AUGMENTED ONTOLOGIES

The Question Concerning Digital Technology and Projectual Humanism

GEAUMENTEERDE ONTOLOGIEËN

De Vraag naar Digitale Technologie en Ontwerpend Humanisme

Dissertation submitted in support of candidature for the title of doctor at the

Erasmus University of Rotterdam

under the authority of the *Rector Magnificus,*

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to be publicly defended on April the 17th, 2014 at 9.30 hours

by

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"They don't know *Monopoly*," Hauck said to himself, "so this screwball game [*Syndrome*] doesn't seem strange to them."

Anyhow, the important thing was that the kids enjoyed playing *Syndrome*; evidently it would sell, and that was what mattered. Already the two youngsters were learning the naturalness of surrendering their holdings. They gave up their stocks and money avidly, with a kind of trembling abandon.

Glancing up, her eyes bright, Lora said, "It's the best educational toy you ever brought home, Dad!"

– Philip K. Dick, *War Game* (1959)

This dissertation elaborates on the phenomenological tradition and operates, more specifically, in the academic context commonly referred to as the 'digital humanities'. By definition, the work of a digital humanist is interdisciplinary and is interpretive, experiential and generative (Gold, 2012). In other words, actively pursuing research in the 'digital humanities' necessarily involves a degree of *praxis* as it is an activity that, quoting the Digital Humanities Manifesto 2.0, involves "the creation of new technologies, methodologies, and information systems, as well as in their *détournment*, reinvention, repurposing […]"
(available at http://humanitiesblast.com/manifesto/Manifesto_V2.pdf).

Two are the essential dimensions in which my work was involved with some form of *praxis* and materialized through 'doing':

1. my activity as a video game designer and video game developer, through which I created several philosophical games aimed at making certain notions playable and interactively disclose alternative world views, and

2. the development of a postphenomenological approach to biometrically-aided design which led to the grant-funded launch of the applied research project *BD4CG - Biometric Design for Casual Games* in collaboration with the University of Antwerp, Belgium.

The practical outcomes of the activities summarized above as well as several of the theoretical elaborations contained in the dissertation that follows these acknowledgment pages were published in academic journals, presented at academic or industry conferences and were made available online both in their textual and in their interactive, ludic form. A complete list of published works, video games and articles derived from this study is offered in the section dedicated to my biography.

At this point, I believe it is safe to observe that my philosophical inquiries, my game development activities and my 'research'[i] would have been radically different or perhaps not even possible at all

had I been ‘thrown’ into this world as a bat, as a dog, as a plastic bag, *et cetera*. In the context of having been born a human being, in good health, with enough passion, time and intellect to pursue an academic education and not having to worry about a roof over my head or food on my plate… Well, all things being the same, this study would still not have been possible without the care and support of my promoter Prof. Jos de Mul, whose humanity and guidance I know I will never be able to express enough gratitude for.

Needless to say, I am also thankful to my home institution NHTV Breda University of Applied Sciences, and my co-promoter Prof. Hans Bouwknegt in particular, for having believed in me and in my project and for having granted me the time and the resources to pursue it.

I am indebted with the academic communities of philosophy of computer games, human-computer interaction, game studies and philosophy of technology for the constructive feedback and the enthusiasm with which they received my work and challenged the interdisciplinary perspectives outlined above. I would like to individually thank prof. Patrick John Coppock, scholars Dario Compagno, Ivan Mosca and Sebastian Möring for the help and inspiration that provided both directly and through their publications. Several of their insights and quotes punctuate the last three chapters of my text.

I would like to also dedicate some space in this acknowledgments section to express my gratitude to the institutions and the individuals who believed in my work and enjoyed my games enough to allow for my voice to be heard. Among them are Nicolò Tedeschi, Diego Zamprogno, Paolo Giacomello, Emilio Cozzi and Prof. Pierluigi Panza. I am particularly indebted to Sandy Appleoff, founder and chair of the Game Art Major at *Laguna College of Art and Design* (LCAD) in Laguna Beach, California, for her constant enthusiasm, affection and support.

In addition, I would like to take the opportunity to show my appreciation for the effort that Elize de Mul and Michelle Westerlaken dedicated to proof-reading and helping with the fluency, the coherence and the intelligibility of various parts of my text. I am also thankful to Irina Tomova for the patience and the care she put into producing the cover for the present version of this book. I am sure that none of my flimsy male friends could have endured any of these nerve-wrecking tasks; thank you again, girls.

Last but not least, I believe credit is due to Marcello Gómez Maureira – my friend and former student – for having trusted, questioned and helped me at every step of the path we walked together in the last six years. His passion and hard work had been constitutive for many projects we have developed together, including (but not limited to) his ambitious undergraduate thesis and the period during which he performed as my teaching assistant. Additionally, his efforts influenced and contributed to many of the philosophy-entrenched experimental video games that I discussed in the present dissertation: Marcello was, in fact, the designer in charge of the video game

- *Haerfest* (experimental, free video game developed by TECHNICALLY FINISHED in 2009) (referred to in chapter 4)

and he provided additional design work and technical art direction for

- *Gua-Le-Ni; or, the Horrendous Parade* (Double Jungle S.a.s., 2011. A commercial title discussed in chapters 4, 5 and 6),
- *Necessary Evil* (experimental video game, developed independently in 2013) (mentioned in chapter 3, note 2), and
- *Ode to Soup* (Double Jungle S.a.s., a commercial title currently in development).

Resorting to a perhaps immoderate literary analogy, I sometimes like to think of Marcello as the Doctor John Watson to my Sherlock Holmes. Similarly to Dr. Watson, Marcello's reliable, sensitive character and intelligence were not only necessary to the solution of many of our 'cases', but played in counterpoint with my analytic and emotionally-detached character.

To conclude this preliminary section of my text, I would like to dedicate this study to the memory of Percival Bartlebooth and Pierre Menard, whose invisible works still inspire and motivate mine.

Lovere, Italy, August 2013.

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[i] In the context of this text, I am using the term 'research' to designate the quantitative analysis of biometric data. My use of the word 'research' aligns, in this sense, with the specific meaning that Martin Heidegger attributed to scientific endeavours. Quantifiable methods are understood, in Heidegger's radical essay titled 'The Age of the World Picture' (published in 1938), as diverging from genuine philosophical enquiry. According to Heidegger, "[r]esearch into facts in the realm of nature is intrinsically the establishing and verifying of rule and law. Methodology, through which a sphere of objects comes into representation, has the character of clarifying on the basis of what is clear – of explanation." (Heidegger, 1982, 120, 121) "Every science is, as research, grounded upon the projection of a circumscribed object-sphere and is therefore necessarily a science of individualized character. […] [R]esearch is not ongoing activity because its work is accomplished in institutions, but rather institutions are necessary because science, intrinsically as research, has the character of ongoing activity." (Heidegger, 1982, 123, 124)

Augmented Ontologies

CHAPTER 1: The Question Concerning Digital Technology

The values of Western culture are conducive to spending a considerable amount of resources on the development of computer games, digital social networks, special effects for movies, *et cetera* (Bolter, 2003). With the increasingly more prominent role of digital media[1] in the global economy as well as their progressively saturating involvement in social processes and practices, the study and development of digital technologies of representation and communication managed to attract a growing academic interest from a wide spectrum of disciplines.

The specific objective of one of such disciplines, namely 'digital media studies', can be generally recognized as that of being able to understand and describe the role of the digital platform as a factor of socio-cultural change. This traditional humanistic purpose can be conveniently presented in the context of this introductory chapter as a twofold endeavor:

1. the achievement of a deeper awareness of the growingly influential role the digital medium in the obtaining, shaping, storing and sharing information and knowledge, and

2. the development of a closer understanding of the creative possibilities and expressive qualities of digitally mediated simulations.

As will be discussed in the next two chapters, several approaches in the fields of media theory and philosophy of technology already identified the digital medium as a specific form of technical mediation. As for any other forms of technical mediation, computers are recognized capable of extending, enhancing, sharpening as well as numbing the intellectual, sensory and operational capabilities of human beings. In this study I will argue that the specific ways in which they function as mediators in social practices cannot be understood ignoring its effects in terms of the augmentation and the supplementation of the perceptual, intellectual and operational capabilities human beings. Philosophical anthropology will be, thus, embraced by this study as a fruitful frame of reference to understand the cognitive and cultural consequences of the social diffusion and the cultural relevance of digital mediation as well as that of a simulative mindset.

Complementing the anthropological perspective mentioned above, I believe that the influences of computers as mediators cannot be embraced apart from the very technical possibilities afforded by the digital platform. Often focusing their attention on their interactive qualities, their computational and representational possibilities as well as their affordance of disclosing of alternative virtual worlds and granting access to virtual extensions of their users' bodies, it is not infrequent for digital media scholars and media philosophers to employ methodologies and models from a broad spectrum of approaches customarily bridging the traditional gap identified between the 'natural sciences' and the 'human sciences'.

Among all media configurations that are accommodated by the digital platform, a particular interest and enthusiasm has been elicited, in the past two decades, by the study of video games from a number of different, interdisciplinary perspectives. This engrossment has frequently been attributed to the recent recognition of the specific

relevance of video games as factors of socio-cultural change (Bogost, 2007; Bogost, 2011; Compagno, 2008; Juul, 2005; Juul, 2009; Nitsche, 2009; Wardrip-Fruin, & Harrigan, 2004; Wardrip-Fruin, & Harrigan, 2007; Wark, 2007). According to the vision proposed by American game designer and researcher Ian Bogost in his 2007 book *Persuasive Games*, in fact, interactive, digital worlds hold a unique and momentous disrupting power over the fundamental attitudes and beliefs people have about reality. Bogost argued that video games are especially efficient persuasive tools that have already been successfully employed to raise political awareness and introduce change in social behavior (Bogost, 2007, ix).

The outlined understanding of the cultural role of computer games presented by Bogost could be complemented and extended by observing, as – for example – Russian-born media theorist Lev Manovich did in his 2001 book *The Language of New Media*, that the digital medium is, in its logical core, nothing else but a machine sustaining and representing autonomous or semi-autonomous logical systems capable of manipulating modular information. The endlessly configurable logics of computers systems is largely incongruent with the causal, univocal and essentially stable way that humans traditionally experience and understand the world through the mediation of their senses (Manovich, 2001).

Lev Manovich and Marshall McLuhan shared a sympathetic understanding in this regard: the computer as a medium in general, regardless of the different affordances of its individual applications, discloses artificial worlds whose elements and qualities can be automatically or manually reconfigured in their fundamental ontological traits (for instance in terms of causality, the continuity of space and time, the perdurance of physical qualities, *et cetera*). From this standpoint, the cultural impact of digital media – or their 'message', as McLuhan himself would phrase it – does not lie in the specific representations and services they offer but, as Bogost also noted in relation to video games, in the very way they shape and disclose experiences.

Adopting an anthropological perspective to analyze the socio-cultural effects of digital mediation, I argue that the influence that computers are exerting on Western societies can not – or no longer – be suitably understood from a perspective which is limited to its rhetorical and ideological affordances, but needs to be recognized as holding a wider and deeper philosophical relevance.

1.1 – WHAT IS TECHNOLOGY?

Technology is a term that originated in ancient Greece, where it was used to indicate the study of τέχνη (*techné*). The term '*techné*' denoted a craft, a methodology or a skill aimed at the practical creation of some material thing. These practice-oriented concepts were later appropriated by the Romans under the umbrella-term *ars* (art) (Fedier, 2001, 12 – 27). For reasons that will be apparent to the reader in later chapters of this text, the focus on the labor-involving, material fabrication that pertained to the original meaning of the word '*techné*' is recognized as unsuitably restrictive when it comes to describing what the term means in today's age of digital mediation.

The historical shifting of the meaning of the term '*techné*' and the baffling diversity of possible interpretations of the word 'technology' inspired Stephen J. Kline's 2003 essay 'What is Technology?' In that academic enquiry of his, Kline clarifies that rather than a single concept, the term 'technology' presently refers to a family of concepts bound together by their participation in the creation or the employment of man-made objects. The breadth (both historical and societal) of the involvement of technology with humankind is, according to Kline, responsible for the fragmentation and the ambiguity of the contemporary acceptation of the term.

- 'Technology' can, in fact, indicate anything that the natural environment does not generate autonomously (that is without the intervention on human beings), as Aristotle explained in his writings on nature (*Physics*). To use Kline's words to express the same interpretation, technology could be described as: "things made by humans that do not occur naturally on earth, for example refrigerators, eyeglasses, atom bombs, paints, automobiles, pianos, paper, rubber, glass, aspirines, penicillin, airplanes, copying machines, furniture, roads, rifles printing presses, boots, bicycles and on and on." (Kline, 2003, 210)
- In addition, the term 'technology' can be understood as encompassing all the "knowledge, technique, know-how or methodology" that are employed to pursue a practical task (Kline, 2003, 211). In these first two meanings of the word 'technology', our definitory attempts align with its original Greek denotation.
- According to Kline, 'technology' can also be employed to indicate to "[a]ll the elements needed to manufacture a particular kind of hardware, the complete working system including its inputs: people; machinery; resources; processes; and legal, economic, political and physical environments." (Kline, 2003, 210, 211)
- In its fourth meaning, and building on the previous point of this list, the word 'technology' does not only refer to the methods for individual beings to produce or employ technical artefacts, but embraces the complex and social and technical infrastructures through and for which they are fabricated and utilized. A car, for instance, cannot be thought as isolated from the machinery that is employed in the construction of cars and the technical limitations of the latter. The way cars are built, however, also relates to larger and interconnected technological systems such as roads, gas stations as well as the traffic rules, the laws regarding ownership and the tastes and needs of the social group(s) they are produced for (Van den Berg, 23). The

necessary relationships among all these system constitute what Kline calls the 'socio-technical system of use'. When using a car, "[we] use the combined system (the autos plus all the rest) to extend the human capacity for moving ourselves and our possessions about." (Kline, 2003, 211)

- From an anthropological perspective, technology can be largely recognized as a combination of natural forces that are conveyed and combined towards certain human purposes. From this standpoint, the successive stages of technological development can be interpreted as one of the objective externalizations of the historical process of self-understanding of humankind (De Mul, 2010, 113; Coolen, 1992, 250 – 271). In Martin Heidegger's 1954 essay 'The Question Concerning Technology', different techniques are explicitly presented as unveiling different worlds, which are succeeding epochs in the history of how Being is approached and understood by human beings (Heidegger, 1982).

In the context of this study, I decided to embrace a workable definition of 'technology' capable of encompassing all the interpretations listed above. A convenient, synthetic designation was proposed by Jos de Mul in 2002 introduction to *Filosofie in cyberspace*, where he defined technology as "a conglomerate of technological artefacts, specific forms of knowledge and capabilities […] (embraced in their necessary relation with the relative) geographical and social infrastructure, economic interests and societal norms and values." (De Mul, 2002, 30) An analogously broad and integrated understanding of technology was adopted by the American historian of technology Thomas P. Huges in 1994 as a framework for the development of his theory of technological momentum which will be discussed in detail in the third chapter of this study.

1.2 – TECHNOLOGIES AND SOCIETIES

Before engaging in a thorough elaboration of the perspective on digital technologies offered by my work, it is not only conventional but also desirable to clarify and substantiate the perspective it will take on the interrelations between technology and society (or even their possible synthesis as byproducts of a more fundamental framework of thought). Towards that objective, I will briefly sketch the theoretical landscape that emerged in philosophy of technology in the twentieth century.

From a perhaps overly simplistic point of view, the historical understanding of the relationships between technologies and societies can be grouped in three families: those of instrumentalism, determinism and constructivism. The subsequent sub-paragraphs will outline the salient features of each perspective.

Instrumentalism: Instrumentalism is a very rare position within the horizons of philosophy of technology, albeit often adopted in social practices such as the structuring of government policies or the design of digital services and applications[2]. Academics and theoreticians embracing an instrumentalistic stance hold, by definition, a neutral perspective in relation to technology and technological development: they believe that technologies do not have

inherent effects on human beings or influence in steering culture. In their vision, technologies simply function instrumentally, that is to say as tools and systems employed to accomplish human purposes. This first theoretical approach treats culture and technology as two social domains which are interacting with one another but are not internally interwoven an interdependent. According to the instrumentalist vision, technology does not intrinsically suggest a way of relating to it, does not 'invite' a certain (ethical or less so) pattern of action, nor facilitates the development of a certain structure of thought or understanding of the world. In other words, instrumentalism considers technological development to be innately value-free: its significance and its role in society are attributed to a particular technological system by the different ways in which culture utilizes it in a certain historical period.

Determinism: The second perspective regarding the effects of technology on societies is called 'determinism' and it encapsulates the set of beliefs according to which changes in technology exert a greater influence on societies and their processes than any other cultural factor. Technological determinists maintain that "technology broadly conceived, along with its lesser sibling Science, is the central force in the modern world, more important to defining the patterns and problems of twentieth-century life than international conflicts, national politics, the maldistribution of wealth, and differences of class and gender, because it is in some sense prior to all of these." (Memo from Wade Roush to M.R. Smith, in Smith & Marx, 1994, 2) Determinism regards technology as a cultural domain characterized by its own developmental logics: an independent the functioning and scopes of which cannot be intellectually grasped or practically controlled by human beings. Due to its dichotomic approach, this perspective on technology is home to very radical stances. Among the determinists, polarizations between strongly optimistic positions and darkly pessimistic ones are common. According to the first group, technology is effectively a natural force and will exert a predominantly positive influence on society (Nye, 2006, 19). For the second one, the independent momentum of technology, in time, "will have a negative impact on, or even destruct, the core values of our societies and the central elements of what makes us human." (Van den Berg, 2009, 29)

Constructivism: In the last decades of the twentieth century, a third general approach towards the relations between societies and technologies was developed in response to both the instrumentalist and the deterministic perspectives. According to a constructivist approach, in fact, the previous two theoretical frameworks overlooked the socially contextual aspect of the development of new technologies. Constructivists argue, in fact, that new technologies are the material answers to some intangible social need: they arise out of "conflict, difference and resistance" in specific historical, economic and socio-cultural settings (Bijker & Law, 1992, 11). The constructivists criticize the deterministic point of view in particular for its unidirectional understanding of the influence between technology and society, accusing it of overly simplifying what should instead be recognized as a complex process of mutual shaping. It is society, constructivists believe, that influences and ultimately controls how technology is developed and utilized.

> Their position is often supported by the observation that "[until now], no technology, no matter how ingenious and powerful, ever has initiated an action not pre-programmed by human beings."[3] (Smith & Marx, 1994, xii)

The position adopted by the present study in relation to technical mediation does not strictly align with any of the three perspectives presented above. As will be contextualized and explained in depth as a constituent part of the third chapter, the understanding virtual technologies that will be articulated in this study transcends various aspects of the modern theoretical horizon of philosophy of technology. It will in fact be presented as a highly interdisciplinary standpoint which will borrow from social constructivism the specific perspective according to which the relations between technologies and societies are influenced by a large quantity of interrelated factors on different ontological levels: social, technological, cultural and biological. However, as MacKenzie and Wajcman observed in 1999, stating "that technology's social effects are complex and contingent is not to say that it has no social effects." (Mackenzie & Wajcman, 1999, 4)

The interdisciplinary interpretation of the socio-cultural role of technological systems and artefacts adopted by this study consists of a synthesis between the technological deterministic approach and the social constructivist one, a synthesis that was inspired by the philosophical anthropology of German philosopher and sociologist Helmuth Plessner (1892 – 1985) and aligns with the understanding of technologies as 'extensions of man' as structured by the already mentioned Marshall McLuhan. According to the proposed perspectives, technologies are designed and adopted by mankind as modifiers of the sensory, intellectual and operational capabilities of human. In his 1964 book *Understanding Media: The Extensions of Man*, McLuhan observed that any technology "amplifies or accelerates existing processes" and introduces a "change of scale or pace or shape or pattern into human association, affairs, and action" which result in "psychic, and social consequences". (McLuhan, 1994, 8)

Both McLuhan and Plessner believed that the use and the introduction of technologies in society and social practices have consequences that continually shape and re-shape the ways in which individuals and cultures understand and act in the world. As already hinted, their perspectives resonate with the anthropological approach to technology according to which technological development is one of the most evident materializations of the historical process of humanity. This recognized relationship between humanity and technology does not, however, entail the conviction that mankind is in control of every effect and aspect of the artefacts and systems it designs and employs. The consequences of technology, Plessner observed in his seminal 1928 book *Die Stufen des Organischen und der Mensch* (The Stages of the Organic and Man), are under any circumstance largely outside the direct control and understanding of their creators:

> "[e]qually essential for the technical artifact is its inner weight, its objectivity that discloses the aspect of technology that only can be found or discovered, but never made. Everything that enters the sphere of culture shows its dependence on human creation. But at the same time (and to the same extent) it is independent

> from man." (Plessner, 2006, 334, English translation in De Mul, 2010, 204)

According to McLuhan, this 'weight' – the independence from the original intentions of the creators of a technology – has the power to impose put unwary in a "subliminal state of Narcissus trance" and impose on them its own assumptions and values. (McLuhan, 1994, 15)

After what was observed, technology will be embraced by this study a factor of cultural change among others, but a factor whose influence and consequences, with the diffusion and progressively more saturating involvement in Western social practices of digital technologies, are becoming increasingly more dominant and less critically understood. In a sense which is, instead, specific to computers, the digital medium will not be understood in this study as a single technology but as a permanently flexible platform whose applications and effects are never univocally or fully established in societies. As a consequence, my position could perhaps be identified as a 'soft deterministic' one at best, in the sense that – despite considering the relations between technologies and societies complex, biunivocal and co-dependent – I believe that in the present, dawning epoch of the human process, digital media will have, in some aspects, a leading influence on thought and culture.

More specifically, this study understands digital media as systems of technologies involved in the processes of creating and granting interactive access digitally simulated worlds. My claim with regard to virtual environments is that they hold a specific cultural relevance and that this relevance resides in their capability of granting access to the experience of persistent and interactive worlds which are alternative to the one commonly indexed as 'actual'. This is not, however, a declaration of independence of virtual worlds from the one human beings share as biological creatures: the worlds that are experientially affordable through digitally mediated simulations are largely ontologically independent from the 'actual' one, but are ostensibly reliant on the latter in a number of ways, first and foremost for their hardware substrate. The relationship between virtual ontologies and actual ontologies will be the focus of the conclusive chapter of this study.

Later in this text I will also elaborate on how the cultural shift brought about by digitally mediated simulations can be understood as consisting of a broadening of the human capabilities for relating to reality in directions that are not limited to the 'actually potential', but extend towards what is 'virtually possible'. Understood in this framework, I believe that what video games inherently propose as mediators (the fundamental metaphorical way in which they represent reality) is that the present state of the world is neither the best, the ultimate nor in any way univocal.

One of the practical consequences of the insights larvally outlined above will be the advocacy, in the last chapters, for the use of digital technology as a medium for testing, developing and disseminating philosophical notions and hypotheses which is alternative to the traditional textual one. Presented as interactive virtual experiences, philosophical concepts cease to be accessed exclusively with the intercession of subjective imagination and take new, projective dimensions which I propose to call 'augmented ontologies' (a thorough explanation of this concept will be provided in the fourth chapter).

The envisioning of the opening of a new, experimental philosophical branch is not a mere theoretical proposition expressed textually, but resulted in (and is completed by) the creation of exemplary video-ludic artefacts among which the commercially released action-puzzle videogame *Gua-Le-Ni; or, The Horrendous Parade* (Double Jungle S.a.s., 2011 – 2013). The fourth, fifth and six chapters of this study will present my understanding and my practical employment of interactive digital media (and of video games in particular) as ontological instruments as well as mediators of philosophical thought. In those chapters, digital simulations will be recognized as technologies capable of materializing alternative phenomenologies and new ways of interactively understand causation and they can pragmatically disclose philosophical notions, hypotheses and experiments as well as give raise to new questions that could only emerge and be experienced in those virtual contexts. It is in this sense that experiences disclosed by interactive digital technologies can be understood as the general context where a novel humanism is already developing[4]. In the next sub-chapter I will elucidate, among other lexical and methodological clarifications, what I mean by a 'new humanism' in the context of the perspectives offered by this study.

As a corollary to the principal philosophical goals and perspectives outlined above, the proposed anthropological approach to digital technology opened the way to the structuring of a phenomenological account of biometry in relation to interactive, virtual experiences. The idea according to which worlds and events experienced through digital, interactive technologies have a direct correspondence with reactions detectable on the actual body of the cybernaut herself will be articulated in the fifth chapter (cfr. sub-chapter 5.4). My understanding of biometrics will be complemented in its practical consequences for video game design in the sixth chapter, where I will briefly present the design and tuning work performed on the aforementioned philosophical video game *Gua-Le-Ni; or, The Horrendous Parade* with the support and guidance of biometric experiments (cfr. sub-chapter 6.5.3).

1.3 – A PHILOSOPHICAL TASK

In the previous parts of this introductory chapter, the work of one of the founding fathers of philosophical anthropology – Helmuth Plessner – was presented as seminal for this study due to his interdisciplinary and anthropological understanding of technology as a constitutive dimension of what it is like to be human beings. A similar approach to technology as an ingrained and basic attitude towards the world and other human beings was proposed by another German philosopher who was also a central figure of phenomenological and existentialist though: the already mentioned Martin Heidegger (1889 – 1976). In 'The Question Concerning Technology', Heidegger identified technology as the functional and objectifying frame of mind which is a manifestation – or could be even identified with – the heritage of Western thought. Michael Heim observed that the overt understanding of technology as a phenotype of Western thought makes Heidegger a landmark in modern philosophy of technology (Heim, 1994, Chapter 5).

In the present study, Heidegger's philosophical understanding of technology (as well as his wider philosophical project in relation to the totality of Western thought) will be combined with Plessner's anthropological perspectives in order to establish a novel humanistic approach to the digital platform. The purpose of this endeavor is that of understanding the effects of the experiences of virtual worlds on human thought and the potentialities for digitally mediated simulations to serve human beings in 'overcoming' the traditional (pre-digital) boundaries of human kinds of ontologies. From the embracing of Heidegger's work as a foundational philosophical framework, follows the need to define and integrate five lexical items which are will be frequently use in the structuring of the arguments that will follow:

1. In his 1949 essay 'Letter on 'Humanism', Heidegger described a 'world' as "the openness of being" (Heidegger, 1998, 266). While exploring the relationships between human ontologies and the experience of simulated, alternative worlds, I will utilize the term 'world' as an interrelated set of beings and relationships among the said beings which are stably perceivable, persistently intelligible and mutually constitutive within a certain spatial-temporal context. This interpretation offers the possibility to establish a clear distinction between the experiences of virtual worlds and dreams or hallucinations. Inspired by Heidegger's existential phenomenology, the proposed definition of 'world' lays the groundwork for the sidestepping of a dualistic perspective of philosophy of mind. Instead of constructing a system of knowledge based on the theoretical separation between an observer (subject) and the world (object), their coexistence and mutual relationships are presented by Heidegger as a necessary and structural aspect of the characteristic way in which beings are[5].

2. I will use the term 'ontology' in a way that was inspired by Heidegger's 1927 book *Being and Time*, where it indicated the way the world is for a being. According to Heidegger, a Being (*Dasein*, German: *da* – 'there' and *sein* – 'being') is always involved with a 'there', a world, and is consequently always characterized by biological and historical dimensions. In general, from the postphenomenological stance adopted by this study, I will use the unspecific term 'ontology' to refer to human kinds of ontologies, which is to say the

rationalization of certain relationships constituted between a human being and a world. From this perspective, things in the world make sense within an ontology precisely because, via the mediation of the senses, they become part of a persistent and intelligible system of relationships with an individual human being. On this basis, a definitory distinction can be posited between traditional media such as sculpture, painting or film and new, simulative ones. The specificity of the latter would be recognized, in fact, as residing in the offered affordance for materially establishing meaningful, interactive relationships with the mediated content, allowing for the emergence of what were described in the previous point a 'worlds'. As will be explained in the following point, analogue understandings of the concept of 'world' are often embraced within the phenomenological tradition and in the postphenomenological one in particular. Berger and Luckman described, for example, the term 'world' as a stable set of beings and relations with (and among) such beings (Berger & Luckman, 1988, 25). Analogously, Paul Verbeek addressed the same concept in terms of "reality as disclosed by human beings." (Verbeek, 2005, 108)

3. As anticipated in the previous section of this chapter, the interactive experiences disclosed by digital technologies are understood as a new, projectual context for humanism. Given the foundational role of Heidegger's thought in the development of my perspective, I deem it necessary to specify that I am not utilizing the term 'humanism' in its common interpretation, that is to say the one that emerged from the encounter between the Roman civilization and the late Hellenistic culture. According to this conventional acceptation, in fact, 'humanism' indicates the realization of the human essence through "scholarship and training in good conduct" (Heidegger, 1998, 244). As a reaction to this interpretation, in 'Letter on 'Humanism', Heidegger explained that the conventional understanding of humanism does not truly cater to the original essence of human beings, but rather "is determined with regard to an already established interpretation of nature, history, world, and […] beings as a whole." (Heidegger, 1998, 245) Heidegger found that this way of embracing 'humanism' was a reductive by-product of the Western metaphysical tradition. He further specified that his opposition to the traditional acceptation of the term 'humanism' does not advocate for the 'inhuman' or a return to the 'barbaric', but stems instead from the belief that the 'humanism' can only be properly understood and restored in culture as a more original way of meditating and caring for humanity and understanding its relationship with Being. In articulating my postphenomenological understanding of virtual worlds as ontological instruments and mediators of philosophical thought, I will use 'humanism' in accordance with the complete interpretation proposed in the 'Letter on Humanism', which is to say a concern and focus on human beings that is necessarily embedded in a metaphysical horizon[6] but that is also capable of transcending such horizon while remaining open towards other 'vistas'. (Heidegger, 1998, 265).

4. In Martin Heidegger's 1927 *Being and Time*, the term 'projectivity' (*Entworfenheit*) indicates the way a Being opens to the world in terms of its possibilities of being (Heidegger, 1962, 184, 185 / SZ, 145)[7]. Inspired by Heidegger's and Vilem Flusser's work in the field of philosophy of

technology as well as Helmuth Plessner's anthropological position presented in his 1928 book *Die Stufen des Organischen und der Mensch. Einleitung in die philosophische Anthropologie*, the present study understands the concept of 'projectivity' as the innate openness of human beings to construct themselves and their world by means of technical artefacts. Borrowing the words of Robert Musil, 'projectivity' is "a conscious utopianism that does not shrink from reality but sees it as a project, something yet to be invented." (Musil, 1996, 11) In this sense, this study embraces a fundamental understanding of technology as the materialization of mankind's tendency and aspiration to overcome its 'thrownness' (*Geworfenheit* in the original German edition of *Being and Time*), that is to say the historical dimensions as well as the physical, perceptual, cognitive and communicative limitations that define *Dasein* in its relationships with the world.

5. In this fifth linguistic specification, I would like to direct the attention of the reader on the fact that, when describing the social and cognitive effects of the exposition to interactive virtual worlds, I will refrain from referring to them as ruptures, revolution or from using paradigm-breaking expressions. Instead, terms like 'alteration', 'shift' or 'overcoming' will map the understanding of the ontological effects that I recognized in the progressive diffusion of interactive, digital mediation in social practices. The last term in particular, 'overcoming', is utilized in accord with Heidegger's embracing of the concept, which is not to be understood in the dialectical meaning of the German term *Überwindung* (surpassing) but must be interpreted in the nuanced conjunction of two other terms: *Andenken* (rememoration) and *Verwindung* (distortion, twisting, incorporation). One of Heidegger's translators, Joan Stambaugh, clarified the difference between the two distinct and coexisting understandings of 'overcoming' of metaphysics presented in *Being and Time*, stating that

> "when something is overcome in the sense of being überwunden, it is defeated and left behind. This is not the sense Heidegger intends here. When something is overcome in the sense of being verwunden, it is, so to speak, incorporated. For example, when one 'overcomes' a state of pain, one does not get rid of the pain. One has ceased to be preoccupied with it and has learned to live with it. Thus, to overcome metaphysics would mean to incorporate metaphysics, perhaps with the hope, but not with the certainty, of elevating it to a new reality." (Heidegger, 1973, 84; also cfr. Heidegger, 1982, 39)

Elaborating on the same concept, contemporary Italian philosopher Gianni Vattimo maintained that 'overcoming' as *Verwindung* 'repeats' metaphysics "while radically changing its meaning." (Vattimo, 2004, 39) In his analysis, Vattimo identified two qualities of Heidegger's idea of *Verwindung* outlined above:

- its consisting in a ‘repetition’ of the metaphysical tradition, which is to be understood as an acceptance and a rememoration (*Andenken*) of it, and

- its being a factor of change in the understanding of metaphysics itself.

Combining the two characteristic aspects of *Verwindung* in the dyadic expression ‘acceptance-distortion’, Vattimo interpreted Heidegger’s project of ‘overcoming’ metaphysics as “a going-beyond that is both an acceptance (or ‘resignation’) and a ‘deepening’.” (Vattimo, 1991, xxvi) The interactive experiences of virtual worlds can, on the basis of this interpretation, be identified a possible ‘opening’ where the extension and the deepening of the foundational and inescapably binding context of being ‘thrown’ into this world as humans can take place.

How exactly can interactive digital technology assist human beings in ‘overcoming’ the traditional boundaries of human kinds of ontologies? This is the very question at the core of the present study, a question that can appear as a provocative paradox from a traditionally humanistic perspective which considers the mechanization of the world as an external challenge to mankind. This standpoint, as well as the recognition of impending, inherent threats in mankind’s increasing dependence on technology, was encapsulated and popularized by the cultural production of the early twentieth century in a paradigmatic techno-pessimistic way. Edward Morgan Forster’s 1909 novel *The Machine Stops* focuses on the humans’ escalating detachment from the world by means of a complete and alienating dependence from technology. In the artificial underground environment of *The Machine Stops*, technology became ubiquitous, inscrutable, indispensable and revered in a quasi-religious sense. In Forster’s work, it is only upon the final failure of the machine that mankind is faced with extinction as well as the awareness of how far removed they have become from their native independence and from the natural and social order they were once a part of (Forster, 1985).

Another remarkable example of such a techno-pessimistic approach in early twentieth century cultural production is *R.U.R.* (*Rossum's Universal Robots*), a theatrical play created in 1920 by Czech playwright Karel Čapek. *R.U.R.* is often considered to be a historical milestone of science-fiction for having first introduced both the term robot (Czech for ‘work’) to indicate an electro-mechanical agent capable of pursuing tasks autonomously or semi-autonomously and the trope of the deliberate revolt of the machines against their creators in popular culture. Mary Shelley’s 1818 novel *Frankenstein; or, the modern Prometheus* (in overt analogy with the ancient Greek myth of Prometheus) can also be identified as an obvious precursor in the use of fictional media content to reinforce and spread the specific ideology according to which the interference of technology in what is considered to be a favourable balance of both natural and social forces will inexorably lead to a tragic conclusion for humanity.

From the techno-pessimistic perspectives outlined above, being humans is presented as an involvement with reality which is genuine and irreducible. Technology is, instead, recognized by the same framework as an inhuman, autonomous force striving for the rational interpretation and the objective domination of the world, including mankind (Heidegger, 1982; Richard Villa, 1996, 182; Vattimo, 1991, 40, 41; Costa, 2007, 33 – 47). If this humanistic approach to philosophy of technology were to be

embraced literally, any form of technical mediation would appear as not contributing to society and culture in the direction of the emancipation of humanity from contextual constraints as well as inherent cognitive and operational limitations. Technical mediation would rather manifest itself as the materialization of the will to control and rationally re-construct the world recorded, for example, in 'social science-fiction' literature or in Borges' fictional writings (Borges, 1994, 2001, 2004; Richard Villa, 1995, 182). Is technology, then, a danger for humanity? And if so, what is de-humanizing about technology? Could it not be embraced, instead, as the apex of humanism? These very questions were first explicitly raised by Heidegger in 1949 in a series of four lectures collectively called *Einblick in das was ist* (Insight Into What Is). In his speculations, Heidegger acknowledged the danger of estrangement and objectification of the world as well as humans in the advancing mechanization, and at the same time identified technology as the ultimate consequence of the development of Western thought (Heidegger, 1982; Vattimo, 1991, 177 – 179; Richard Villa, 1996, 181 – 195).

Philosophers and aesthetics scholars of the last century (among whom Heidegger himself or Hans Robert Jauss, a pupil of Heidegger's) reacted to the progressive commoditisation and alienation of human existence that they observed in the technical mediation of culture proposing – instead – the free encounter with art as a means to achieve liberation from the canons and shortcomings of our system of thought by means of aesthetic persuasion. Albeit passively experienced, traditional forms of artistic expression were considered to hold sufficient rhetorical power to detach people from their everyday and functional existence and lead them into a freer realm of sensory appreciation (Panza, 2002). In the last century, Heidegger, Jauss and, perhaps with an overly optimistic slant, German philosopher and sociologist Herbert Marcuse developed their work on the social relevance and salvation potential of art before the social diffusion of computers and they could not fully anticipate the advent and the effects of a technology capable not only of representing fictional worlds, but also of offering a persistent interaction with them.

Michael Heim observed in 1994 that the way in which computers produce interactive virtual environments and allow smooth and controlled transitions "to the real and back" cannot be satisfactorily explained in analogy with traditional forms of mediation or the use of psychotropic drugs (Heim, 1994, xiii). Heim suggested that the interaction with radical alternatives to a world-view which has traditionally been embraced as univocal and universally shared has such profound implications on epistemology, aesthetics and sociology that must be explored and understood in a way that is necessarily philosophical (Heim, 1994, xvii).

The present study identifies the possibility for persistent interaction with virtual alternatives to the way humans experience the world as a distinguishing affordance of digital technologies. Further, it purports that this affordance inevitably entails alterations in the way humans develop and organize knowledge. From the recognition of effects on human kinds of ontologies ensuing from the interaction with of computers and the experience of dynamic virtual environments, follow that any study that hopes to encompass and understand the cognitive and cultural import of digital mediation necessitates a foundational philosophical approach. The same attitude in relation to the study of the experience and interaction with computer and computer-generated worlds is also evident in the work of Paul Dourish. Dourish observed, in

fact, that for him "it is hard to imagine *a more* philosophical enterprise." (Dourish, 2004, viii)

Specifically, in terms of philosophical approaches, this study identifies postphenomenology as a fruitful and viable context where an answer to 'the question concerning digital technology and projectual humanism' can be elaborated. In this text, I will employ the term 'postphenomenology' in two interrelated interpretations:

> **'Postphenomenology' as the praxis-perception model originally proposed by contemporary American philosopher of technology Don Ihde:** in this understanding, postphenomenology can offer perspectives on philosophy of technology capable of overcoming the shortcomings of classical phenomenology in terms of taking the context-dependence of human knowledge into account (Verbeek, 2005). Adhering to the classical phenomenological tradition, Ihde presented the objective of technology as that of revealing dimensions and qualities of the actual world that could not be observed or experienced without the mediation of technical instruments. Understood in this way, Ihde's perspective has strong affinities with – and in a way continues the work of – some of the most interesting accounts of the relationships between human beings and reality that developed from classical phenomenology[8]. Differently from classical phenomenology, however, Ihde considered that the development of a relationship between human beings and reality precedes the theoretical establishment of a subject and an object of observation themselves. This means that, according to a postphenomenological perspective, human beings and their worlds are always mutually constitutive in their fundamental interrelation (Ihde, 1993, 3, 7). In the constitutive encounter between humans and reality, a specific 'objectivity' of reality arises (a world), and so does a specific 'subjectivity' of human beings. In this sense, when trying to explore digital media from a postphenomenological perspective, their role as mediators cannot be regarded as a taking place 'between' subject and object (Verbeek, 2005, 130). Mediation is, instead, to be understood as a way in which subject and object mutually constitute each other and, in their relationship, can never be isolated or absolutized.

> **'Postphenomenology' as the phenomenological approach to post-humanism:** the latter is a cultural movement that affirms the possibility and the desirability of altering the way human beings are in the world by developing technologies capable of 'overcoming' biological limitations inherent in being human (for instance their mortality, the limited capacity of their memory, *et cetera*). In his work, Ihde showed that, in contemporary Western culture, potentially all human perceptions and actions are already mediated by technical devices. From this perspective, humans can be understood as always having been cyborgs: hybrid beings that are originally constituted, defined and influenced by both their biological dimensions and their technological ones. Also according to this second acceptation of 'postphenomenology', human beings and the worlds they can experience are embraced as products of (technological) mediation and not as the conceptual extremes among which mediation takes place.

I believe it is important to observe here that, for classical phenomenology, technology consists of a particular – and particularly reductive – relationship with the world. Heidegger's later work in the field of philosophy of technology is a particularly obvious example of this approach. He, in fact, presented an understanding of technology as a derivative mindset: a construal of the world as a storehouse of raw materials that lies ready for human manipulation. From the postphenomenological perspectives offered by Ihde and Verbeek, instead, technology and technical artefacts do not necessarily entail a reduction, an impoverishment of the alleged ideal of a whole and authentic reality or of the way we are 'destined to' experience and understand as human beings. Conversely, technologies are understood by postphenomenologists as fundamental mediators of the relationships between human beings and reality that have the potential for opening up new ways in which reality can manifest itself (and for humans to shape it and be shaped in return).

For postphenomenology, technology discloses new worlds, new 'objectivities' (Verbeek, 2005, 135). A postphenomenological approach to philosophy of technology understands technical artefacts in terms of their capabilities and their effects as mediators, that is to say as concrete objects which are never 'in themselves' but are always in a relationship with the human beings who engage with them (Ihde, 1990, 125). This approach offers an alternative to the ways in which the traditional philosophy of technology explained the relationships between technologies and cultures, encompassing the threefold, dialectic taxonomy of 'instrumentalism, constructivism, determinism' outlined above.

Inspired by Heidegger's philosophy of technology and elaborating on the postphenomenological tradition, this dissertation presents an anthropological understanding of technologies as mediators of the relationships between human beings and reality[9]. More specifically, it proposes an original standpoint according to which interactive digitally mediated simulations can be understood as interactive, heuristic allegories capable of disclosing new phenomenologies. Accordingly, technology is not embraced here as an abstract and alienating force precluding humankind from experiencing the 'full richness' of existence. On the contrary, this study recognizes digital technology as a new horizon for humanism in the sense explained above, that is to say in a way that is poetically opened towards various possibilities of realization.

1.4 – ONTO-LOGICAL MACHINES

The inevitable involvement and mutual influence between human kinds of subjectivities and the relative technological environment was famously professed by Marshall McLuhan in his 1962 *The Gutenberg Galaxy: the making of typographic man*[10]. In the digital era, the first scholar to directly address the power of the digital medium to influence world-views and foster social change through the experience of virtual worlds was the already mentioned Michael Heim. In his 1994 book *The Metaphysics of Virtual Reality*, Heim announced the manifestation of a metaphysical shift caused by the possibility of computers to effectively produce digital alternatives to the way human beings experience their everyday involvement with the world (Heim, 1994, xiii).

Heim's proposition of a metaphysical point of view as a desirable perspective from which to approach and achieve a closer understanding of the influence of digital media on society and culture is presented as a fragmented collection of essays which lack the coherence and focus of a systematic model. I believe it is particularly interesting to observe that in Heim's pioneering steps in the understanding of the ontological and cultural effects of the social diffusion of computers in social practices (including philosophical pursuits), Heidegger is often appointed as the forerunner of the modern philosophical understanding of technology (cfr. the fifth chapter of Heim's *The Metaphysics of Virtual Reality*). In his text, Heim also openly elaborated and re-contextualized perspectives and reflections on technology and mechanization that were originally introduced by Heidegger. I find this aspect of Heim's work particularly interesting because Heidegger structured his philosophy of technology in a highly abstract way that is not only suitable as a basic groundwork to develop a specific philosophical account of digital mediation, but is also natively integrated in a wider philosophical discourse. Both of these qualities make Heidegger's philosophy of technology a very promising and workable starting point for the present inquiry.

Heidegger developed his understanding of the way in which technology shapes and influences the relationship between humans and the world towards the later phase of his thought in two texts in particular, both derived from the aforementioned 1949 series of lectures 'Insight Into What Is'. The essays I am referring to are 'The Question Concerning Technology' (1954) and 'The Turning' (1961). A joint reading of 'The Question Concerning Technology' and 'The Turning 'presents the progressive becoming more involved with technology of the world as an element of great danger for humankind. In extreme synthesis, the threats inherent in technology are recognized by Heidegger as being more profound and menacing than the external challenges to the primary ontological role of human beings such as those presented in the literary examples cited earlier on in this chapter. The danger posed by technology, can be identified, according to Heidegger, as the "coming into presence of the Enframing." (Heidegger, 1982, 41 – 43) The 'Enframing' (*Gestell*) consists in the opaque objectification of the world, opaque in the sense that it "remains veiled and disguised. This disguising is what is most dangerous in the danger." (Heidegger, 1982, 37) The 'Enframing' will also, according to Heidegger, inevitably lead to the supremely dangerous objectification of human beings.

The two subsequent paragraphs will briefly elaborate on the two central techno-pessimistic arguments that emerge in Heidegger's writings concerned with philosophy of technology:

- **The becoming more opaque of the partial and derivative nature of metaphysics as a form of thought due to the progressive proliferation of technology.**
  The ongoing and diffused mechanical objectification of the world supports and reinforces the understanding of the world as a 'standing-reserve' (*Bestand*): a resource whose existence is only justified by the possibility of being transformed and exploited for human purposes (Vattimo, 1991, lii; Richard Villa, 1996, 182). This orientation in relation to the world is, according to Heidegger, doubly dangerous. Besides from the evident objectification of the world inherent in understanding it as a functional system of objects, it will blind humanity from the broader spectrum of ways in which the world can reveal itself: when the technological mindset holds sway, it "drives out every other possibility of revealing" (Heidegger, 1982, 27). In spite of (in fact, *because of*) the entire set of scientific apparatuses and theories which are meant to structure the knowledge of the world, humans will grow progressively less open to the "coming into being" of Being, and will fail to understand deeper and more substantial truths about it (Zuern, 2008; Heidegger, 1982, 27). According to Heidegger, technology will not facilitate the human beings engagement with the world nor their pursuit of philosophical truth. The second aspect of 'danger' that is discernable in Heidegger's philosophy of technology is

- **the objectification of human beings themselves.**
  American psychologist Abraham H. Maslow famously remarked that for those holding a hammer everything appears to be a nail. This aphorism does not only resort to an analogy that is recurrent in Heidegger's writing, but bears strong resemblances with his later understanding of technology according to which "the essence of technology is nothing technological" (Heidegger, 1982, 35). In his later works, in fact, technology is not presented as something tangible and instrumental, but rather as "a form of revealing." (Heidegger, 1982, 12, 13) In other words, understood from the standpoint outlined above, technology is not a tangible, objectual quality of the implements and apparatuses that humans construct and employ, but it is rather a frame of mind whose fundamental characteristic is that of rendering all the objects in the world a resource that can be utilized towards a certain human scope[11]. The technological mindset extends the attribute of 'usable object' (or of nails, in the example of the hammer presented at the beginning of this section) also to people, as elements of the world. When man "is nothing but the orderer of standing-reserve, the he comes to the very brink of a precipitous fall", wrote Heidegger talking about the technological objectification of the human being, "[…] he comes to the point where he himself will have to be taken as standing-reserve." (Heidegger, 1982, 27) The risk of alienation as well as the social-ethical consequences of the ontological shift inherent in understanding people as an exploitable resource deeply concerned Heidegger and also guided the work of social theorists of the same period among whom, notably, Karl Marx and Arnold Toynbee.

In Heidegger's technological thought, the progressive and objectifying mechanization of the world is presented as an inhuman and deeply undesirable prospect. In 'The Memorial Address', written in 1959, he went as far as explicitly proposing an 'antidote' for the technological mindset: using technological products but at the same time remaining free from them, so that we can at any time be free from them: it's the abandonment (*die Gelassenheit*) of things (Heidegger, 1966). More simply stated, according to the techno-pessimistic dimension of Heidegger's thought, if there could ever be freedom for human *in relation to* technology, it would be freedom *from* technology.

For the sake of completeness, I believe it is important to observe that in the techno-pessimistic aspects of Heidegger's thought, unlike those of German philosopher Günther Anders (a pupil of Husserl's like Heidegger himself), there is no advocacy for forms of regressionism or neo-luddism. Heidegger, in fact, specifically acknowledged in 'The Question Concerning Technology' that it would be unreasonable to thoroughly condemn technology and that it would be utopian and naïve to hope for a radical change: the technology is a formative and deep-seated constituent of Western society (Zuern, 2008; Heidegger, 1982).

As already suggested, not every theorist who scrutinized the relations between technologies and societies foresaw a gloomy future for the technologically-involved Western culture. Daniel Bell, for example, famously envisaged an increase in the volume and importance of information circulating in the world driven by communication technologies. The expected quantitative increase of information would, in turn, provoke a qualitative change to society. In Bell's technologically deterministic point of view, the mechanization of the world will lead the emergence of a 'new consciousness', resulting in the emergence of a 'caring society' (Bell, 1974, 15 – 20). Another remarkable example of a techno-optimistic approach to technology can be recognized in the work of Czech-Brazilian 20th century philosopher Vilém Flusser whom, in the sixties, prophesized that the technological implementation of a telematic culture that will establish a relationship of mutual respect among individuals. For Flusser, technological development was to be interpreted as the continuation of the 'Enlightenment project' that begun in the eighteenth century by thinkers such as Locke, Hume, Rousseau, and Kant[12] (Ströhl, 2004, xvi).

The work of Vernor S. Vinge, Ray Kurzweil, Hans Moravec and the posthumanistic currents in general can be recognized as vivid contemporary examples of a strong techno-optimism. It is interesting to observe how the way in which the Enlightenment as well as transhumanism approached the relationship between humanism and technology is almost diametrically opposed to the dystopian perspectives proposed by techno-pessimists, and yet both of them can be fully ascribed to the humanistic tradition.

In the case of Heidegger's work, traces of techno-optimism can hardly ever be detected. Philosophers like Gianni Vattimo and David Edward Tabachnick spotted a glimmer of hope in the murky depths of Heidegger's techno-gloom: a solitary, poetry-inspired ray of light. Heidegger's high regard for poetry should not be surprising, as Heidegger positioned the experience of poetry at the centre of his philosophical reflection on truth. However, in Heidegger's later writings, poetry and technology are

presented as two divergent ways of 'revealing': according to Heidegger poetry brings being into presence, as a form of openness, while technology dangerously frames beings (reduced to objects) as resources to be used by a subject with a functional purpose in mind. How could technology ever contribute to a more genuine revealing of Being instead of threatening humanity with its 'supreme danger'?

In attempting an answer this question, I believe it is important to note that, both in 'The Question Concerning Technology' and in 'The Turning', Heidegger cited the following verses of German poet Friedrich Hölderlin:

"But where danger is, grows
The saving power also.
[…]
Poetically dwells man upon this earth."[13]

According to Heidegger, this poetic intuition of Hölderlin's reinforces his belief according to which where the salvific potential of technology is not a secondary aspect of the dangers and threat that technology itself poses, but the danger is itself the saving power. "The danger is the saving power, inasmuch as it brings the saving power out of its – the danger's – concealed essence that is ever susceptible of turning." (Heidegger, 1982, 42)

The 'saving power' of technology was never discussed in detail by Heidegger. Rather than giving it a definitive account, he simply presented it as something hidden and potential, but always present, in the danger *as* danger. In 'The Question Concerning Technology', Heidegger prophesized that the saving power inherent to the technological mindset, "as yet inexperienced but perhaps more experienced in the future", could become a determinant factor in both accessing and expanding philosophical thought (Heidegger, 1982, 33, 34).

The passage discussed above could be read and re-thematized, in the age of digital mediation, (with a certain interpretative freedom) as an exhortation to develop, disclose and experience philosophical notions by means of technology. The employment of technology as a means to develop and disclose worlds as well as philosophical approaches could allow philosophers and culture more in general to abandon the univocality and the abstraction of descriptive language which, in the 1971 collection of essays *Poetry, Language, Thought*, Heidegger often juxtaposes to the poetic one. Heidegger himself clarified that, in its essence, "[t]*echné* belongs to bringing-forth, to *poiesis*; it is something poetic." (Heidegger, 1982, 13) "So, oddly", noted Tabachnick, in Heidegger's thought *techné* appears to be "both the start and the finish of, the contagion and the cure for, the most profound threat to human existence." (Tabachnick, 2006, 94)

Similarly to what has been observed in relation to Heidegger's philosophy of technology, in structuring his all-too-neglected philosophy of technology, the 20th century philosopher and psychiatrist Karl Theodor Jaspers also cautiously envisaged the potential for technology to play a role in establishing a relationship with the world which is more genuine and thorough than the one imposed by the simple and relentless mechanization of the world. As explained in his 1931 book *Man in the Modern Age*, Jaspers attributed to technology the capability of opening new

perspectives on the world, for instance by widening the perceptive abilities of humans. (Jaspers, 1951, 179, 180; Verbeek, 2005, 22) For both the early Heidegger and the early Jaspers, however, an optimistic embracing of technology can only be spotted in passing remarks, while the predominant understanding of the effects of technology on human beings is that of (opaque) distancing and alienation from themselves and from the world they are natively engaged with.

The relative obscurity and the lack of a detailed elaboration of in Heidegger's structuring of the relationship between a potential 'salvation' and technology could be attributed, besides for methodological and poetic reasons inherent to his thought, also to the fact that Heidegger could only witness the first glimmerings of the diffusion of computers. Consequently, he could not anticipate or elaborate on the profound cultural and sociological implications of the massive access to a form of technology capable of reproducing, distorting and fragmenting worlds, *de facto* offering alternative ways of relating to reality and structuring beliefs to the reductive and faulty philosophical tradition which he recognized in Western metaphysics[14].

It is important to underline once again that, in the context of this study, the possibility to access and activate what Heidegger calls "the saving power" of digital technologies does not suggest a voluntary return to what can be considered a less adulterated past. It is neither intended as the premise to a cultural anthropization of technology, as proposed for example by Gilbert Simondon or Pierre Lévy in order to constrain it within the boundary of traditional humanism (Costa, 2007, 62). The present study does not embrace the concepts of freedom and genuineness to be definitory of what it is like to be in the world as human beings, which is – in line with the phenomenological tradition – understood as a privative state, natively and always confined by biological and historical factors.

Several influential philosophical approaches had been developed from the embracing of a derivative understanding of human subjectivity similar to the phenomenological one outlined above. It is the case, for instance, of Kantian transcendental aesthetics and Plessner's philosophical anthropology. In a sense which relates more closely to media studies, this interpretation of what it is like to be humans is the foundational belief on which the work of Marshall McLuhan, who embraced technology as "the extensions of man" is built upon. According to McLuhan, in fact, technological development can be interpreted as the historical materialization of mankind's aspiration to overcome its physical, cognitive and communicative limitations (McLuhan, 1994; McLuhan, 2008).

The previously mentioned Vilém Flusser cast light on the same idea from a different angle. Discussing the term 'humanities', in opposition to the 'natural sciences', Flusser commented that this academic separation presupposes the understanding of human beings as 'unnatural animals' (Ströhl, 2004, 3). Plessner analogously described human beings as creatures who are 'artificial by nature': open to (re)construct themselves and their world by means of technical artefacts. This is at least true, in accordance with Plessner's 'first anthropological law', from the moment in which the *Homo habilis* manufactured the first stone tools (Plessner, 2006, 334).

The proposed vision of man as a being who is never complete but is originally open to structure his projectuality and his relationship with reality also has definite similarities

with Heidegger's already discussed understanding of 'humanism'. Differently from Heidegger, however, the interpretation of what 'humanism' is offered by philosophical anthropology (for example in the work of Arnold Gehlen or in the already outlined perspective of Hemuth Plessner) is entirely and innately compatible with the technological dimension of culture, if not fundamentally grounded in it. On these premises, I believe that an interdisciplinary, postphenomenological approach to philosophy of technology that is capable of integrating with perspectives from philosophical anthropology can offer a wider and more accurate understanding of the effects of technology on human cognition and culture than either the modernist utopian takes on the liberating qualities of aesthetical perception (including Heidegger's) or contemporary theories on media rhetoric ever could.

1.5 – THE QUESTION CONCERNING DIGITAL TECHNOLOGY

Adopting what can be recognized as a very traditional ontological divide, the field of digital media studies still distinguish the digital experiences affordable via the computers in two broad categories:

- The first one is that of telepresence: a family of technologies that grant the exchange of information as well as various degrees of agency between users and environments which are commonly indexed as 'actual' but not immediately present for them. The experiences and worlds materialized by teletechnologies and robotics are therefore qualified as 'telepresent'. In other words, telepresence allows humans to aesthetical and interactive relationships with the world humans inhabit as biological creatures in ways that transcend their users' spatial location as well as, often, their biological capabilities and their confinement in terms of spatiality and temporality (De Mul, 2010, chapter 11; Goldberg, 2000). An example of the use of this technology which is often mediatically popularized is telerobotics, which is the remote control of an electro-mechanical agent. The *Mars Exploration Rover* that was sent on Mars by NASA in 2003 is an extreme example of the experiential extension afforded by telepresence. The rover dislocated the cognitive and interactive capabilities of the NASA scientists both in space (they can observe and analyze chemical samples in a part of the universe that is several million kilometres away) and in time (the radio-signal based-interaction between NASA and the rover has an average time delay between inputting the controls for action and the perception of the results of 20 minutes).

- The second category – that of simulations – shares the same basic strategies with telepresence in terms of surmounting the cognitive and interactive limitations that are inherent to being the world labelled as 'actual' as human beings. Instead of affording human beings access to experiences that are not present, simulations disclose experiences that are perceptually effective, but that do not exist in the world commonly labelled as 'actual' world. From a strictly ontological standpoint, the qualities of simulated worlds have no necessary dependencies from the world humans inhabit as biological creatures, albeit being designed through (and mostly for) human kinds of world views. Digital simulations are frequently used as training technology (for aviation

> pilots and race drivers among others) allowing people to gain experience in certain procedures and to learn how to face critical situations without risking actual damage to people or equipment. Besides for the often interactive re-enactment of circumstances that could probably occur in the world indexed as 'actual', digital simulations are capable of providing the experience of virtual, alternative phenomenologies precisely in the sense that they have the potential emancipate humans from the pre-digital constraint of having to interact and shape knowledge in an exclusive relation to one single world (the one we share as biological creatures, previously indexed as 'actual'). Digitally mediated simulations offer, instead, a wide and bizarrely populated multiplicity of artificial experiences as well as virtual sensory and operational possibilities which are often simply not affordable in the 'actual' world.

Since the second half of the last century, speculative philosophical concerned with artificial computation and computer applications were predominantly directed at the exploration of the ethical and epistemological possibilities of artificial intelligence. This pioneering and interdisciplinary field was commenced by Hubert Dreyfus' and attempted to utilize the work of Heidegger in order to delineate the theoretical boundaries of the possibilities for AI to understand the world and engage with it in a mutually constitutive relationship.

On the other side of the divide between theory and practice, a fascination with the same topic is apparent in the science-fiction literary production of the same period: it would suffice to think of the socio-religious themes associated with computer intelligence in the works of authors like Isaac Asimov, Philip K. Dick and William Gibson among others.

One industry revolving around a specific simulative application of the digital medium, namely the video-games industry, has also been particularly active in encouraging and furthering the role of interactive digital media as factors of cultural change, and especially so in the less economy- and tradition-bound approach taken by independent developers in the last decade. The contents of video games in general and independent video games in particular manifestly embrace the belief that video games can be influential factors in instigating and facilitating socio-cultural change (Bogost, 2007; Bogost, 2011; Compagno, 2008; Juul, 2005; Juul, 2009; Nitsche, 2009; Wardrip-Fruin, & Harrigan, 2004; Wardrip-Fruin, & Harrigan, 2007; Wark, 2007). I argue, however, that their import and weight as factors of cultural and social change cannot be satisfactorily understood in a way which is limited to its ideological and rhetorical possibilities, but need to be recognized and embraced in the full comprehensiveness of its ontological relevance. Video-games have ostensibly been offering experiences that transcend the horizon of native human phenomenologies since the late seventies. Their particular forms of 'overcoming' originally arose as a necessary form of adaptation to the stern technological restrictions of the early days of computing, that is to say from having to creatively cope with the linguistic, computational and visualization limitations of the first machines. In these respects, the pioneers of game development had no choice but to offer symbolic and highly abstract experiences which were, in their functioning and aesthetics, constrained by the architecture and the capabilities of early personal computers.

On the one hand, the digital-entertainment industry attempted, from its onset, to provide interactive entertainment in a way which is as worldly as possible in terms of its aesthetical consistency, granularity and cognitive unobtrusiveness. This game-design attitude aimed at maximizing the appeal as well as the intuitive accessibility of ludic experiences is commonly indicated in the field of game studies as *mimesis*, in analogy with the attribute of tragic theatre that Aristotle found necessary to elicit empathy and pursue catharsis and truth (*mimesis* as a defining dimension for metaphorism and simulation will be analysed in more detail in chapter 6). In the first decade of the twenty-first century the video games industry creatively converged on ludic metaphors which relied on simplified versions the traditional physical understanding of the world as well as behavioral and representational conventions of Western world societies. In other words, it is not a coincidence that *Super Mario Bros.* is 'read' from left to right, that the player is explicitly asked to pursue values ascribable to a specific worldly ideology[15] and that the physical qualities of the world that *Super Mario* inhabits are intuitively intelligible to human players in analogy to the ones the players themselves experience in their everyday relationship with the 'actual' world (a couple of notable examples of this cognitive analogy can be observed in the way gravity works in the *Mushroom Kingdom*, or the moral viability of causing damage or killing mushrooms, plants and animals throughout the game).

On the other, since the very first vectors drawing rudimentary spaceships on a screen, video games presented experiential systems which are often significantly different from the ones that humans commonly establish in their relationship with the world along the history of culture. After more than thirty years of technological development, recent video game productions still openly (and in a willingly 'escapistic' way) defy traditional world-views, making phenomenological estrangement a central theme of their creative agenda, taking the same role that aesthetical estrangement had in modernist art movements such as Dadaism, surrealism or constructivism. Titles like *Super Paper Mario* (Intelligent Systems, 2006), *Portal* (Valve Software, 2007), *Crush* (Zoë Mode, 2007), *Echochrome* (Japan Studio, 2008) and *Portal 2* (Valve Software, 2011) just to mention a few, desecrate the traditional understanding of space, actively granting their players the possibility to reinterpret its dimensions, its continuity and its homogeneity (see Figure 1A).

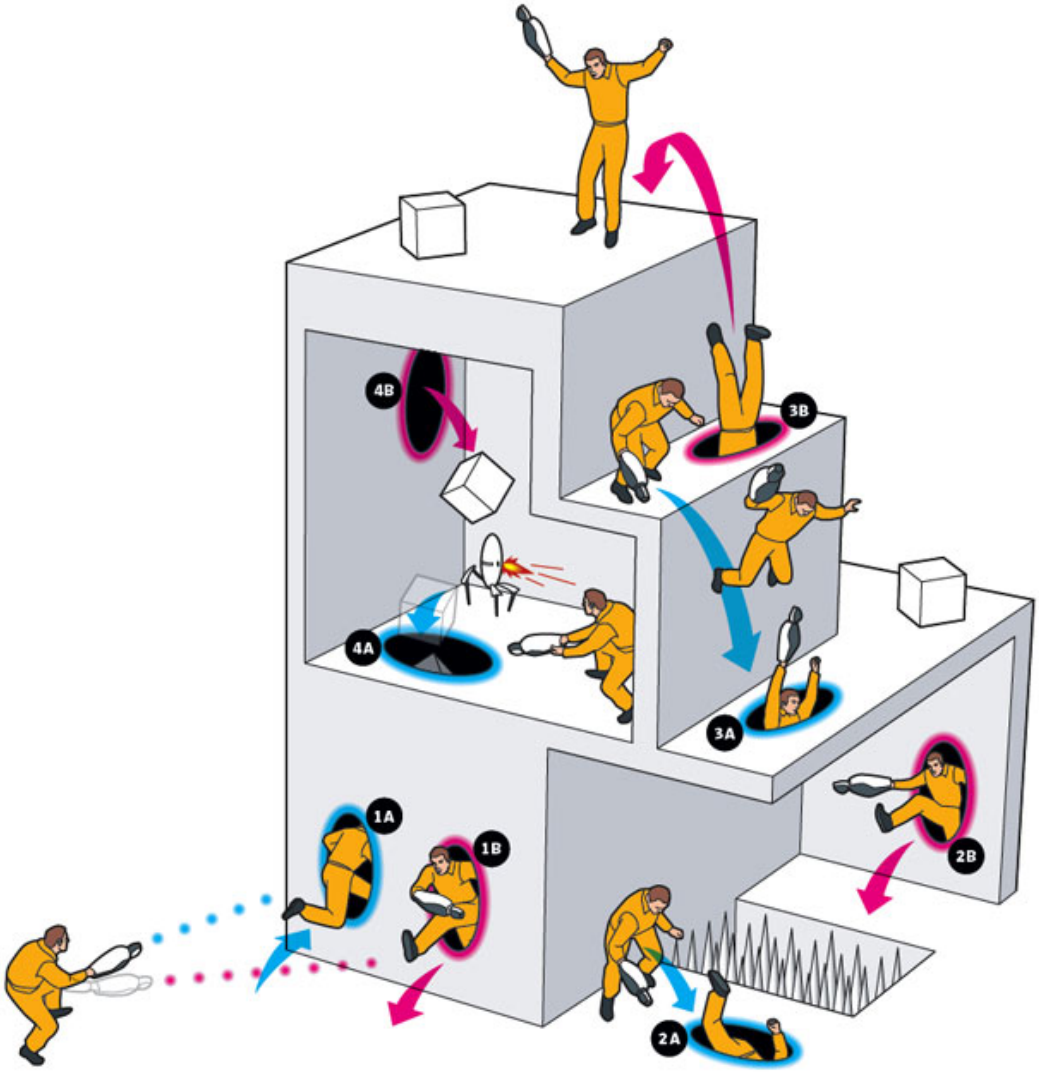

Figure 1A: *Portal*'s breach of the understanding of space traditionally offered by the mechanistic sciences[16].

Other aspects of world-views which were pre-digitally established and traditionally embraced as universally shared are overtly violated in the virtual experience of time offered by games like *Legend of Zelda: Majora's Mask* (Nintendo EAD, 2000), *Blinx: The Time Sweeper* (Artoon, 2002), *Prince of Persia: Sands of Time* (UbiSoft Montreal, 2003) and *Braid* (Number None, Inc., 2008). The video games mentioned above are just a few instances of a recent trend in game design which empowers the player to actively materialize, manipulate and relativize traditional ontological assumptions. Challenging concepts like duration, reversibility and causality are, in fact, at the very core of innovative game-mechanics of several titles of modern interactive digital entertainment.

Other, and conceptually similar, examples of digital insubordination could be listed in relation to a multitude of other ontological topics and categories other than space and time, for example interactively subverting concepts like personal identity, infinity, divinity, the problem of the universals *et cetera*. In modern video game development, the laws of physics as well as the stability of most categories of pre-digital human

kinds of ontologies are not only defied, but are more and more often interactive and modifiable elements of 'play' themselves. It is important here to remind the reader that this study does not consider such infringements as the medium specificity of video games, rather it considers the interaction with digitally mediated simulations as a particularly evident, popular and immersive way in which computers foster and support the distortion, the extension and the fragmentation of human thought.

Heidegger's critical position concerning the derivative quality of the Western philosophical tradition will provide the essential ground to understand the cultural shift entailed by the incest between computers and society. In his 2003 paper 'Simulation versus Narrative: Introduction to Ludology', Gonzalo Frasca tersely described this change, as the passage from a "literary mind" to a "simulational way of thinking" (Frasca, 2003). One of the perspectives offered by this study identifies an analogue cultural shift in the transition from a 'metaphysics' to a 'mediaphysics' (see chapter 4).

Concluding this introductory chapter, I deem it fundamental to clarify that, due to its largely overlooked cultural impact and unifying explanatory aptitude, I expect that a postphenomenological approach to interactive digital media which explores the ontological consequences of the interactive experience of virtual worlds will be a fruitful addition to both the fields of philosophy of technology, digital media studies and game studies. An extra advantage of a postphenomenological understanding of virtual worlds resides in the easily portable nature of its insights that can effortlessly shift from being used as analytical equipment to becoming (game-) design tools. In this study, I complement and reinforce the offered theoretical insights and approaches with observations coming from the *praxis* of the development of media content, analyzing creative and experimental video-games (either designed by myself or other independent developers) as philosophical artefacts.

No less important is the way in which this perspective will integrate, re-thematize and re-interpret relevant sections of the legacy of philosophical thought, namely Heidegger's metaphysical project and Plessner's philosophical anthropology, with the objective of answering the question at the basis of this study:

How can digitally mediated simulations supplement human beings in 'over-coming' the horizon of their traditional (pre-digital) ontologies?

1.6 – DISSERTATION STRUCTURE

In this synthetic sub-chapter, the central claim of each section of my dissertation will be presented utilizing a paragraph per chapter. This structural summary should offer an overview of the main arguments and the way in which they were connected and structured in thematic sections. It is my hope that this editorial decision will work in the direction of empowering the reader with a comprehensive vision on this text and towards overall clarity.

1. **The Question Concerning Digital Technology**
   In the phenomenological tradition of thought, the term 'world' denotes an interrelated set of beings and relationships with (and among) the said beings that are stably perceivable, persistently intelligible and mutually constitutive. This study considers the interaction with digitally mediated simulations as a particularly evident, popular and immersive way in which computers foster and support the distortion, the duplication, the extension and the fragmentation of human thought. The two chapters that will follow the introductory one will focus on contextualizing what concepts like 'ontologies' and 'technologies' mean in the framework of this inquiry. The objective of the latter is that of structuring an understanding of their relationship in the age of digital mediation and human augmentation.

2. **Meta-Metaphysics**
   According to the proposed (post)phenomenological perspective, 'ontology' refers to the rationalization of certain relationships that are established between a being and a world. This understanding of 'ontology' presupposed an inextricable engagement between beings and worlds, a relationship which is always characterized by biological as well as historical dimensions. More closely following the path of Heidegger's thought, the term 'metaphysics' is specifically used to indicate a family of world-views that follows from the establishment of a theoretical standpoint. In two oh his later writings, Heidegger suggested that the 'overcoming' of the metaphysical horizon of Western thought beyond its traditional boundaries could be actualized (if at all) through the apex of metaphysics itself: technology.

3. **Simulations in the Age of their Digital Mediation**
   One group of technologies in particular can be recognized as having brought about an anthropological shift: digitally mediated simulations. The socio-cultural dynamics and the ontological effects that followed the diffusion of computer simulations ensue from the possibilities they offer to afford digital experiences of worlds which are actual not in fact, but they are as far as their cognitive and interactive qualities are concerned. Digitally mediated simulations literally disclose new worlds and ways understand time, space, properties, causation, *et cetera* that are alternative to the ones through which human beings structure their everyday relationships with the world labelled as 'actual'. The interaction with digital simulations broadens the human capabilities for relating to reality in directions that are not limited to the 'actually potential', but extend towards what is 'virtually possible'

4. Mediaphysics and Augmented Ontologies

Complementing the understanding of simulations proposed in the third chapter, my work in the field of game design exemplifies the use of interactive digital technology as a medium for testing, developing and disseminating philosophical notions, problems and hypotheses in ways which are alternative to the traditional, textual one. Presented as virtual experiences, philosophical concepts cannot only be accessed without the mediation of subjective imagination, but take a novel projective dimension which I propose to call 'augmented ontology'. This way of embracing digitally mediated simulations will serve as a foundation to a closer understanding of both their anthropological dimensions and their functioning as ontological instruments and mediators of philosophical thought.

5. BEING in Those Worlds

The fifth chapter will start the exploration of the experience of alternative, virtual worlds disclosed by digital simulations from an anthropological standpoint. Adapting the perspectives offered by Helmuth Plessner's theory of 'positionality' to the age of digital technologies, interactive digital simulations are understood as capable of enhancing and expanding the native *body schemas* of human beings with supplementary, virtual *body schemas*. As a corollary of this approach, the proposed anthropological perspective to philosophy of technology opened the way for the structuring of a phenomenological account of biometry in relation to interactive, digital experiences.

6. Being IN THOSE WORLDS

While the fifth chapter tackled 'the question concerning digital technology and projectual humanism' from the human side of the human-computer relationship, the sixth one will shift its focus on the technological pole of the process (digitally simulated worlds), elaborating on the expressive limits of digital simulations as onto-logical machines. As a consequence, this chapter will embrace human beings not as bodily inhabitants of virtual worlds but as founders and designers thereof. It will not understand digital simulations as virtual body extensions but rather as interactive, heuristic allegories. This last aspect of chapter six will serve as a premise to the conclusive one, which will explicitly elaborate on the epistemological and expressive limits of digital simulations as poetic allegories and conclude the text.

7. Concluding remarks

The epistemological and expressive limitations inherent in relationship that humans can establish with virtual worlds (and consequently with new, virtual bodies) through the mediation of interactive digital simulations will be recognized as inextricably tied to the cognitive, perceptual and intellectual qualities and constraints that define us, human beings, both as creators of virtual worlds and as agents inside them. Consequently, the question concerning the use and the possibilities of any kind of technology can only be asked as a derivation of a more fundamental question

concerning the human condition. Attempting to delineate the limits of human technologies is tantamount to trying to conclusively define man and, as such, is bound to remain an 'open question'.

[1] American scholar Janet Murray observed that the interdisciplinary study of digital media, addressing media in their plural form, is still symptomatic of the academic confusion about the emergence of what is – in fact – a single medium (Murray, 2003, 3).

[2] On January the 25th 2013, during a private conversation with Bradley Horowitz (product manager of *Google+* and former product leader for *Gmail*, *Google Voice*, *Google Talk*, *Orkut* and *Google Docs* among other services and applications) I had the chance to briefly converse with him about his interpretation of the relationships between technologies and societies. In our discussion, I asked whether he shared the belief (elaborated, among others, by Nicholas Carr in his 2007 book *The Shallows*) according to which digital technologies have an inherent effect on human beings that makes them more easily distracted and generally shallower. Horowitz answered that, in his vision, digital technology is "essentially a neutral instrument" and that the cultural relevance of the services and applications it offers does not reside in their specific affordances, but rather in the way they are used. When asked if I could quote him on this topic in the present dissertation, he nodded and agreed on the basis that he considered his statement to be "innocuous".

[3] The reason behind the notation 'until now' is that the present condition actualizes, according to transhumanistic thinkers, a radical break with the past in terms of our involvement with technology. This rupture is often referred to as 'the singularity'. The crucial claim of transhumanism is that what distinguishes this period from the preceding is that *Homo sapiens sapiens* will be the first species destined to design its evolutionary descendant. According to them, the modal sciences will render technology itself the evolutionary successor of biology. For the specific point of view held by this study, please refer to chapter 7.1.

[4] This position about the cultural role and perception of interactive digital mediation was often momentously presented by Bogost. In the specific case of the videoludic medium, Bogost clarified his position stating that he will not "assume that the best or most legitimate specimens are still to come [...] [i]nstead I'll take for granted that videogames are already becoming a pervasive medium, one as interwoven with culture as writing and images. Videogames are not a subcultural form meant for adolescents, but just another medium woven into everyday life." (Bogost, 2011, 7)

[5] In Heidegger's revisionary standpoint in relation to traditional metaphysics, 'the scandal of philosophy' does not consist in the fact that the proof of the existence of the world is still lacking, as Kant supposed, but in the fact that, in the face of its obvious role in our 'being in the world', "that such proofs are expected and attempted again and again." (Heidegger, 1962, 249 / SZ, 205, 206)

[6] "Every humanism is either grounded in a metaphysics or is itself made to be the ground of one. […] Accordingly, every humanism remains metaphysical. In defining the humanity of the human being, humanism not only does not ask about the relation of being to the essence of the human being; because of its metaphysical origin, humanism even impedes the question by neither recognizing nor understanding it." (Heidegger, 1988, 245)

[7] As the only reference-related divergence from the style utilized in the rest of the present study, when referencing Heidegger's 1927 book *Being and Time*, I will resort to a dual canon. Similar forms of split-referencing are not rare among Heidegger scholars or, in general, in texts that reference that book of Heidegger's in a language other than German. The first part of the way in which I will be referencing *Being and Time* in my work is relative to the position of a notion or a quote in the 1962

English translation by John Macquarrie and Edward Robinson. In the case of the quote that this note refers to, the first part of the reference is 'Heidegger, 1962, 184, 185'. The second part of the dual canon I have decided to utilize indicates, instead, where the same notion or quote is to be found in the original German edition of 1927. In the case of the quote that this note refers to, the second part of the reference is 'SZ, 145', with its original title *Sein und Zeit* condensed, for simplicity to the acronym SZ.

[8] For example, Maurice Merleau-Ponty analyzed the relationship between human beings and reality from a chiefly perceptual perspective, Edmund Husserl in terms of consciousness and Martin Heidegger through his original understanding of 'being-in-the-world'.

[9] In the pursuit of academic rigour and exhaustiveness in laying the theoretical foundations for the work that will follow in this study, I want to clarify here that the combined use of various aspects of Heidegger's thought together with anthropological perspectives was not unproblematic. Heidegger approached philosophical anthropology in a rather neutral way, considering it to be the name for a "philosophical interpretation of man which explains and evaluates whatever is, in its entirety, from the standpoint of man and in relation to man", and, in the earlier phase of his thought, he was sympathetic with such perspectives (Heidegger, 1977, Vol. 5, 86). After the alleged 'turn' in his thought, however, Heidegger changed his mind in relation to philosophical anthropology. In the anthropological recognition of the human subject as the unquestionable foundation for knowledge, in fact, Heidegger identified the accomplished form of that Western metaphysics that he so thoroughly criticized (Heidegger, 1977; De Mul, 2004, 43). A more thorough elaboration of the relationships between Heidegger and philosophical anthropology can be found in chapter 2.2.

[10] In the introduction to *The Gutenberg Galaxy*, McLuhan states that "[a]ny technology tends to create a new human environment" and that "[t]echnological environments are not merely passive containers of people but are active processes that reshape people and other technologies alike." (McLuhan, 2008)

[11] In the specific case of digital technology, a transition between 'usable object' and 'usable data' was recorded by a number of scholars and media philosophers. Lev Manovich announced, for instance, that "databases have become the dominant cultural form of the computer age." (Manovich, 2002, 219) Jos de Mul gave a modern 'twist' to one of Abraham Maslow's notorious quotes observing that "a world in which the computer has become the dominant technology everything is becoming a database." (De Mul, 2009, 97)

[12] The idea that the intellectual heritage of technological determinism can be traced to the enthusiasm and faith in technology expressed by the most influential thinkers of the eighteenth-century Enlightenment is a perspective which is also widely upheld by contemporary media philosophers. Refer here, for example, to Smith & Marx, 1994, 2, ibid. 237 – 257, Meltzer, Weinberger & Zinman, 1993, 113 – 130. According to the mechanistic worldview proposed by the Enlightenment, reality should be describable mathematically because it is written with a mathematical language itself. In this sense, the digital world-view is a continuation of the mechanistic one. Similarly, Martin Heidegger claimed that the advent of the technological world marks the culmination of the project of Western metaphysics to dominate a world made of objects (Richard Villa, 1996, 182; Heidegger, 1982, 120 – 127).

[13] Excerpt taken from the hymn *Patmos*.

[14] For Heidegger, the term 'metaphysics' indicates the specific way in which, generally and abstractly, Western thought structured its relationship with reality. Heidegger identified the term 'metaphysics' with the faulty, dychotomic epistemology that presupposes a separation between an observing subject and an observed object, a tradition of thought that dawned with Plato's theory of the Forms and subsequently misguided all philosophical efforts in the Western tradition. It is an implicit, defective

heritage that, from Heidegger's revisionary standpoint, must be discarded and forgotten. In the second chapter of this study a more detailed account of this understanding of the Western metaphysical tradition will be offered together with its relationships and influences in the philosophy of technology that followed Heidegger's lectures and writings on the topic.

[15] In the concluding statements of an article I recently published on the magazine for the Dutch game industry *CONTROL ONLINE*, I explain that that an "[…] ideology is a system of beliefs that constitute one's goals and determines one's actions (for example game design decisions). Ideologies are often ideas accepted and proposed by the dominant class of a society that are, then, shared by its members. When crafting the logical system of a game, it is inevitable that several ideologies contribute to the choices made by the designers, who are often unaware that such beliefs have a fundamental role in their process. If those ideologies are the most basic meaning of video games, then the visual materialization of the game *Duck Hunt* is a statement of superiority of mankind over animals; killing animals for fun and training them for our amusement are portrayed by the game as something acceptable if not openly desirable. Similarly, what *Farmville* is offering to its players is fundamentally an extension of the routine and objectives of their jobs into what should be their leisure time. The ultimate meaning of *Farmville* is economic efficiency, an objective that the player is led to pursue by means of also treating people as production resources. *Zynga's* 'masterpiece' does not teach the players anything realistic or valuable about running a farm, instead it rehearses the very capitalistic vision that motivated its development in the first place. Ah, the irony of a social game making money out of people through an allegory that involves making money out of people! In conclusion, when designing your games, why not also consider this deep-seated way in which video games allow the emergence of meaning? As a last reflection I would like to spend a few lines to look at the allegories proposed in the various *Super Mario* titles. In terms of underlying meaning, the adventures of *Nintendo*'s plumber can be broken down as follows:
• it is a heroic thing to respond to violence with violence and
• it is not ethically problematic to eliminate creatures and people as long as they are not friends or associates. In this sense, *Super Mario* is the harbinger of a set of values that are closer to those of a mafia
clan than to the ones traditionally characterizing folklore heroes." (Gualeni, 2012b)

[16] *Portal*'s breach of the traditional understanding of space:

1) *Portal* players get an *Aperture Science Handheld Portal Device*, which can create warp portals between any two flat surfaces.
1a) Fire at a wall, floor, or ceiling to create an entrance point.
1b) Fire where you would like to end up to make an exit point.

2) Some obstacles can be dodged only by creating portals.
2a) Blast an entry point in the ground.
2b) Create an exit point on the far wall. Drop through the hole in the ground and you'll emerge on the other side of the spike pit.

3) The game poses conundrums, like how to get up to a platform that you can't jump high enough to reach. The solutions often rely on the fact that momentum is maintained when warping.
3a) Create an entry portal one level down.
3b) Bore an exit point on the floor next to you. Leap down into the entry portal. Even though you willl be moving in the opposite direction, when you re-emerge your inertia will propel you all the way to the upper level.

4) Take advantage of objects in the environment to neutralize gun emplacements and other dangers.
4a) Open an entry portal under a box.
4b) Put an exit portal above the gun. The falling box will gather enough speed to knock over the gun.

(taken from http://www.wired.com/gaming/gamingreviews/magazine/15-10/pl_games – Illustration by Jason Lee)

CHAPTER 2: Meta-metaphysics

In the first century BC, the Peripatetic philosopher Andronicus of Rhodes edited and arranged the writings of Aristotle. His work had a seminal importance for both the preservation and the current organisation of Aristotelian texts (*Corpus Aristotelicum*). In his arrangement, the philosopher of Rhodes coined the term 'metaphysics' as a bibliographic coordinate that indicated the group of books dealing with 'First Philosophy', placed by Andronicus after (μετά – meta) the ones dedicated to the study of the general properties of nature (φύσις – physis)[1]. Aristotle characterized his 'First Philosophy' as the study of 'being *qua* being' (the understanding of being as such: the primary and most fundamental form of knowledge) (*Metaphysics*, VI, 1026 a, 31) (Garrett, 2006, xiii). Although very basic, this description captured a central aspect of the traditional understanding of metaphysics: its aspiration towards a form of knowledge which is independent from empirical observation and universally applicable[2].

The philosophical effort contained in Aristotle's *Metaphysics* can be read as an attempt to reconcile Plato's theory of forms (to which he was exposed during his years at the Academy in Athens) to the world-views of the 'natural philosophy' of Greece's Classical period (see Figure 2A) (Mancini, Marzocchi, Picinali, 1993, 132 – 146). Interpreted from that historical perspective, it should not be surprising to observe that Aristotle tackled, in the original organization of his 'First Philosophy', a broad variety of topics with very diverse levels of abstraction: from speculations on cosmogony and theology (books *Epsilon* and *Lambda*) to the practical study of motion and properties of natural elements (book *Kappa*).

In the 'First Philosophy' section of the *Corpus Aristotelicum*, and for the first time in the history of written thought, one of the fundamental questions of traditional metaphysics found its explicit formulation. These questions are often grouped under the umbrella term of the mind-dependency problem that can be briskly formulated as: to what extent does knowledge depend on the qualities and possibilities of the sensory and intellectual apparatuses of humans?

Figure 2A: A detail of Raffaello Sanzio's 1510 fresco *The School of Athens*, in the Apostolic Palace in the Vatican City. This representation is often understood as encapsulating the philosophical differences between Plato (on the left hand side, looking old and holding his *Timeo*) and Aristotle (on the right hand side, looking younger and holding his *Nicomachean Ethics*). According to this interpretation, the gestures of the two philosophers illustrate central aspects of the respective approaches. Plato, indicating upwards, might be affirming the belief that knowledge is a chiefly innate mental structure deducted from having experienced the higher truth of the world of the 'forms' prior to their imperfect manifestation in an world of senses and illusions. Aristotle, with his palm towards the ground, might be suggesting, instead, the idea that all knowledge is a matter of induction, which is to say a rational organization of worldly, empirical data.

A concrete example might help clarifying the meaning of this fundamental metaphysical question. Bat's meat is a delicacy customarily consumed in the Philippines and in Papua New Guinea, but it is not generally considered a mouth-watering ingredient in other cultural and geographical contexts, as is the case for most Western societies. The incongruence in the perception of the culinary appeal of that specific flying mammal is due to the fact that its appetizing quality is not an objective property, which is to say it is not inherent in the roasted bat itself but resides in the

subjective tastes and values of the peoples relating to it as an edible item. The intrinsic subjectivity of any sensory perception is commonly experienced by humans as they engage the world and other humans in their everyday life.

The very question raised by Aristotle could be posed – and has in fact been raised – to put into question the foundations of all aspects of the way humans gather, organize, communicate and preserve knowledge since the dawning of Western thought. Radical philosophical stances in both Eastern and Western cultures pushed this fundamental interrogative to its most extreme – and perhaps most paradoxical – consequences, and went as far as putting into doubt the very existence of physical objects outside of their possibility for being perceived[3]. Due to the basic relevance of the extent to which certain basic epistemological assumptions are mind-dependent as the foundation of knowledge, disputes between realists and anti-realists are frequently encountered along the course of the history of philosophy.

Although not literally expressed in terms of mind-dependency, several incredulous approaches with regard to the possibility of ubiquitous and absolute knowledge pre-dated both Plato and Aristotle at least by a few centuries. The subjectivism proposed by the early atomists in relation to the problem of induction commenced to cast doubts on the possibility of an objective and complete understanding of the world as early as the fifth century BC. Protagoras and the sophists also openly presented knowledge as a relative construction based on perception and interpretation of phenomena, rather than on the possibility for humans to access absolute truths (Reale & Antiseri, 2008, Vol. 1, 148 – 175). Notwithstanding the problematic state of the sources, the transition from an approach to knowledge which relied on a general diffidence concerning knowledge to a proper philosophical method is commonly identified in the introduction of skepticism by Pyrrho from Elis (ca. 360 BC – ca. 270 BC) (Mancini, Marzocchi, Picinali, 1993, 169). Attempting to condense and formalize the teachings of the philosopher of Elis in the *Pyrrhonian Writings*, Sextus Empiricus defined 'skepticism' as "the capability to establish any kind of antitheses between phenomena and intellective perceptions" (ibid.). Given their dependence on human perception and interpretation, and thus on the limited and fallible human sensory and intellectual equipment, Pyrrho considered the achievement of any certainty regarding the correspondence between knowledge and truth to be simply and conclusively unattainable.

Since its first methodological introduction in the work of 17th century French philosopher René Descartes (1596 – 1650), any form of knowledge founded on the systematical separation between subject and object of observation had been recognized as having consequences concerning the nature of the subject and the object of observation themselves (Dreyfus, 1991, 45). In his 1637 *Discourse on Method*, Descartes embraced the essential stance proposed by the skeptics according to which there is no aspect of either the experience and the knowledge that humans can accumulate that cannot be encompassed by a fundamental doubt[4]. The framework adopted by Descartes recognized in the outlined 'methodological doubt' a necessary philosophical background for the establishment of a solid footing for the rational construction of any system of knowledge. This foundational skeptical stance was then subverted via a *reduction ad absurdum*: with his "*cogito, ergo sum*" (I think, therefore I am), Descartes avowed the possibility a self-questioning mind (*res cogitans*) to exist independently from its material substrate as well as from any

corporeal being (*res extensa*) (Descartes, 1637, Part IV). His identification between corporality and spatial extension offered to the philosophical approaches that embraced his theoretical framework (and developed on it) the possibility to observe and understand nature from an exclusively quantitative point of view, that is to say simply through physical measurement. Helmuth Plessner observed that the interpretation of the physical world upheld by Descartes, as well as its cultural success and consequent diffusion, left only two options open to the development of Western thought:

> "[…] either interpreting the qualitative aspects of what exists as well as bodies mechanicistically, which is to say interpreting them quantitatively, or, avoiding this analysis, explaining them as cogitations, contents and products of out interiority." (Plessner, 2006, 63, 64, my English translation from the Italian edition)

The dichotomic structuring of the relationship between *res cogitans* and *res extensa* elaborated by Descartes gave way to narrow variety of perspectives which claim that mind and matter are two separate ontological categories. Descartes identified the mind with consciousness, self-awareness and the imaginative recall of mental representations (Descartes, 1637, Part IV). Being the first to pose a distinction between the immateriality of the mind and the physicality of the brain, his approach still epitomizes – in the philosophical discourse in general and in philosophy of mind in particular – the views commonly identified as 'dualisms'. According to these theoretical standpoints, mental phenomena such as imagination and hallucination are, in some respects, non-physical.

In the last three centuries, Cartesian thought and its characteristic dualism have been subject to heavy methodological criticism from different quarters of the philosophical debate, and especially so in contexts like philosophical anthropology or philosophy of mind whose inquiries specifically concern the characteristics of experience, thought and action as well as their mutual relationships. Among the arguments most frequently presented against Cartesian thought from such perspectives are the so called 'problem of other minds' and the impossibility to conceive, from a dualistic perspective, the idea of causal interaction[5]. Arguments against the possibility to accept a dualistic stance that are less purely speculative were developed on the basis of either physics (as in the argument according to which a non-physical mind violates the law of conservation of energy) or neuroscience (among which the famous argument from brain damage formulated by Paul Churchland according to which brain injuries have a direct impact on a subject's capability to memorize and elaborate information[6]).

Regardless of the shortcomings of Descartes's dichotomy between *res cogitans* and *res extensa* and its misalignment with empirical proof, Plessner argued that not all of his epistemological efforts should be demonized or discarded. According to Plessner Descartes needs, in fact, to be recognized the merit of having focused his pioneering philosophical efforts on the autonomous essence of the human being (Plessner, 2006, 8 – 10). He can indeed be considered responsible for the elaboration and diffusion of modern dualism, a perspective that had a momentous (and perhaps detrimental) methodological influence on modern philosophy, but despite its many detractors in

several disciplines, Plessner believed that Descartes's approach deserves to be praised for having opened the way for an understanding of the human condition unconstrained by theology[7] (Plessner, 2006, 8 – 10; Rasini, 2010, 170).

On a similar note, Hubert Dreyfus observed that among the most striking consequences of the Cartesian epistemological shift is the assumption that theoretical knowledge can be achieved in every natural domain or human activity (Dreyfus, 1991, 45). It is important to remind here, as already specified in the first chapter, that with the term 'theory' I indicate a system of knowledge based on empirical observation rationalized in the specific fashion that ensues from separating the observer (subject, mind) from the world (object, matter).

As discussed at the beginning of this chapter, in the Aristotelian framework – and more in general prior to the modern history of science – questions about the general properties and functioning of the physical world were addressed as 'natural philosophy'. Plessner noted that, after Descartes, theoretical knowledge forced 'natural philosophy' out of its original shape into a system of techniques, empirical activities and principles of reasoning known as 'the scientific method' (Plessner, 2006). After Descartes, and more systematically starting from the end of the 18th century, the term 'metaphysics' started to denote a form of non-empirical enquiry into the nature of existence (Gay, 1966, Vol. 1, 132 – 141).

Starting from the early modern period, the system-building scopes of both the empirical sciences and rational philosophy relegated 'metaphysics' to what appeared as an idle, speculative role. The successful practical application of the two former disciplines and the leaps and bounds they fostered in several aspects of culture (for example in the fields of logics, industrial production, mathematics, medicine, astronomy, *et cetera*) contributed to the establishment of the undertones of futility and academic exoterism that still characterizes the use of the term 'metaphysics' in everyday language.

Before continuing with the development of the groundwork for my perspective, I believe it is important to bring to the fore a linguistic clarification which will also serve the purpose of introducing the larger philosophical stance as well as the methodological context of this study. Since the beginning of this chapter, the term 'metaphysics' was attributed a number of different meanings. Along the history of Western thought, it was utilized to indicate:

- a bibliographical reference,
- the knowledge of what extends beyond the physical world (see note 1),
- a derogatory categorization for certain intellectual efforts in their attempt to tackle purely speculative (and often extravagant) questions.

In his 2006 book *What is this thing called metaphysics?* Brian Garrett proposed yet another point of view, according to which 'metaphysics' can be understood as the involvement of two different concepts, or rather two distinct positions within culture:

- *a* metaphysics (with a lower case ‘m’): a fundamental elaboration on human sensory experiences which constitutes the primary structure for the development of systems of thought (the core of notions and relationships determining the way an individual or a culture approaches and shapes the understanding of the world), and

- ‘Metaphysics’ (with a capital ‘M’): the eclectic bundle of philosophical disciplines engaged in developing *a* metaphysics (Garrett, 2006, xiii).

The list of interpretations of the term is still growing, and so is the ambiguity of the term. To cite an even more recent interpretation, Quentin Meillassoux in his 2008 book *After Finitude* treated ‘metaphysics’ as a particular form of ontology, namely a form of ontology which proposes a dogmatic (and often religious) understanding of the existence and the qualities of a reality outside of the human possibility to perceive it. (Meillassoux, 2011, chapter 1)

Given the fragmentation and the opacity of the semantic spectrum of the term, I believe it is necessary to clarify and establish the way in which I will employ the term ‘metaphysics’ in this text. The explanation that will follow clearly pursues the objective of establishing a workable theoretical ground to introduce the novel use I intended for Heidegger’s thought in relation to the structuring of a philosophical and anthropological understanding of digital mediation. The necessity for a terminological clarification should be evident after having recognized how ‘metaphysics’ was employed to indicate at the same time a philosophical field, its component disciplines, several forms of speculative thought and an editorial convention in a sort of eclectic, self-referential and contradictory Borgesian classification.

As hinted in the introductory chapter, this study draws inspiration and originally builds upon two interconnected aspects of Heidegger’s philosophy:

- his overarching project of ‘overcoming’ metaphysical thought and

- his seminal work in the field of philosophy of technology.

Both of these aspects are constitutive for my study. Consequently, in line with Heidegger’s interpretation, I will utilize the distinction between ontology and metaphysics that Heidegger presented in *Being and Time*. In Heidegger’s philosophy, ontology is a vast horizon of possibilities with which a being understands and relates to a world that it is always inevitably engaged with. This understanding of the term ‘ontology’ has definite analogies with the way Garrett identified as *a* metaphysics (with a lower case ‘m’). For Heidegger, the term ‘metaphysics’ has, instead, has a much more definite and restricted meaning: it indicates the general way in which Western thought structured its understanding and relationships with the world from an objectifying, theoretical standpoint. In his writings, he identified the term ‘metaphysics’ with the faulty, dichotomic epistemology that presupposes a separation between an observing subject and an observed object, a tradition of thought that dawned with Plato’s theory of the Forms misguided all philosophical efforts in the Western thought.

From his perspective, metaphysics is the very, perverted pursuit of objective truth that went largely overseen in the methods and goals of Western thought. It is this form of thinking, according to what Heidegger wrote in the second introduction and in section one of *Being and Time*, that led philosophy astray to the point of paradoxically questioning of the very existence of reality, it is a defective heritage that must be 'overcome' (Heidegger, 1962).

Heidegger's critical position with regard to the derivative quality of the Western philosophical tradition will provide, in combination with his seminal efforts in the fields of philosophy of technology, one of the most foundational frameworks on which this study will build upon. The question that this study attempts to answer ('how can interactive, digitally mediated simulations supplement human beings in 'overcoming' the horizon of traditional ontologies?') is formulated from Heidegger's standpoint (his philosophical project in relation to metaphysics) and with a Heidegger's lexicon (his understanding of the concepts of 'ontology', 'metaphysics', and 'overcoming', not to mention his foundational interpretation of concepts like 'poetry', 'humanism' and 'technology').

According to the proposed understanding of Heidegger's project and in combination with the perspectives on philosophical anthropology offered by Helmuth Plessner, technology will not be understood by the present study as an alienating force precluding humankind from experiencing the 'full richness' of existence. Instead, it will be postphenomenologically understood as a fundamental and constitutive form of mediation of the relationships between human beings and reality.

2.1 – WHAT ARE THE EPISTEMOLOGICAL LIMITS OF METAPHYSICS?

In his 1641 *Meditationes de Prima Philosophia* (*Meditations on First Philosophy*), Descartes expanded on the philosophical system that he first outlined in the fourth part of his 1637 *Discourse on the Method*. In the *Meditationes*, he proposed the assumption that – in order to perceive, understand and in general relate to a world – a mind must initially contain some form of internal structure (Descartes, 1641). German mathematician and philosopher Gottfried Wilhelm Leibnitz (1646 – 1716) also remarkably based his dualist interpretation of knowledge on the presumed existence of an innate epistemological framework. For Leibnitz, the human soul is a microcosm, a monad, naturally endowed with an internal *vis repraesentativa* (representational power) which determines the soul's capability to perceive and interpret the world that is external to it (Reale & Antiseri, 2008, Vol. 5, 253 – 257).

The belief according to which an inborn cognitive structure is a functional necessity at the basis of any form of knowledge was first recorded in the history of written thought by Plato in the Socratic Dialogue *Meno*[8]. The innatists' standpoint in philosophy of mind has its diametrical opposition in the epistemological hypothesis known as *Tabula Rasa* ('blank slate') which made its first appearance in Aristotle's work[9]. According to the theory of the 'blank slate', all beings are born without any mental content. In this vision, any form of knowledge can be recognized as a construct that proceeds from experience. The two competing approaches that were just outlined constituted the premises for the eighteenth century epistemological dispute between

continental rationalists, understanding knowledge as a rigorous, deductive, intellectual *a priori* construction and British empiricists, who put forward an *a posteriori* approximation based on sensory evidence (Mancini, Marzocchi, Picinali, 1993, 620 – 622).

According to the empiricist philosopher John Locke (1632 – 1704), the stability and the objectiveness of the knowledge that can be deductively structured in relation to geometric and mathematical concepts is not achievable with regard to the way in which human beings experience of the world. Given the sensory – and thus imperfect and accidental – foundation of the way humans relate to reality, Locke maintained, science cannot be anything other than the generalization of empirical observations and will, consequently, never be able to demonstrate necessary relationships between physical phenomena. In the 18th century, David Hume adopted Locke's conclusions concerning the nature of empirical knowledge and its necessarily practical orientation. One of Hume's foundational philosophical efforts, building upon Locke's theoretical framework, holds a particular relevance for the history of philosophy: his exploration and questioning of the concept of causation. The starting point of Hume's speculation on causation can be paraphrased in the following interrogative: why is it instinctive to expect that everything that happens in the world has a cause? Hume's skepticism with regard to the realism of the notion of causation and his rejection of the unquestioned acceptance of the traditional metaphysical understanding of the relationship between cause and effect had a decisive influence for the work of Immanuel Kant. In his 1793 text *Prolegomena to Any Future Metaphysics*, Kant explained that it was his reading of David Hume that first awoke him from his 'dogmatic slumber'. He further identified Hume's questioning of the traditional understanding of causation as one of the first inspirations and stimuli that led to his 1787 *Critique of Pure Reason* (Kant, 1783, 4: 257, 4: 261; Kant, 2000, 23).

For Hume, causation – as a relationship developing in time among physical phenomena – was neither intuitively evident nor logically demonstrable and, as such, could not offer any truth that was independent from the observation of phenomena. In *The Universal Problem of Pure Reason*, the sixth section of the introduction to the *Critique* itself, Kant presented his perspective according to which Hume did not complete his critical path. Hume, according to Kant, stopped short of considering that synthetic judgments (ways of thinking characterized by the fact that no analysis of the subject matter can produce the predicates, as in the original Humean observations about causation) can be made *a priori* of experience (Kant, 2000, 146 – 148).

Differently from Hume, Kant observed that the core of the matter was not whether the concept of causation was in itself legitimate, applicable and indispensable in relation to the human knowledge of the physical world. What Kant attempted to understand was whether the causation could be thought *a priori* of experience. In that case, he would be able to establish the autonomy of the principle of causation from any object of sensory perception and, consequently, its intrinsic validity. His philosophical effort in relation to causation in the *Critique of Pure Reason* played the role of a first, exemplary step towards the ultimate purpose of being able to determine whether the very conditions at the basis of human knowledge could be established *a priori*, which is to say independent from experience and logically necessary (Kant, 1988). Clearly, this question came bundled, for Kant, with the aspiration of exploring the extent to

which such conditions guarantee the absoluteness and the universality of any theoretical postulation.

In his attempt to resolve the historical dispute between the competing epistemological approaches of empiricism and continental rationalism, Kant elaborated a philosophical framework according to which humans are recognized as having the possibility to access *a priori* truths about reality. Such truths, he believed, could be achieved analyzing the sensory pre-conditions of human experience itself. In his reflections about the foundation of knowledge and in accordance with the interpretation of space and time proposed a few years earlier by Swiss mathematician Leonard Euler, Kant understood space and time as the necessary (and, as such, given *a priori* of any experience) framework for phenomena to be perceived by humans[10].

Aspects of human experience that were often embraced the by the Western philosophical tradition as properties of reality, such as its spatial extension, its development in time or its following causal relationships, were recognized by Kant as qualities imposed on phenomena by the very intellectual equipment of human beings. A metaphor which is often colloquially employed to encapsulate Kant's understanding of the limitations of the perceptual and intellectual systems of human beings depicts human beings as innately wearing tinted spectacles through which they observe the world. As a consequence of the affordances of their metaphorical spectacles, humans are bound to experience a world with hues and deformations which are not inherent properties of reality, but depend on the qualities of the lenses they are wearing[11]. Concordantly, according to Kant, when synthetic *a priori* knowledge is achieved, it is really absolute knowledge about the 'tinted spectacles', that is to say the humans' very forms of receptivity (Kant, 2000, 192).

Whereas the empiricists understood the mind as being a largely passive receptor of phenomena from the world, Kant maintained that experience is actively constructed by the mind in accordance with content-less, innate rules. Instead of interpreting the outside world as being passively and objectively received by the human mind, Kant assigned the mind the role of active constructor of human world-views. This shift in the understanding of relationship between mind and reality (or between subject and object of observation) is what Kant himself referred to as his 'Copernican revolution' of thought (Kant, 1783, 4: 257, 4: 261; Kant, 2000, 23).

As a consequence of what was observed, it should appear evident how Kant considered the *noumenal* essence of reality outside of the reach of the possibility for human beings for grasping and articulating knowledge. Reality for what it is (being *qua* being) could never be accessed by the human intellect: the *noumenon*[12] is, for Kant, the limit of pure reason. This epistemological boundary, as Virgilio Aquino Rivas pointed out, destroys the precondition of transcendence and any aspiration to absolute knowledge (Rivas, 2007, 65). From the theoretical framework of Kant's *Critique of Pure Reason*, thus, some of the most abstract questions traditionally ascribed to metaphysical thought (is there a God? Do humans have free will? Is there a world outside of any consciousness?) are entirely unworkable.

Similarly to Aristotle's work, Kant's speculations aimed at reconciling the philosophical divergences between two competing epistemological standpoints. As already observed, according to Kant, the ultimate nature of reality (as well as that of

the minds relating to it) is inaccessible to humans. From the perspective offered by Kantian thought, the eighteenth century dispute between innatists and empiricists cannot be resolved epistemologically. As a consequence of this last observation, modern metaphysics is characterized by a focus which is narrower and more pragmatic than that of traditional metaphysics, namely one which is limited by the human sensory and intellectual possibilities.

A fundamental methodological aspect which characterizes Kant's criticism consists in the reduction of being human to a purely intellectual subjectivity. In the *Critique of Pure Reason* human beings are in fact presented in a highly abstract form, a form which – in its theoretical simplification – ignores any peculiarities or differences in the way they relate to reality. According to Kant's transcendental idealism, all of humankind shares the same perceptual and intellectual limitations and, consequently, the frontiers of metaphysics coincide, for him, with the boundaries of what he recognized as the common background of mankind's sensory and intellectual equipment. Departing from Kant's interpretation, the perceptions of the world of a human subject and its rational elaboration of such perceptions could be understood as not necessarily homogenous with that of other human subjects on the basis that such perceptions and rationalizations are always influenced by biological and historical factors as well as individual diversions from an idealized norm. Such diversions could, for example, be blindness, colour blindness, deafness, a particularly high or low intelligence quotient, attained level of formal education, type of religious beliefs, sexual orientation and so on.

A generic and abstract understanding of subjectivity is not a unique trait of Kant's perspective, but was shared by several other thinkers of the same period. Most of the philosophical approaches developed during the Enlightenment era relied, in fact, on an understanding of the world as static and homogenous, a (reductive) interpretation that could rationally, and hence indisputably, be described in terms of 'laws of nature'. In that respect, it is significant to observe that even a sceptic like David Hume expressed the belief, in his 1748 book *Enquiry Concerning Human Understanding*, that "[m]ankind are so much the same, in all times and places, that history informs us of nothing new or strange in this particular. Its chief use is only to discover the constant and universal principles of human nature […]" (Hume, 1748, section VIII: On Liberty and Necessity, Part I).

It is, however, necessary to specify that, unlike Hume, Kant held a realistic perspective and believed in the existence of a reality external to any consciousness. In the epistemological setup embraced by Kant, as already outlined, reality was fundamentally perceived in the same way by all human beings. The outlined framework was proposed by Kant on the anthropological premise that all mankind shares identical perceptual and cognitive equipment regardless of race, religion, language, historical period, level of technological development, literacy, *et cetera*. Consequently, all humans grasp and shape the material world through the same *a priori* forms of understanding. Were distinct human individuals endowed with different *a priori* forms, they would literally live in different worlds. In summary, Kant believed that the sensory projections that mankind can have experience of are indeed constitutive for the phenomenal world of each human subject but are, at the same time, non-subjective.

From Kant's perspective, the humans' sensory equipment is the fundamental boundary to their capability for producing and organizing knowledge. According to Kant, metaphysics cannot be logically considered to be capable of granting access to truths (or to any form of knowledge for that matter) that is absolute in the sense that it does not hinge on sensory experience. Heidegger openly praised and highly valued the depth and the influence of Kantian thought, but he deemed Kant's perspective on metaphysics to be not as revolutionary as Kant himself claimed it to be and too conventionally constrained within the tradition of Western philosophy. According to Heidegger, "Kant took over Descartes' (sic) position quite dogmatically notwithstanding all the essential respects in which he had gone beyond him." (Heidegger, 1962, 45 / SZ, 24) This particular aspect of Kant's work has often been subject of academic criticism on the basis of its reductionism and its anti-historicism. This is, for example, the case of the approach to Kantian metaphysics that can be read in the work of Wilhelm Dilthey.

As explained above, Kant's stance presents all human beings as homologous rational subjects whose intellectual and perceptive possibilities are unchanging across time or cultures and, thus, independent from any contextual influence. Not only this last assumption of Kant's was condemned by thinkers that developed their work after the Enlightenment, but it is manifestly at odds with fundamental beliefs of contemporary media theory and philosophy of technology. According to the latter, in fact, the affordances disclosed by technical mediators for extending, fragmenting, sharpening, numbing and enhancing the intellectual, sensory and operational possibilities of human beings (or rather cyborgs: cybernetic organisms functionally merging biological and artificial components) always played a constitutive role in the development of cultures and the organization of societies.

A level of abstraction in embracing the essential qualities of human beings that is reminiscent of Kant's can, however, also be observed in the first phase of Heidegger's thought. Despite Heidegger's recognition in his 1924 book *The Concept of Time* (*Der Begriff der Zeit*) that questions about the human being require the analysis of the 'ontological characteristics' of *Dasein* in its historicity, in *Being and Time* 'being in the world as humans' is problematized by Heidegger in a way which is essentially non-historical (Heidegger, 2011, 73; Heidegger, 1962). The historical dimensions of Dasein only briefly appear in Being and Time in section 77, near the end of Division Two. In Being and Time, Dasein is understood from several different perspectives (for example through the lenses of its temporality, its mortality, its being thrown into existence, its concernful engagement with the world, *et cetera*) but it is generally embraced as a basal factor which is experienced in the same way by all humanity along all the course of human history. Only after Heidegger's alleged 'turn' the historical dimension of being will return to be a central dimension of his thought (Thompson, 2005, 114). Differently from the perspective proposed in Kant's *Critique of Pure Reason*, for the late Heidegger, *Dasein* is in the world not only in the sense of the limited horizon of what it is like to be in world as a human being perceptually, cognitively and operationally, but is also necessarily involved with and influenced by the socio-cultural dimension of the historical context.

The belief according to which the possibility of developing human thought are historically dependent on the perceptual and intellectual limitations of mankind and are, therefore, necessarily historical was first discussed, in a quasi-philosophical

fashion, by Xenophanes of Colophon (570 – 480 BC) as early as the sixth century BC[13]. As a philosophical notion, it received its first elaboration in Hume's 1748 'An Enquiry Concerning Human Understanding'. With a focus on the humans' imaginative capabilities, Hume observed that:

> "Nothing, at first view, may seem more unbounded than the thought of man, which not only escapes all human power and authority, but is not even restrained within the limits of nature and reality. To form monsters, and join incongruous shapes and appearances, costs the imagination no more trouble than to conceive the most natural and familiar objects. […] But though our thought seems to possess this unbounded liberty, we shall find, upon a nearer examination, that it is really confined within very narrow limits, and that all this creative power of the mind amounts to no more than the faculty of compounding, transposing, augmenting, or diminishing the materials afforded us by the senses and experience." (Hume, 1748, section II: Of the Origin of Ideas)

The notion according to which 'being in the world as humans' is a fundamental imprinting which frames and limits the possibility to humanly develop knowledge is a recurring philosophical theme in Continental philosophy. It was famously associated with the concept of metaphysical 'destiny' in the philosophical work of Georg Hegel, Friedrich Nietzsche and in several currents of the phenomenological tradition (Vattimo, 1991, xlvii-liii; Heidegger, 1962, 82 / SZ, 56).

One of the most interesting reflections on the same concept in the analytical tradition of thought was raised by American philosopher Thomas Nagel. In his 1977 essay 'What is it like to be a bat?', Nagel argued that consciousness must have a role the interpretation and organization of sensory perception as well. His argument, similarly to the ones put forward by Heidegger and Nietzsche, does not abandon the idea that humans are bound to a certain world-view or family of world views. Nagel, in fact, initially and openly argued that humans cannot stop being human subjects with a human kind of subjectivity and are, in other words, 'stuck' with the experience of what it is like to be a human being (Nagel, 1977, 1).

With the objective of developing a new perspective on digital media that is not simply capable of dialoguing with philosophy of technology, but that also tackles the anthropological consequences of technological development (and of digital technologies in particular), I would be tempted to propose an integration to Nagel's introductory statement paraphrased above. I believe it would be more accurate to state that individual humans are 'stuck' with the experience of what it like to be human beings in the specific individual understanding of an existing socio-cultural environment. Recognizing and giving relevance to the contextual and embodied qualities of human ontologies (purposefully used in its plural form) is not something that this study pursues only for the sake of completeness or academic rigor, but it is a foundational aspect of the very purpose of this enquiry.

2.2 – WHAT DOES IT MEAN TO 'OVERCOME' METAPHYSICS THROUGH TECHNOLOGY?

From the revisionary approach offered by the early Heidegger on the foundational topic of metaphysical thought, philosophy should be embraced as a form of knowledge which is more fundamental than what was developed and was inherited by the Western tradition of thought. Adopting an original stance that departed from the philosophical path of phenomenology originally opened by his teacher Edmund Husserl, Heidegger considered Western thought to be a derivative mode of thinking, instead of a primary form of knowledge and involvement with existence. "While for the pre-Socratics 'being' still meant 'emerging out of concealment into unconcealment,' for Plato it began to mean 'essence.'" (Verbeek, 2005, 51) From Plato on, Heidegger believed, philosophy had been perversely treated as a form of physical investigation and its objective had been understood as that of determining the 'meaning of being' as if such beings were mere, detached objects[14] (Heidegger, 1998, 155 – 182; Volpi, 1998, 91 – 94).

In Heidegger's work, traditional metaphysics is identified as one among many possible ways in which the world reveals itself to human beings, namely a form of thought that is deficient in its very method of observing the world solely through a theoretical separation between subject (the for-itself) and object of inquiry (the in-itself).

Heidegger understood ontology as "the essential ground on which humans relate to the world and in which knowledge is rooted" (Heidegger, 2008, 94) and philosophy as "the painstaking effort to think through still more primally what was primally thought" (Heidegger, 1982, 22). Concordantly with these premises, he believed in the necessary philosophical commitment to the constant questioning and destruction of traditions of thought and the intellectual imperative to constantly attempt the 'overcoming' of their boundaries. In *Being and Time*, Heidegger overtly advocated the deconstruction and the abandonment of the 'metaphysics of presence'[15] as the path to salvation from the current and totalizing form of thought uniquely preoccupied with knowledge-theory.

Several books and essays by the previously mentioned Thomas Nagel offered a comparable critical attitude towards the Western tradition of thought. Not dissimilarly from Heidegger's perspective outlined above, Nagel explained in his 1986 book *The View from Nowhere* that:

> "Philosophy is […] infected by a broader tendency of contemporary intellectual life; scientism. Scientism is actually a special form of idealism, for it puts one type of human understanding in charge of the universe and what can be said about it. At its most myopic it assumes that everything there is must be understandable by the employment of scientific theories like those we have developed to date – physics and evolutionary biology are the current paradigms – as if the present age were not just one in the series." (Nagel, 1989, 9)

I believe it is important to observe here that, in constructing his radical criticism to Western thought, Heidegger explicitly stated that he was not opposed to scientism *per se*: he often clarified that he considered an abstract, theoretical approach to reality a powerful instrument, albeit inherently limited in its applicability (Dreyfus, 1991, 251 – 253). Heidegger believed that the world could indeed be fruitfully interpreted as a set of external objects, and that such objects can conveniently be seen as resources, that is to say assets that can be approached and utilized with a functional purpose in mind. On the other hand, Heidegger specified this functional and value-oriented approach needs to be always adopted with caution (as it constitutes the supreme danger for humanity) and with the awareness that there is a broader background over which human beings can relate to reality (Heidegger, 1982).

In Heidegger's early work, the abstraction the metaphysical tradition of thought is presented in sharp dissonance with the phenomenological analysis of existence. In his work that preceded the alleged 'turn' in his thought, Heidegger envisaged a new beginning for Western philosophy, a new epoch of thought that will emerge from the 'overcoming' and the forgetfulness of Plato's understanding of truth (Heidegger, 1998, 155 – 182). In the first phase of his thought, in his 1927 *Being and Time* in particular, Heidegger's critical stance towards Western metaphysics was coupled with the advocacy according to which philosophy could be efficiently 'restarted' by recuperating a more original form of thinking founded on a practically involved and more thorough relationship with philosophical truth that was established by the pre-Socratic thinkers.

I believe it is important to clarify that, even without necessarily encouraging a return to the origins of Greek philosophy, I embrace Heidegger's overarching philosophical project of critically reflecting on the thought horizon of Western metaphysics that had the objective of 'overcoming' the limitations of the latter and pursue a more thorough and encompassing reflection on Being. The lexical dimensions of terms like 'ontology' (in opposition with the perverted horizon of 'metaphysics'), 'project' and 'overcoming' which are foundational for 'the question concerning digital technology and projectual humanism' reflect in their meaning and their context the adoption of a fundamental Heideggerian stance.

The inspiration derived from Heidegger's work is evident, in my opinion, in several components of this study, among which – most notably – lexical ones as well as those related to his overarching philosophical aim of 'overcoming' the deficient and unsatisfactory thought horizon offered by the Western tradition in the sense of 'accepting-distorting' its heritage and limitations (see chapter 1.3, point 5). Following from such recognition, I deem it fundamental, for the sake of clarity and academic rigor, to provide a systematic outline of how my work relates to Heidegger's writings in this foundational chapter for this study. This delineation will be pursued with a particular attention to the changes and shifts that occurred in Heidegger's thought in the two phases of the development of his philosophical project.

One aspect of Heidegger's early work that was particularly encouraging for the development of my arguments was his instrumental acceptance of the discipline of philosophical anthropology. From that perspective of Heidegger's, philosophical anthropology was understood as a 'regional' ontology: a derivative form of thinking that, on the backdrop of the awareness of its inherent limitations and partiality, can be

fruitfully employed in developing and organizing knowledge. Heidegger does not, however, directly contribute to the discipline philosophical anthropology but, in the first phase of his thinking, he clarified that he understood his fundamental ontology as constituting the essential ground for any kinds of 'regional' ontologies as well as the sciences.

One dimension of Heidegger's early philosophy that is, instead, at odds with the philosophical aspirations of this thesis that were summarized in the first chapter can be identified in the anti-historical nature of his analysis of *Dasein* as articulated in *Being and Time*. This aspect characterizes Heidegger's work in the phase that preceded the alleged 'turn' in his thought (the period that follows the 1927 publication of *Being and Time*) and was already mentioned when discussing Heidegger's reception of Kant's *Critique of Pure Reason*. This anti-historical position precluded Heidegger's early thought from structuring itself as a philosophy of openness. In *Being and Time*, in fact, technical, biological, political changes or in general socio-cultural transformations cannot be understood as factors of change in the ways human beings are in the world, the ways in which they develop their thought and in which they can, in turn, alter their very socio-cultural environment. I find this aspect of Heidegger's early work to be poorly capable of describing the dynamism and the growingly influential interconnections between human beings and technically-mediated social practices.

Taking a closer look to the relationships between technology and being-in-the-world as articulated in the early phases of Heidegger's thought, they can be recognized as being understood overall in a privative fashion, that is to say not as novel possibilities for human beings to establish additional ways of engaging with the world but rather as detrimental forms of 'severance' from it, as deficient modes of being. In relation to the aspirations to openness inherent in my philosophical project, the second phase of Heidegger's thought is – at least in a general sense – more promising than the first one as it appears to redeem some of the shortcomings that I mentioned above. Even if still explicitly pursuing the same general objectives, Heidegger's later thought is less 'monolithic' and in several occasions demonstrates a degree of openness towards certain historical dimensions of *Dasein*. The relative flexibility and the historical dimensions that being-in-the-world assumes in the second phase of Heidegger's thought is particularly evident, in my perception, in the writings concerning the socio-cultural role of works of art or social production in general ('The Origin of the Work of Art', 'Building, Dwelling, Thinking') and in his pioneering efforts in the field of philosophy of technology ('The Question Concerning Technology', 'The Turning' and 'The Age of the World Picture').

Despite the uncompromising deterministic stance held by the later Heidegger in relation to art and technology, several dimensions of that very phase of his thought had a formative influence in the structuring of my arguments. Two among the most relevant contributions of the second period of Heidegger's philosophy to the development of the present study can be identified in:

- The recognition that the relationships that human beings can establish with artworks and, in general, with artifacts have influences and effects that extend beyond their functional use. They can disclose new worlds and facilitate the emergence of alternative systems of thought in ways that are more thorough

and practically involved than the perspectives currently offered by the Western tradition of thought. Activities pursued with the use of artifacts such as sailing, hunting or erecting buildings are, in this phase of Heidegger's thought, understood as forms of revealing, "scenes of disclosure" for the breaking in of the overwhelming (Heidegger, 1982, 12, 13; Heidegger, 2000, 174).

- The identification of possibilities for the 'overcoming' of Western thought as latent in the depth of the technological mindset. In 'The Question Concerning Technology' 'The Turning' and 'The Age of the World Picture', in fact, Heidegger often hinted at a growing opportunity for what he calls 'salvation' lying at the very core of technology. In other words, Heidegger believed that the problem of leaving the restrictive thought-horizon of knowledge-theory / scientism behind could potentially be achieved within the limits of scientism itself.

Not all the developments of Heidegger's later thought can be, however, recognized as contributing to the cause of the postphenomenological understanding of the ontological effects of digital technology. As already discussed in note number 9 of the first chapter, in the second phase of his thought Heidegger openly identified in the anthropological recognition of the human subject as the unquestionable foundation for knowledge the accomplished form of that Western metaphysics that he so thoroughly criticized (Heidegger, 1977; De Mul, 2004, 43). After the publication of *Being and Time*, in fact, Heidegger radicalized his attitude towards philosophical anthropology and started to consider its restricted, anthropocentric perspectives to be hopeless as far as the pursuit of an original and thorough 'questioning' of Being (Heidegger, 1982, 140).

Heidegger's dismissal of philosophical anthropology is a very interesting dimension of his later thought that can be interestingly associated with the advocacy for a wider and deeper understanding and pursuit of what 'humanism' means and can mean, a position that is epitomized in his 'Letter on Humanism'. However, it is evident that the later Heidegger's rejection of what he understands as the limited and derivative horizon of philosophical anthropology constitutes a conceptual obstacle when trying to integrate the latter with Heidegger's pioneering insights in the field of philosophy of technology. The way in which I propose to proceed in order to surmount this incongruence is that of adopting, in this particular case, the less inflexible and more fruitful instrumental understanding philosophical anthropology that was recognized as characterizing the early developments of Heidegger's work, rather than his later interpretation.

I would like to point the attention of the reader on the fact that there is a common denominator that underlies the seemingly haphazard decisions as to what aspects of Heidegger's philosophy were embraced as constituent elements of my arguments. For the sake of clarity, I take the liberty to repeat that this common denominator is the desire to re-discover aspects of Heidegger's thought that do not reject practices and 'regional' ontologies wholesale as uselessly derivative or even openly detrimental. I am, in fact, trying to recuperate and re-integrate notions and perspectives of his work that are helpful in understanding being-in-digital-worlds in a way which is neither anti-historical nor 'watertight'. So, with the goal of understanding digital technologies as technologies that promote a specific kind of human openness towards modality, it

is not only logical but also desirable for this study to re-thematize certain dimensions Heidegger's heritage that can be interpreted as pointing in the same direction. This is, once again, pursued on the basis that Heidegger's work can be interpreted, and was presented by Heidegger himself, as not being composed by two separate thought framework at odds with each other, but rather as two moments of the same process that can be recognized as having different focal points but that ultimately pursue the same philosophical project.

From the outlined use of Heidegger's work, it should be evident that the 'overcoming' traditional kinds of human ontologies through the use of any technologies could never be understood as a complete and definitive 'abandonment' of our biological and philosophical heritage. I believe it should also be apparent that I am not advocating here for a dogmatic and unquestioned acceptance of the integration of digital technologies in social processes. Instead, I am proposing that the fragmentation, the extension and the distortion of human kind of ontologies through interactive, digital technology are always accompanied by an open and thorough reflection over the possibilities of human forms of digital extensions and their influence on the ways in which mankind develops thought and establishes social practices and relationships.

2.3 – PRELIMINARY CONCLUSIONS

In Heidegger's framework, the fundamental question on which philosophy needs to be constructed (or rather re-constructed) is deeper and more encompassing than the deficient, objectifying one passed down from Plato. In his early writings, heavily influenced by the work of his mentor Edmund Husserl, Heidegger laid the speculative ground for his envisaged 'overcoming' of Western metaphysics and promoted its recognition as a partial and faulty tradition of thought. According to Heidegger's perspective, human beings are thrown in the world with a human kind of biology and, as a consequence, are destined to structure specific kinds of relationships with reality. Given these premises, for Heidegger, the only context where an 'overcoming' of the endemic and theoretical kind of ontology which takes the name of 'metaphysics' can come about – if at all – is the very context of human kinds of understanding of being. Consequently, it is clear why his understanding of the concept of 'overcoming' is not presented as a radical break with the metaphysical past, to which we are inescapably bound, but rather as its 'acceptance-distortion' (or *Verwindung*, see chapter 1.3, point 5).

Inspired by the philosophical perspectives of the early phase of Heidegger's thought, this inquiry shares the belief that there is a broader and more encompassing philosophical horizon to be embraced by human beings through human kinds of ontologies. However, as observed earlier in this very chapter, in *Being and Time* the human perceptual and intellectual equipment is still understood in an anti-historical fashion, that is to say as an absolute and context-less background for knowledge shared by all mankind. From this perspective, the *Verwindung* of the ontological horizon of human beings takes the logical dimension of a utopian aspiration or a remote hope. Differently from the early developments of Heidegger's thought, the present study deems it crucial to recognize that socio-cultural determinants play a key role in structuring and modifying human kinds of ontologies. These determinants

include, but are not limited to, biological differences as well as psychosocial determinants such as stage of technological development, religious and sexual orientations, attained level of formal education. In other words, this study accept an historical interpretation of human being, an interpretation according to which, as humans, we live "[…] in a permanent beta state"[16] (De Mul, 2010, 41).

It is from the perspective outlined above that:

a) the relationship with technology can be embraced as a essential aspect of being in the world as human beings instead of a derivative mindset constraining the thought horizon of mankind, and

b) the overcoming of traditional ontologies can be projectually pursued, instead of being vaguely prophesized.

In his later reflections over technology (in 'Building, Dwelling, Thinking', 'The Turning' and 'The Question Concerning Technology') Heidegger himself suggested in various ways that the transcendence of the metaphysical horizon of Western thought beyond its traditional boundaries could take place through the apex of Western metaphysics itself: technology.

> "[…][W]hen we consider the essence of technology we experience enframing as a destining of revealing. In this way we are already sojourning within the free space of destining, a destining that in no way confines us to a stultified compulsion to push on blindly with technology or, what comes to the same, 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." (Heidegger, 1982, 25, 26)

On these fundamental assumptions, I will develop an original perspective in relation to philosophy of technology according to which the specific contribution of digitally mediated simulations in the shaping of human thought is not that of a revolution or a radical break with pre-digital human kinds of ontologies, but amounts to a deepening and fragmentation of the possibilities for humans to perceive and understand worlds as well as actively operate within the interactive horizon they disclose. In particular, computers will be recognized, in the chapters of this study that will follow, as intrinsically affording the overcoming of two traits that traditionally characterized the ways in which human beings structured ontologies:

- their exclusive engagement with the world commonly indexed as 'actual' (which will be specifically tackled in the next chapter and then in finer details in chapter six), and

- the specific structure of their 'positionality' (an anthropological concept that will be a central topic of the fifth chapter).

Allowing for the transcendence of such fundamental aspects of how human kinds of ontologies are structured, the interactive experiences of virtual worlds disclosed by digitally mediated simulations are understood as the contexts in which 'augmented ontologies' can be experienced and manipulated and where a new, projectual humanism[17] is already arising.

[1] Andronicus of Rhodes specifically labeled those writings '*τά μετά τά φυσικά βιβλία*' (*ta meta ta physika biblia*): the books that come after the (books on) physics. The Catholic Encyclopedia of 1913 explains, regarding the term 'metaphysics', that Andronicus' reference was mistranslated by Latin scholiasts. Instead of being interpreted as a bibliographical indication "[…] it was understood to refer to the chronological or pedagogical order among our philosophical studies", thus indicating the knowledge of what extends beyond the physical world.

[2] In the Aristotelian 'First Philosophy', the study of natural theology, universal science and being ("meant in many ways", as specified in the seventh book of his *Metaphysics*), is explicitly performed at the level of their general and ubiquitous features, in what can be recognized as an attempt to detach Aristotle's metaphysical speculations from a necessary dependence upon empirical observation.

[3] An example of such fundamentally dubious philosophical stance is the immaterialism proposed in the eighteenth century by the Irish philosopher George Berkeley (1685 – 1753) (Reale & Antiseri, 2008, Vol. 5, 409 – 424).

[4] Descartes imagined, along the path laid by Pyrrho, that the sensations experienced during waking life cannot logically be given a different ontological value than those experienced in dreams, psychoses or deceitful hallucinations, and can be considered, as such, entirely illusory. The 'evil d(a)emon' (sometimes named 'evil genius') is a speculative concept specifically introduced in Descartes' 1641 *Meditationes de Prima Philosophia* to illustrate his position on the illusory nature of empirical knowledge. Hypothesizing the existence of an all-powerful deceiver capable of intervening in our sensory perception, it would be logically impossible – according to Descartes – to determine whether perceptions have any relation with a possibly existing reality. The idea of the evil genius has a close relationship to the idea of a 'consensus reality' proposed by the already mentioned George Berkeley (cfr. note 3).

[5] The first argument mentioned in the passing list of questions of philosophy of mind that cannot be answered within a dualistic framework is the famed 'problem of other minds'. The latter can be succinctly presented as follows: since an individual human mind can only observe the corporeal behaviour of other humans, how could it ever know that they also have minds? Taking a purely dualistic perspective, it would be impossible to tell whether humanity actually exists or only a single mind does, surrounded by 'behavioural zombies'. The second argument proposed in the list problematizes 'causal interaction', elucidating the impossibility to explain dualistically how consciousness can have an effect on the physical world. For the sake of example, Cartesian philosophy cannot explain how one's immaterial mind can command one's physical body to perform a certain action.

[6] The 'bran damage' contention that had been used to disprove Cartesian dualism argue that the mental capabilities and properties of an individual are always significantly changed or compromised in instances of some sort of brain damage. If the (immaterial) mind were completely separated from the physicality of the brain, how could a brain injury always be consistent with mental damage? "One would expect", Churchland commented, "reason, emotion and consciousness to be invulnerable to direct control or pathology by manipulation or damage to the brain." (Churchland, 1988, 20) These questions cannot find a satisfactory answer in a philosophy of mind framework which understands the mind as immaterial and separated from the physical world or when the properties of the mind are

believed to be ontologically independent from the materiality of the brain. An additional argument observes that the capability of medical science to explain and predict the types of mental or psychological deterioration that an individual human being undergoes when specific parts of his or her brains are damaged objectively counters the dualistic theories about the independence of the mind from its bodily substrate. In relation to the same point, in the 2010 English version of his 2002 *Cyberspace Odyssey*, De Mul cited a famous adage by Jacob Moleschott that incisively claims the impossibility of the emergence of subjectivity without a material substratum to support it. Moleschott stated that "Ohne Phosphor keine Gedanke." ("Without Phosphorus there would be no Thought in the first place", English translation in De Mul, 2010, 167)

[7] Plessner's understanding of both the limitations and the merits of modern dualism has a close affinity to the interpretation of Cartesian philosophy offered by the French philosopher and social theorist Michel Foucault. In his 1966 book *The Order of Things*, Foucault noted that before the Classical age the human perception of reality was metaphorically embraced as the language of God, as Berkeley puts it. In other words, knowledge was considered a system whose presence, stability, and correspondence with noumenal reality were metaphysically guaranteed by a higher, ineffable order (Foucault, 1994, 58). Before the seventeenth century, the decipherment of such system, which is to say the access to an absolute framework of knowledge with a theological grounding, was considered the sole task of culture.

[8] The issue about the nature of knowledge raised by *Meno* is not simply eristic, as Socrates first describes it, but is a clear indication of the Pythagorean influence on Socratic thought. Concepts akin to those of *anamnesis* (knowledge as recollection) and *metempsychosis* (the transmigration of the soul) support the innatistic, idealistic approach to knowledge in both Socratic and Platonic thought (Reale & Antiseri, 2008, Vol. 1, 332 – 334).

[9] In his treatise Περι Ψυχης (*On the Soul*), Aristotle compares the mind to an 'unscribed tablet', or 'tabula rasa', where he states that: "What the mind thinks must be in it in the same sense as letters are on a tablet which bears no actual writing; this is just what happens in the case of the mind." (*On the Soul*, 3.4.430 a1)

[10] According to Kant, space and time are part of our intellectual tools to relate to the external world and are, more accurately, the ways humans' perception of reality functions. The locution often used to indicate their peculiar role in both *The Critique of Pure Reason* (1781) and the *Prolegomena to any Future Metaphysics* (1783) is 'forms of receptivity'.

[11] Albeit incisive and revelatory with regard to the way in which the humans' perceptual system frames and shapes their experience of the world, the metaphor of wearing tinted glasses has problematic aspects in its correspondence with Kant's insights. Drawing an analogy between a pair of coloured lenses and the imperfect and contingent possibilities for humans to relate to the world empirically, inherently suggests the possibility for humans to eventually remove such (limiting and distorting) filters. Kant, however, never addressed or suggested that possibility in the *Critique of Pure Reason*, conversely he considered such limitations to be innate and characteristic of the way human beings are in relationships with reality.

[12] The *noumenon* (from the ancient Greek νοούμενον, present participle of νοέω 'I think, I mean') is an object, a quality or an event that is independent from the presence of an observer and from the mediation of the observer's senses. After the work of Immanuel Kant, the *noumenon* has been understood as the objective of a priori knowledge customarily presented as standing out, in a theoretical separation, against the *phenomenon*. The term *phenomenon* (term deriving from the ancient Greek φαινόμενον) indicates any object, quality or occurrence that is the subject of sensory experience.

[13] In his poetic fragments, Xenophanes rejected the representation of the Gods which had been paradigmatically introduced in the Classical Greek period by Homer and Hesiod. Xenophanes believed it to be an absurdity to confer anthropomorphic traits (both physical and behavioural) to the Gods. Such identifications are inherent to the way human beings perceive and interpret the world, rather than something that pertains to divinity or to the essence of natural phenomena. In one famous passage, Xenophanes ridiculed the idea by claiming that:

> "[...] if cattle or horses or lions had hands and could draw,
> And could sculpt like men, then the horses would draw their gods
> Like horses, and cattle like cattle; and each they would shape
> Bodies of gods in the likeness, each kind, of their own."
> (Diels & Kranz, 38 – 58)

[14] In 'Plato's 'Doctrine of the Truth', his 1942 essay that focused on the Platonic allegory of the cave, Heidegger highlighted an essential split between the perception of Plato and the pre-Socratic perspective concerning the question of metaphysical truth (Heidegger, 1998, 155 – 182). According to Heidegger, the 'question of Being', the problematizing of its meaning, invested and constituted the radical objective of philosophy from Parmenides to Aristotle (Severino, 1994, 40). The pre-Socratic philosophers conceived truth as a form of 'undisclosedness': the revelation of being for what means in the most basic sense. Such a perspective is also recorded in the etymologic meaning of the ancient Greek *aletheia* (*αλήθεια*) where *lanthánein* (*λανθάνειν*, to be concealed) is preceded by the privative *a-* (Reale & Antiseri, 2008, Vol. 10, 103, 104; Severino, 1994, 178; Heidegger, 2008, 139 – 212). In his paper, Heidegger overtly considered Plato to be responsible for having set Western thought on the perverted path of the objectification of truth and knowledge. His perspective also aligns with the insightful observation of Alfred North Whitehead which supported the idea that "[t]he safest general characterization of the European philosophical tradition is that it consists of a series of footnotes to Plato." (Whitehead, 1979, 39)

[15] Heidegger insisted that a crucial aspect of the limitation of Western thought is that of a time perceived as linear and composed of a series of identical 'nows'. "From the dawn of Western-European thinking until today", Heidegger wrote in his 1962 essay 'On Time and Being', "Being signifies the same as presencing." (Heidegger, 1972) The pivoting the temporal horizon of Being and its limited understanding as 'presencing', Heidegger maintained, are correlated aspects of Western thought that characterize the history of Western philosophy *as metaphysics* (Magnus, 1970, 69, my italics).

[16] With regards to digital technology in particular, De Mul noted that "[t]he development of hardware and software is taking place so rapidly that the whole sector seems to find itself in a permanent beta state. When we also consider that information technologies radically reconfigure almost every aspect of our society and our lives we realize how confusing our situation is." (De Mul, 2010, 41)

[17] Cfr. chapter 1.3, point 3.

CHAPTER 3: Simulations in the Age of their Digital Mediation

Questions and hypotheses concerning the way in which humans structure their relationships with reality, and – thus – about the qualities and validity of any form of knowledge had been raised in Western thought as early as the sixth century BC. Such fundamental forms of scepticism can be recognized, for instance, in the surviving poetic fragments of Xenophanes of Colophon (cfr. chapter 2, note 13).

Despite the antiquity and the frequent re-formulation of this fundamental metaphysical enquiry in the history of philosophy, the aspirations of human knowledge towards absoluteness and objectivity only obtained its first, radical critique in the eighteenth century with Immanuel Kant's transcendental philosophy. In Kant's work, the context of knowledge was presented as limited to, if not entirely identifiable with, the boundaries of the very forms of human receptivity (cfr. chapter 2, note 10). In extreme synthesis, Kant argued that human beings are incapable of achieving immediate or absolute understanding of reality because their possibility of developing knowledge depends on the finite and imperfect mediation of their sensory and intellectual equipment. Kant called the former kind of knowledge, whose pure intuition does not depend on the use of the senses, 'noumenal' (from *nous*, ancient Greek for 'mind'). The grasping of the 'noumenon' is understood in opposition to 'phenomenal' knowledge, the latter, which indicates the rational organization of sensorily-obtained information.

The awareness that the various mediations through which knowledge is not only obtained, but organized and communicated are not neutral vessels, but are fundamental factors in the shaping of knowledge itself can be recognized as early as in Plato's writings. *Phaedrus* and *Seventh Letter* contain, in fact, reflections that the diffusion of writing, freshly introduced in ancient Greek culture, had on the structuring of thought (Plato, 1995; Postman, 2005).

In is 1927 book *Being and Time*, Heidegger elaborated a perspective according to which the identification between human knowledge and reality was understood as the foundation on which Western thought had been relying on since Plato. Heidegger considered that the relationship between "what can be known and what can be" had either been accepted in a way that was for the most part unquestioned or only problematized naïvely by untenable sceptical positions (cfr. chapter 2.1). In this sense, his work can be interpreted as an attempt to reveal Western thought as a faulty, derivative tradition. The "largely overseen' acceptance of the identity between the concepts of 'Being' and 'truth' at the core of Western philosophy led, according to Heidegger, to a basic ontology in which space and time are considered objective categories rather than "a derivation of the temporal and spatial structure of *Dasein's* concernful being-in-the-world." (De Mul, 2010, 147)

The impact of Heidegger's writings had on continental philosophy contributed, together with the 'linguistic turn' popularized by American philosopher Richard Rorty in the analytic tradition, to the recent development of a philosophical approach which explores the influence of different forms of mediation on thought, knowledge and culture. According to Reinhard Margreiter, one of the scholars who promoted this shift, the name 'media philosophy' does not only refer to the exploration of yet another academic domain, but rather designates a fundamental transformation of philosophy, which is characterized by a turn towards the mediatic foundations of philosophy itself. In his view, media philosophy can be understood as a contemporary '*prima philosophia*' (Margreiter 2003, 151).

Due to the progressively more integrated and pervasive computer mediation in social practices (and its consequent growing influence as a factor of cultural change), interactive digital media became the central topic of theories and reflections pertaining to the 'mediatic turn' mentioned above. Apart from its diffusion and its economic relevance, it is largely the interactive and self-organizing capabilities of the digital platform that captured the interest and imagination of media philosophers. The reason for such a focus can be recognized as residing in the capability of computers to allow for the materialization of a number of questions and alternatives as well as the actualization of thought experiments and philosophical hypotheses that were simply not possible to materially explore, find answers to or communicate through traditional media. There are three areas in particular in which contemporary reflections in the fields of philosophy of technology and media philosophy play a structuring role towards the understanding of computer mediated interaction:

- **Artificial intelligence.** Artificial Intelligence (AI) is the study and design of systems that are capable of perceiving its surrounding environment and taking action that maximize its chances of 'success'[1] (Russell & Norvig, 2003, 55). With the development and exploration of artificial, intelligent systems, the externalization of certain forms of human rationality entered a new, radical phase that is – perhaps – only comparable with the ancient Greek advent of the externalization of thinking in the form of text. Through the artificial recreation of the capabilities of the human mind, this branch of media philosophy tries to objectively answer crucial questions of philosophy of mind and other cognitive sciences such as: What is consciousness? What exactly is intelligence? Can brain processes be simulated?

- **Telepresence.** In 1992, artist and art theoretician Peter Weibel argued that modern technology must be primarily understood as teletechnology, which is to say technology that serves to overcome "mental disturbance (fears, control mechanisms, castration complexes etc.) caused by distance and time, by all forms of absence, leave, separation, disappearance, interruption, withdrawal and loss." (Weibel, 1992, 75) Teletechnology "produce singular experiences […] [that] extend the range of individual acts of human agency." (Wilson, 2000, 69) Through the use of teletechnology, computers allow people the 'outsourcing' of their consciousnesses in telepresent environments, dislocating and enhancing their sensory perceptions. In a very pragmatic way, teletechnology revitalizes the old Platonic and Cartesian dream of escaping the prison of the body (De Mul, 2010, chapter 11; Dreyfus, 2000).

- **Virtual reality.** Virtual Reality (VR) indicates a set of applications of the digital platform that are closely related to that of telepresence. The principal difference between the two categories can be identified in the fact that in the case of virtual worlds, at least some of the objects that users can interact with and parts of the environments that they can project their senses and their consciousnesses towards, do not exist in a physical sense. VR is customarily defined as a "computer generated, simulated environment that is rendered in real-time according to the behaviour of the user." (Loeffler & Anderson, 1994, xi) It is important to remark once again that the simulated, digital worlds that VR grants access to are neither necessarily completely digital in their constitution or thoroughly immersive, but it is possible to combine them with actual environments, artefacts and control devices (where by 'actual' I mean pertaining to the world that we are presently sharing as biological creatures). A less uncompromising take to the virtuality of objects and world can be observed

> instead, to various degrees, in the digital graphical-user-interfaces of teletechnologies, in computer applications like augmented reality (AR), in video game motion sensor devices such as the *Microsoft Kinect*, in the use of psychophysiological sensors for biofeedback in computer applications, *et cetera*. From a philosophical standpoint, digitally mediated simulations mediate logical and aesthetical exchanges with possible worlds and behaviours, *de facto* materializing a set of idealistic philosophical world-views[2].

The present study concentrates its attention on the last group of applications of the digital medium (virtual worlds, video game worlds or, more generally, digitally simulated environments) and on their overlooked effects on human cognition and culture. With this focus in mind, in the next chapters, I will tackle questions such as 'how does the contact with virtual realities affect the way humans relate to the actual world?' and 'what is the relationship between the ontological structures humans have built in relationship with the world they inhabit biologically and the unworldly phenomenologies that can be encountered in virtual worlds?'

Pursuing the outlined objective, I will label my interpretation of the specific consequences of the social diffusion of interactive computer applications – loosely following McLuhans's intuitions and reflections – as extensions and fragmentations of human kinds of ontologies. These dynamics are anthropological on the basis that they have both a biological dimension and a cultural one. Both dimensions ensue, I argue, from the possibilities offered by digitally mediated simulations of affording interactive, digital experiences of worlds which are actual "not in fact, but in effect." (Heim, 1994, 109 – 110) Digitally mediated simulations do not reveal new worlds fictionally, that is to say through forms of mediation which require the complementation of subjective interpretation and imagination, but they effectively open new objective, phenomenological horizons. They disclose additional ways to experience worlds and operate within them that are alternative – and often in open contradiction – with the stable, scientific understanding of time, space, properties, causation, *et cetera* that human beings structured in their everyday relationships with the world labelled as 'actual'. When I state that they reveal worlds, I mean that precisely in relation to the definition of what a 'world' is offered in the first chapter of this text, that is to say because the aesthetical simulations that they disclose are stably perceivable, persistently intelligible and mutually constitutive within a certain spatial-temporal context and possible to be intelligibly interacted with.

Before beginning an exploration in the field of the ontological effects of digital simulations it is important to observe, as Espen Aarseth illustrated in his seminal 1997 book *CYBERTEXT - Perspectives on Ergodic Literature*, that the rise of the concept of simulation in contemporary culture is – at least from a qualitative point of view – independent from the introduction and diffusion of the digital platform. Aarseth noted that simulation, as well as other interactive and recombining forms of expression and representation, made its cultural debut forming forms that pre-dated the digital era, for example in the familiar form of tabletop games and card games and even in certain uses of text. With regard to the latter, it might suffice to think about examples of ergodic literature (such as the *Choose Your Own Adventure* gamebooks series) or the experiments of *OuLiPo*[3] at the beginning of the twentieth century (cfr. picture 3A) (Aarseth, 1997). From an analogous perspective, game studies scholar Gonzalo Frasca observed that:

> "Simulation is not a new tool. It has always been present through such common things as toys and games but also through scientific models or cybertexts like the *I-Ching*. However, the potential of simulation has been somehow limited because of a technological problem: it is extremely complicated to model complex systems through cogwheels. Naturally, the invention of the computer changed this situation." (Frasca, 2003, 2)

A similar attitude towards cultural production as well as cultural consumption could be observed in the diffusion, at the beginning of the last century, of installations and combinatorial works (Surrealist collage, Dada's assemblages, Cornell's boxes, *et cetera*). Such creations and their defiant multimediality proposed a less univocal and prescriptive approach to cultural production and individual expression, openly confronting traditional representational canons. The coalescence of philosophical currents like hermeneutics, subjectivism and phenomenology in the same period could be understood as reinforcing the interpretation according to which all these cultural factors were not coincidentally concurring, but rather were the phenotypes of a wider and deeper cultural shift that challenged the univocality and the stability of classical world-views. Popularizing combinatorial aesthetics and insinuating doubts about the value and objectiveness of any form of creation and communication of meaning, the majority of modernist artistic currents aimed at the effacing and dissolution of the reductive, theoretical relationship between object and subject of observation traditionally established at the core of Western civilization.

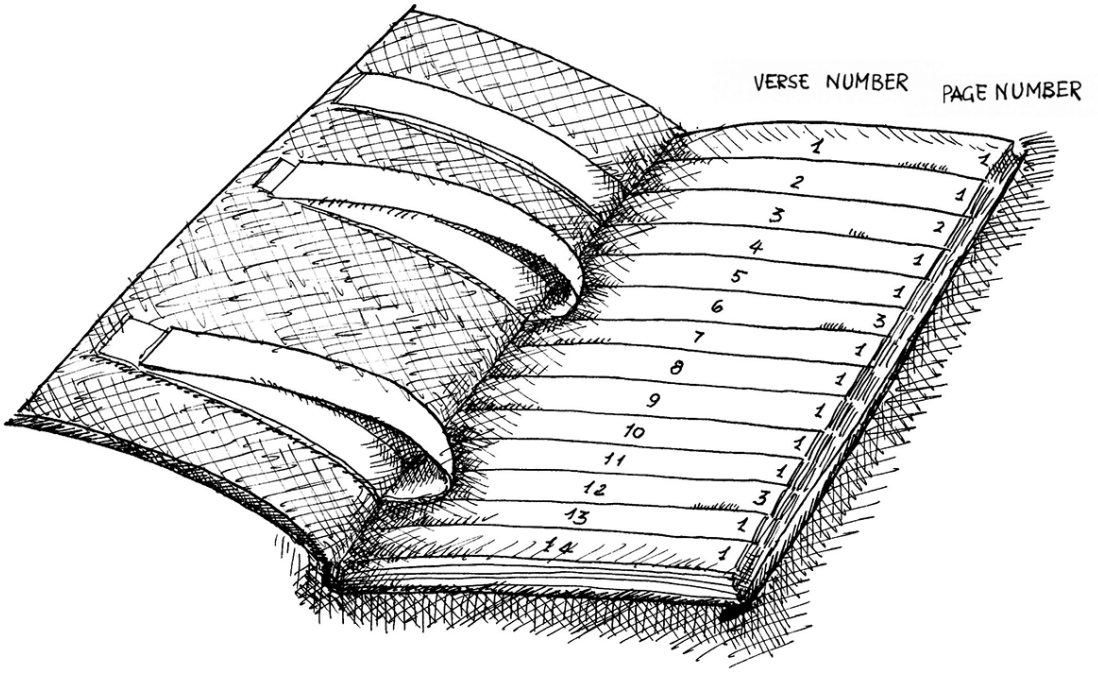

Figure 3A: The editorial structure of Raymond Queneau's 1961 *Cent Mille Milliards de Poèmes* (drawing by Alessandra Mazzucchelli, used with permission). In the preface to the book itself, Queneau wrote that "This small book allows everybody to freely compose a hundred thousand billion poems, all regular of course. It is essentially a machine to produce poems […]". The *OuLiPo* (see note 3) began when Raymond Queneau, stalled in the composition of this book, solicited the help of mathematician Francois Le Lionnais (Gualeni, 2007, 47).

Differently from their pre-digital mediations, computer simulations not only can manage complex and autonomous systems, but can also offer such systems the possibility to be endowed with persistent, interactive and aesthetical affordances that grow more realistic and granular with the advancements of virtual technologies. Following from the phenomenological definition of 'world' adopted by this study, the virtual worlds that can be experienced through the mediation of computers must also be effectively considered to be worlds.

In setting up an understanding of digitally mediated simulations capable of embracing and predicting the cultural consequences of their diffusion on the background of their technological affordances, I believe it is relevant to introduce the concept of 'technological momentum' proposed in 1994 by historian of technology Thomas P. Hughes. Hughes's attribution of a social inertia (or 'momentum') to technological systems is motivated, in his theoretical standpoint, by the need to overcome the dichotomy between the two foremost, competing models used to describe the relationships between technological development and social change. More specifically, Hughes's theory of technological momentum operates a synthesis between the dialectical positions of 'technological determinism' and 'social constructivism'.

As already outlined in the first chapter of this text, technological determinism supports the general view according to which changes in technology exert a greater influence on societies and their processes than any other factor of cultural change (Memo from Wade Roush to M.R. Smith, in Smith & Marx, 1994, 2). Determinists regard technology as an autonomous force that develops and spreads according to internal and inscrutable logics.

The second perspective that constitutes, together with technological determinism, the background for the development of Hughes's theory is customarily labelled 'social constructivism'. Social constructivists argue that a new technologies are always the material answer of some intangible social need: they arise out of "conflict, difference and resistance" in various historical, economic and socio-cultural settings[4] (Bijker & Law, 1992, 11).

The dichotomy between technological determinism and social constructivism was reconciled in Hughes's theory through what could be considered a synthetic understanding of their respective positions. Hughes recognized the two foremost theoretical perspectives in philosophy of technology as two different moments of the development time-line of the relations between a technological system and a society adopting it. According to Hughes, upon the social introduction of a new artificial system (or a new use of an established technology) society exerts a deliberate control over its qualities and ways of employment that is capable of steering its initial phases of introduction. With a new technology (or the new use of an old technology) becoming more common and more ingrained in the fabric of society, the early socially constructivist model evolves into a more inertial and less flexible set of relationships and influences which is recognizable as a form of technological determinism (Hughes, 1994). From Hughes's synthetic standpoint, a technology can be identified – along its process of development and integration – as both the cause and the effect of social change. Technologies can, at the same time, be recognized as both shaping society and being shaped by society in return.

Two critical pathways open in front of the media scholars who decide to adopt Hughes's perspective to observe the development of digital media and their influence on societies:

1. **TECHNO-PESSIMISM: Digital media can be understood as a single, polymorphic technology (or a family thereof) having recently entered their mature stage of development.**

   Due the multifarious cognitive and representational potential of the digital datum and its capillary penetration in society, computers are identified by the techno-pessimistic stance as the artificial system with the most powerful technological momentum in the history of humanity. With the evidently increasing diffusion and penetration of digital mediation in social processes and cultural activities, it is imaginable that its influence on human thought and on the structure of Western societies will be progressively more dominant than any previously introduced medium. The prospect of an increasing dependence of humans on (digital) technology led philosophers, novelists, movie directors and game designers of the second end of the past century to express their visions and their concerns for the future of mankind in the often grotesque tints of human-computer hybridizations and AI-run societies of control[5]. Often envisaging an ontological reversal of roles between technology and humans, it is not rare to witness regressionist or neo-luddist attitudes emerge from techno-pessimistic perspectives.

   In my perception, the techno-pessimistic adoptions of the 'technological momentum' are often too free in their interpretation of Hughes's theory, frequently resulting in theoretical positions that contradict his original perspective in the following aspects:

   - Hughes did not foresee a technological invasion of culture. On the contrary, in fact, he concluded his speculative 1994 essay stating that no artificial system will ever hold the social relevance and the economical sway to truly become autonomous from culture or the needs and desires of human beings.

   - Another crucial point of discordance between the dystopian perspective outlined above and Hughes's theory resides in the following observation about digital technology in particular: computer applications all inherit the computational and logical limitation of the digital medium itself, but despite the presumed maturity of the relationship between computers and societies they maintain strikingly flexible and independent qualities. Instead of aligning and sclerotizing into commonly rehearsed uses and behaviours, new applications, new versions of old applications as well as new uses for old applications are frequently released and rapidly distributed, not rarely supplementing or replacing functions that were once the exclusive domain of other media. Differently from traditional technological products, such applications of the digital medium facilitate and encourage the opening new possibilities to access and share information, reshaping communities as well as individual behaviours. Observations of this nature are precisely what led the way to the opening of the second critical horizon explained below.

2. TECHNO-OPTIMISM: The digital medium can be understood as a platform, rather than a single technology. Observed as a family of artificial systems bound together by functional and logical resemblances, digital technology should not be recognized as having inertia of its own, but rather as being characterized by a set of meta-momentums that are relative to the individual applications hosted by computers.

Towards the end of the nineteenth century, Ernst Kapp was among the first philosophers who tried to structure an understanding of technology that relied on the relationships between the human organism and its artificial extensions. Among other themes, his 1877 book *Grundlinien einer Philosophie der Technik* organizes a philosophy of technology around the concept of 'organ projections', that is to say around the belief that technologies are conscious or unconscious materialization of functions of human organs (Kapp, 1877). Through technology, according to Kapp, humans can supplement the shortcomings of their native organism. The outlined, functional aspect does not, however, conclude the effects and the roles of technologies, as extending our capabilities to perceive, communicate and operate in the world (or in worlds): our artificial extensions are also recognized as cognitive instruments. Elaborating on Kapp's original intuitions, Verbeek added another dimension to the human being capability of 'objectifying' themselves (or parts of themselves) in material apparatuses. Through the technological externalization of some of their functions, what human beings are also doing is disclosing a technological domain of self-discovery (Verbeek, 2013, 232).

Starting from the Enlightenment, the scientific process structured (with increasing granularity) a mechanicistic understanding of nature. Observed from this perspective, Kapp's reflections appear to be working in the opposite direction than that of the Enlightenment project. Kapp can be interpreted, in fact, as having attempted to understand the 'mechanic' in terms of the 'organic'; starting from the recognition of the biological origins of technical artefacts and relying on the integration of the latter with human beings, their needs and activities, Kapp did not posit a dialectical separation between technology and society. His perspective, as such, can be understood as a form of proto techno-optimism. In order to elucidate what it means to understand the digital medium from an analogous techno-optimistic fashion, I find it useful to outline here the qualities of technologies as taxonomically organized in the 1950's by German philosophers Hermann Schmidt and Arnold Gehlen (De Mul, 2010, 113; Verbeek, 2013, 234).

In his 1954 essay 'Die Entwicklung der Technik als Phase der Wandlung des Menschen', Schmidt also elaborated his understanding of the relationships between the 'organic' and the technical. In his text, he recognized three stages in the development of technnology. The earlier analysis by Kapp relates to the first stage: that of the 'tools'. Schmidt's embracing of tools closely reminiscent of Heidegger's understanding of 'equipment' as presented in his writings concerning technology: tools are simple technologies, intuitive in their use, that can be understood as direct extensions of either the physical capabilities of human beings (as, for example, the case of a hammer or a pair of shoes) or their mental ones (for instance in the case of an abacus or a notebook). According to the understanding of perception and cognition proposed by French phenomenologist Maurice Merleau-Ponty in his 1945 book *Phénoménologie de la perception* (Phenomenology of perception) familiarity with

tools and efficiency in their use emerges from the incorporation of the affordances of the said tools in the 'body schema' of a certain subject. For Merleau-Ponty, the *body schema* is the pre-cognitive organizational structure that determines the ways in which beings understand their bodies and create relationships with the world they inhabit – their 'motor intentionality' (Merleau-Ponty, 1962; Carman, 1999, 218 – 223). Concluding this synthetic description, tools are understood in this taxonomy as simple, passive instruments that cannot function unless incorporated and actively employed by (human) beings.

The second stage of technological development proposed by Schmidt is that of 'machines'. 'Machines' are still relatively simple instruments but, in comparison with 'tools', they can be distinguished by a higher degree of autonomy in relation to human employment. A 'machine', in fact, "derives power from itself, but still has to be operated by a human being for a certain purpose." (Verbeek, 2013, 234) Unlike the explicit directness of equipment, machines are semi-autonomous "physical representations" of their design (Coolen, 1992, 34, English translation in De Mul, 2010, 114).

Finally, the third stage is that of the 'automaton', a family of supremely autonomous artefacts characterized by deriving both their physical operations and the purposeful deployment of their machinery from technology (Verbeek, 2013, 232). According to the present categorization, the 'automaton' materializes the functional objective of technology, rendering the human operator redundant (albeit still necessary for its design and maintenance).

In his 2010 book *Cyberspace Odyssey*, De Mul elaborated on the third 'stage' of the taxonomy proposed by Schmidt and Gehlen. Inspired by the writings of Alan Turing, he presents 'computers' as universal machines: electronic systems which cannot be understood as the autonomous or semi-autonomous externalization of a certain need or project, as was the case with general 'machines' or 'automata'. De Mul explained, in fact, that the uses and applications of computers are not one and the same thing with the functioning and the material configuration of the computer-machine (its hardware), but can more suitably be identified with its software (De Mul, 2010, 114).

The variety, the flexibility and the individual nature of each software application does not bestow the digital medium a definite, univocal socio-economical momentum. For this reason, in the perspective offered by De Mul's work, computers can not establish a conventional and stable relationship with society and will never reach maturity in the sense presented in Hughes's essay. In that sense, De Mul pointed out that

> "[t]he computer, understood as a universal machine, distinguishes itself from classical machines because it is not the embodiment of one specific technological design, but thanks to its programmability, it can simulate countless existing and not yet existing classical machines. This implies that the interpretative flexibility of computer-mediated technologies is rather big, compared to most older technologies. And if we realize that new programs can be distributed fast and cheaply via the Internet, it is clear that the interpretative flexibility

> remains relatively big, even after they have become mature. […] In a sense they never reach a stage of closure. It is a sociotechnological system in a permanent beta-stage. Within such a system, innovation is no means, but a goal." (De Mul, 2002, 37, 38)

American Journalist Nicholas Carr discussed this peculiar quality of digital media in very similar terms in his 2010 book titled *The Shallows – What the Internet is Doing to Our Brains*. As a significant example, Carr addressed the fast and ethereal nature of businesses based on computer applications writing that "[a]ll it takes to render a thriving online business obsolete is a sharp programmer with a fresh idea." (Carr, 2010, 157) Differently from the previous critical horizon, this perspective might give way to technological optimism in the sense that it does not envisage a totalizing sway of artificial systems, rather an impermanent state of both technological development and its possibility to influence societies. Digital applications could, in principle, allow for more transparency, a more democratic, and flexible access to both resources of information and a more harmonious society as envisaged, among others, in the writings of the already mentioned Daniel Bell.

I believe that Hughes's theory of the technological momentum can be satisfactorily utilized to describe the dialectical and dynamic relationship between developments in technology and changes in society. In particular, from the recognition of computers as technologies which are permanently in a flexible state of becoming, follows that digital applications are constantly characterized by 'technologically deterministic' aspects and 'socially constructivistic' ones at the same time.

The understanding of technology presented in this study was profoundly inspired by Heidegger's philosophy of technology, according to which technology must be understood as an abstract mindset rather than the material aspect of tools and machinery. According to one of his most cited quotes, in fact, "the essence of technology is nothing technological" (Heidegger, 1982, 35) When embracing this aspect of Heidegger's philosophy of technology in combination with Hughes's theory of the technological momentum, the traditionally dualistic understanding of the relationship between technology and society emerges as the complex and bi-univocal relationship between a functional, objectifying mindset and other human needs that are less reducible and more dependent on cultural factors such as language, historical heritage, religious views, *et cetera*.
In present times, philosophical reflections on the digital medium are no longer encountered in the form of prophecies (as was the case for both Heidegger and Bell). I believe that the present generation is endowed with the analytical and technical capability to explore computer mediation in general – and digitally mediated simulations in the specific case of this study – as a primary factor of cultural change, at least in technologically developed societies. More specifically, as explained earlier in this chapter, I will propose a framework from which the interaction with digitally mediated simulations can be understood as interactively affording the extension, the distortion and the fragmentation of human kinds of ontologies and phenomenologies beyond what is 'actually present' towards what is 'virtually possible'.

With specific regard to the cultural shift towards projectivity promoted and potentiated by applications hosted by the digital medium (cfr. chapter 1.3, point 4), De Mul observed that "[w]hereas the modern natural sciences try to answer the question of how reality is and how it can be controlled, the postmodern modal sciences focus on the possible, that is on the many

ways the world could be designed and manipulated."[6] (De Mul, 2010, 16, 17) From an analogue perspective, Vilém Flusser affirmed that the emergence of digital technologies and their modal affordances

> "[…] means that we are starting to raise ourselves from a subjectivity into a projectivity. We are facing a second birth of mankind, a second *Homo erectus*. And this *Homo erectus*, who plays with chance, in order to intentionally transform it into necessity, may be called *Homo ludens*." (Flusser, 1992, 25)

With the purpose of defining the philosophical relevance of the introduction of digital mediation in society and in order to properly understand and answer the question that motivated this investigation, I deem it necessary to explore the ontological position and role of (digitally mediated) simulations as key factors, and expressive testimonies, of the outlined socio-cultural shift towards modality. The sub-chapter that will follow has precisely that objective.

3.1 – WHAT IS A SIMULATION?

Treating the interactive relationships with simulations as the focus of this philosophical reflection on human ontologies in the age of their digital mediation necessitates a thorough and unequivocal treatment of what the term simulation indicates and how it has been interpreted and contextualized by the scholars that approached the concept from different academic perspective.

Starting from its etymology, *Simulare* is a Latin verb originally denoting the act of 'making a thing be similar to another'. From this fundamental meaning derives the connotations 'to pretend', 'to falsify', 'to feign', 'to make believe', *et cetera*. As Heidegger noted in two of his 1957 lectures, posthumously published under the title *Identity and Difference*, the capability as well as the possibility to recognize how things are the same as and different from one another is a fundamental precondition for the construction of any ontology (Heidegger, 2002). As users and as creators of digitally mediated simulations, human beings manipulate and construct virtual worlds that disclose a new ontological horizon.

But what are simulations in the media studies discourse, and what is the most efficient way to understand their relationship with the way human beings perceive, understand and relate to the actual world? Clarifying these questions will contribute to giving context and foundations to the understanding of how ontological 'overcoming' can take place when human kinds of ontologies are 'projected' (and are 'projecting') into interactive digital worlds.

In a very early attempt to frame the ontological status of simulations Aarseth associated, in his 1994 *Hyper/Text/Theory*, the concept of simulation with that of 'cybertextuality'. Cybertext, explains Aarseth, is a self-changing text in which the organization of the text itself as well as the possibilities to traverse it are controlled by an immanent cybernetic agent (Aarseth in Wardrip-Fruin, Montfort, 2003, 773). Aarseth further constructed his theoretical standpoint setting up an ontological distinction which is cardinal for the development of his argument: that between fictive experiences and the ones that take place within a cybertext.

> "Cybertextuality", Aarseth explained, "has an element that is not found in fiction and that necessitates an ontological category of its own, which might as well be called simulation. […] Simulations are somewhere in between reality and fiction: they are not obliged to represent reality, but they have an empirical logic of their own, and therefore should not be called fictions." (Aarseth, Espen in Wardrip-Fruin, N., & Montfort, N., 2003, 777)

The inadequacy of traditional ontological hierarchies when employed in structuring an understanding of virtual worlds as well as categorizing environments, elements and behaviors pertaining to digitally mediated simulations was also recorded by Danish Ludologist Jesper Juul. In his 2005 book *Half-Real: Video Games between Real Rules and Fictional Worlds*, Juul discussed the fundamental ontological ambiguity inherent in games (and simulations more in general) when approaching them through traditional metaphysical categories.

> "[They] are two rather different things at the same time: video games are real in that they are made of real rules that players actually interact with; that winning or losing a game is a real event. However, when winning a game by slaying a dragon, the dragon is not a real dragon, but a fictional one. To play a video game is therefore to interact with real rules while imagining a fictional world and a video game is a set of rules as well a fictional world." (Juul, 2005, 1)

In 2003, the already mentioned Gonzalo Frasca proposed the vision according to which the specific field of game-studies had already outgrown the necessarily pioneering formalism offered by Ludology. Theoretical horizons that rely on formal or technical elements mediated representation as well as their interconnections are not, according to Frasca, perspectives to be thoroughly discarded: despite all the methodological limitations of a formalistic approach, representational media can in fact be usefully analysed in that way. Frasca argued, however, that modern media are simulational, not representational, which entails that a rigidly descriptive structuralist perspective cannot grasp essential characteristics of changing, negotiable contents like the ones that can be accessed, for example, through video games. As a consequence, he considered the development of a performance-based approach as a necessary step towards a more accurate and encompassing understanding of games, video games as well as any kind of simulation (Frasca, 2003, 1). Towards that objective, he focused his attention on the key-term 'behaviour'. According to Frasca, "to simulate is to model a (source) system through a different system which maintains to somebody some of the behaviours of the original system." (Frasca, 2003, 2) If we are ready to accept, as Aarseth did in his 1997 *Cybertext*, that "simulation cannot be understood just through its output", then a more thorough insight should be possible to achieve when simulations are aptly understood and explored as mediators that grant an interactive access to behaviour-based worlds (Aarseth, 1997).

It should appear evident to the reader that the understanding of simulations outlined above, that is to say as tools capable of mediating the relationship between a being and a world, closely resonates with the general phenomenological approach adopted by this study. I believe

it could suffice, at this point, to relate the phenomenological 'openness' recognized in simulated worlds with the fundamental understanding of what a 'world' is proposed by this research and inspired by the phenomenological tradition. From embracing the concept of 'world' as a context[7] characterized by the persistently intelligible qualities of the beings that participate in it as well as their interrelationships, follows that, in order to access and experience the contents of a simulation and to meaningfully interact with its designed behaviours, a simulated, behaviour-based world needs first and foremost to be intelligible. This must be necessarily true – at the very least – for the beings for which the simulation is designed for. If a digital experience were to take place in a logical-aesthetical context that was not stably perceivable or indecipherable in the way it behaved or responded to user action, then it could be argued that that simulation does not disclose a virtual world for its users. The persistency of its phenomenology and the intelligibility of the causal, spatial and temporal relationships among beings in simulated worlds are precisely the qualities that allow them to be engaged *as* worlds according to a phenomenological understanding of the term.

In the perspective I presented above here, and in line with the theoretical set up of this investigation, simulations can hence be generally described as intelligible and persistent, designed, interactive systems (worlds) that represent a source system (or systems) through a less complex, technically mediated one. The experience of digital simulations, in particular, is structured around (semi)autonomous behaviours the causal logics and physical behaviours of which bear no necessary logical or behavioural dependence from anything outside of the simulation itself. This is not to say, however, that some other kinds of relationships necessarily exist between the two, first and foremost a parental one – a fundamental dependency on the ways in which humans structure their ontologies – that will be analysed in chapter seven.

In general terms, the relationship between a simulation and its source system (or systems) will be understood as functioning through processes of analogy with already established ontologies, consequently simulations will be understood as an extended, behaviour-based subset of a wider cultural practice which is "an inevitable process of human thought and reasoning": metaphorism (Kövecses, 2010, x; Bogost, 2012, 74). A thorough exploration of virtual worlds and interactive digital simulations as metaphors, and thus as heuristic devices, will be the core topic of the sixth chapter.

I believe it is important to note here that the behaviours, metaphors, ideologies and ontologies implemented and integrated in simulations also depend on the expressive possibilities of the medium through which they are simulated. Taking place within the current architecture of the digital platform, computer simulations and their virtual worlds necessarily inherit the digital qualities as well as the expressive possibilities and limitations of its simulator. The effects on human kinds of ontologies and the expressive limitations of digital simulations will be topic that, in chapter number seven, will conclude this exploration of digital simulations as ontological instruments as well as mediators of philosophical thought.

Going back to the definitory difficulties of the concept of simulation, it is interesting to observe that many of the current definitions of 'simulation' embraced by the academic field of game studies elaborate on the pioneering understanding provided by Frasca and quoted in the previous page. In particular, many of them emphasize the necessary connection between a simulation and reality. This is the case, for example, of Joris Dormans's 2011 notion of iconic simulations (Dormans, 2011) or of the definition provided by Katie Salen and Eric Zimmerman in their 2004 book, where they argue that "a *simulation* is a procedural

representation of aspects of 'reality'." (2004, 423) Differently from the commonly shared understanding of the principle of simulation outlined above, my definition does not focus on the relationships with an alleged 'reality' and this is due to two reasons.

> 1 – The first stems from the observation that the source system of a simulation can be a simulation itself, for instance in the case of any digital version of chess or, to follow an example proposed by Sebastian Möring in his 2012 paper titled *Tackling the Metaphor-Simulation Dilemma*, simulating football through the medium of chess. (At that point, Möring added, chess would need to be considered not a simulation of war or the like but a self-contained procedural object. "In this case I would experience and understand football in terms of chess in order to simulate football with chess" (Möring, 2012, 13) The possibility for utilizing a simulation as a source system for another simulation implies that the resulting systems would progressively be more abstract and less adherent or recognizable as a descriptive model of behaviours that can be observed in the 'actual' world.
>
> 2 – The second set of arguments that counter the understanding of simulations as detailed models of 'reality' were raised by Jesper Juul in his already mentioned 2005 book Half Real, in which the he clarified that the artificial systems recognized as simulations
>
> > a) can differ strongly from the original depending on their degree of fidelity,
> >
> > b) they are usually stylized, meaning they highlight some aspects of the simulated and conceal others, and
> >
> > c) they simplify (Juul, 2005, 170).

The ambiguities in the definition of the concept of simulation listed above together with the material and structural dependency of simulation from the medium they are mediated through and the inescapably (and often inscrutably) subjective understanding of both the source system being simulated and the simulation itself are suggestive of an analogy between some of the academic approaches to simulations and various approaches in cognitive sciences and philosophy of mind. It is revelatory to observe, similarly to the way in which simulations were presented so far in this chapter, that in the words of Neil Stillings "[c]ognitive scientists view the human mind as a complex system that receives, stores, retrieves, transforms and transmits information." (Stillings et al., 1995, 1)

It should not surprise the reader, at this point, that the proposition of a specifically reserved ontological position of simulations as well as minds is often advocated as a remedy for what is ultimately the same *impasse* in the fields of philosophy of mind, media philosophy and game studies. Following this association all the way down the rabbit hole, the most fundamental ontological question that scholars have to face in relation to minds as well as simulations must be "to what extent is the thing that I am studying a real thing?"

3.2 – SIMULATION AND REALITY

Jesper Juul's 2005 book *Half-Real: Video Games between Real Rules and Fictional Worlds* is specifically concerned with determining the ontological position of video game worlds as well as virtual beings. As anticipated in the title of his work, Juul argued that the contents of video games can be both understood as real (if explored from a structuralist, ludologic perspective) and fictive (when embraced from the point of view of their aesthetic and narrative dimensions). This distinction in Juul's work is yet another trace of the already observed ontological ambiguity that appears to be endemic to simulations when analyzing their elements and behaviors through the lenses of traditional (pre-digital) ontological categories.

According to Juul, regardless of whatever a video game is, some part of it is more real than another. Interestingly, however, Juul never discussed or included in his argument the material dimension of what a video game is, nor explicitly defined what he meant when utilizing the term 'real'. In *Half-Real*, 'reality' is always introduced in connection with the systemic nature of games and – in at least a couple of occasions – Juul seemed to suggest that the concept of being 'real' relates to the ontological stability of some thing. In other words, the interactive contents of a video game (for example a game state or the interactive affordances and behaviours of a certain game element) can be considered real when they can be intelligibly experienced with a certain coherence and persistency.

Despite openly discussing ontology and the concept of 'reality' in their analytical works on simulation, neither Juul, nor Aarseth or Frasca clarified in their theoretical frameworks what it means for something to be real. It is my belief that this lack of context is not only detrimental to the full intelligibility of the work of all those three pioneers of simulation theory and game studies, but also inevitably made the question of the ontological positioning of simulations in relation to the actual world opaque. In order to ensure that a consistent part of the present study is not undermined by the same ambiguity, I believe it is necessary to provide a workable and solid enough definition of such a fundamental concept on which to anchor all the assumptions and notions that will follow.

One could be tempted to describe reality as something which is physically present, but this perspective would instantly raise two separate families of issues. In the first place, it iterates on the duality between the material and the immaterial which held philosophy of mind captive for nearly four centuries (think of Descartes's concept of the 'evil genius', see chapter 2, note 4). Secondarily, defining something as 'physically present', the problem of a solid and practical definition is effectively 'swiped under the rug' rather than tackled. Let me explain what I mean: in defining 'reality' as the property of being 'present', the nature of the problem we are posing assumes an aesthetical nature, rather than a ontological one. Instead of providing with an efficient and agreeable answer to the question, this second strategy defers the question to the definition of what being 'present' means in general or to some consciousness.

The largely overlooked and poorly understood question of "what does it mean for something to be?", as well as the non-critical acceptance of its associations with the concept of 'presence', were the springboards for one of the most original philosophical enterprises of last century: Heidegger's question of Being. In *Being and Time*, Heidegger criticized the definition of reality as something ontologically stable or as something sensorily present. For the sake of clarity and completeness, I will summarize the two respective arguments presented by Heidegger:

1. THE CASE AGAINST ONTOLOGICAL STABILITY: The first aspect of Heidegger's criticism problematizes the fact that no forms of ontological stability can be considered by itself a sufficient criterion to comprehensively define 'reality'. Ontological stability restricts the horizons of the definition of what reality is to only one aspect of the latter (namely its persistence, that is to say its conjoined aesthetical and causal endurance in time). This quality of human experience can only offer a standpoint which must be recognized as partial and limiting (Heidegger, 1962, 254 / SZ, 211). Heidegger considered this restriction to be unacceptable and not suitably matching the aspiration of providing an absolute and encompassing definition of what it means for something to be 'real'.

2. THE CASE AGAINST PRESENCE: In the second aspect of his criticism, Heidegger paid a tribute to Kant and the idea that the human sensory and intellectual equipment is a limited, partial tool to relate to reality and make sense of it. The inherent limitation of the human capability to reason, to perceive sensorily, to understand time and space and even to imagine simply cannot conjure a definition of reality which can be extensive. Heidegger stated, in fact, that there is no guarantee that the reality recognized by humans as ontologically present or not ontologically present for them corresponds to the total spectrum of reality: it is something the perception and understanding of which can be limited or not fully disclosed to our possibilities to perceive it (Heidegger, 1962, 254 / SZ, 211).

Following Heidegger's insights and his original phenomenological approach, I propose an understanding of 'reality' as a term which indicates the most basic level of existence: the fundamental background for the perception of phenomena and the development of ontologies[8]. As explained in the previous chapter of this study, for Heidegger a world is always a world *for someone* (or something capable of perceiving and relating to it): a set of impressions of other beings and relationships with (and among) them that depend on the individual's possibilities to perceive and elaborate it as well as on the individual's own scopes and moods (modes of being). The divide between *worlds* as (post)phenomenological constructions and *reality* (a primary and non sensorily-attainable level of existence) is evident in the distinction that Heidegger posited between the ontological level of beings, which presupposes a world experienced and understood via a characteristically human mode of existence, and the ontic level of beings, which is, instead, observer-independent (Heidegger, 1962).

In a general sense, and in line with the phenomenological tradition, in this text I embrace the term 'reality' as a primary and non sensorily-attainable level of existence. The distinction that I will utilize between the terms 'real' and 'actual' is a derivation of the understanding of 'reality' outlined above, where the term 'actuality' is utilized as "reality as disclosed by human beings." (Verbeek, 2005, 108) In this lexical convention, what is labelled as 'actual' is not understood as something that is merely potential or possible, but as something that is subject to property ascriptions and thus possible of being categorized in ontological structures. In other words, with the premise that sensory mediation must be considered mediation nevertheless, reality could be succinctly defined as 'that which is immediate'[9].

Having defined in the first chapter what a 'world' is, or at least what phenomenological understanding of the term 'world' I decided to employ in this study, the missing ingredient to

attempt a rigorous exploration of the effects of virtual worlds on human kinds of ontologies is that of elucidating what I indicate with the adjective 'virtual'.

3.3 – THE 'VIRTUAL'

Etymologically, 'virtual' derives from the Latin *virtualis* which is not a classical Latin term. It is a late-medieval neologism "whose existence became necessary when, partly via Arabic versions of Aristotle's works, his Greek concept of *dynamis* ('potentiality, power, quadrate') had to be translated into Latin." (Van Binsbergen, 1997, 9) The idea of potentiality at the etymological origin of 'virtual' provides the background for understanding why 'virtual', at least in one of its acceptations, indicates the latency of certain possibilities inherent in a world.

By definition, every simulation is characterized by the potentiality of virtual alternatives to its current state. An evident example of this latency can be recognized in the editorial arrangement and the consequent structuring of the literary content in Raymond Queneau's 1961 *Cent Mille Milliards de Poèmes* (see figure 3A). The interpretation of the adjective 'virtual' that refers to the potentiality of certain embedded possibilities can only be understood in the limited context of a single work of simulation or world. In such contexts, all the unexpressed potential of the combinatorial content of a simulation is 'virtual', while the only combination with the quality of presence is the only non-virtual state and it is commonly indicated as 'current' or 'actual'. As a direct consequence of what was just observed, a simulation which is not active or does not have a definite present configuration (for example, a closed copy of *Cent Mille Milliards de Poèmes*) has its range of virtual combinatorial possibilities completely available.

This first understanding of 'virtual' is particularly apparent in digital media content, that is characterized – paraphrasing the perspectives offered by Lev Manovich in the first chapter – as modular, interactive and self-organizing (Manovich, 2001). The combinatorial nature of digital content is particularly evident, for example, in the functioning of the kinds of software – or more specifically 'middleware' – such as 'video game engines' and 'level editors'. This kind of 'middleware' offers video game designers, level designers and digital artists the tools to configure finite sets of game elements from an existing assets-database into game worlds or sub-worlds (levels).

When players traverse and experience computer-simulated worlds, instant after instant their screens display the current 'states' of that particular world or sub-world. Each present 'state' of digital worlds has the inherent possibility of developing and changing in innumerable others potential configurations that have a perceivable logical (causal) connection with the present one. All the hidden paths, all the unexpressed possibilities offered by game worlds exist virtually within the way the software was designed and the possibilities offered by its affordances.

This first kind of digital virtuality can either take place in the form of prescriptive branches or of deeper, more flexible and interactively granular gameplay options. With regard to the latter, it could be useful to think, as examples, about multiple different ways to reach the end of a level in 'platformer' video games, where several alternative paths are viable, in time, for the player and multiple different gameplay approaches allow for progress in the game. Hybrid

combinations of the two interaction design approaches mentioned above are also possible and are particularly frequent and visible in recent video game titles – for example in *Capcom*'s *Resident Evil 4*, *Quantic Dreams' Heavy Rain* and *Bioware*'s *Mass Effect* series – where action-oriented gameplay is punctuated by chiefly narrative sections where the player is asked to perform choices between different branching of the plot, usually in the form of ergodic dialogue options or of 'Quick-Time Events'[10].

I believe that the virtual quality of video game content is particularly easy to recognize in the *Apple iPad* and *iPhone* video game *Gua-Le-Ni; or, the Horrendous Parade* that I designed, developed and released in collaboration with the Italian company *Double Jungle S.a.s.* (*Gua-Le-Ni* from now on) (Double Jungle S.a.s., 2011 – 2013). In *Gua-Le-Ni*, paper creatures walk across the finely drawn illustrations of an old bestiary. The impossible animal shown in picture 3B is a CA-BIT-DOR-STER: a four-module beast with the head of a camel, one body part of a rabbit followed by the mid-section a condor and concluded by a lobster's tail. From the player's perspective, the main goal of *Gua-Le-Ni* is to recognize the components of the animal monstrosities and their relative order before one of them manages to flee from the page (which consists in the game over condition). Mentored by an old, befuddled, British taxonomist, the players pursue this purpose by actively manipulating (rotating, moving and spinning) toy-cubes with images of animal heads and bodies on their faces. A paper beast is correctly recognized and thus prevented from escaping the bestiary – the possibility of being known – when the player manages to orderly match the illustrations on the top faces of the taxonomic cubes with the order and composition of the paper beast currently in play.

As already mentioned, during a game of *Gua-Le-Ni*, only one beastly combination is displayed at any given time. Each individual beast is generated by the game code and chosen among many other beasts which fit certain difficulty and solvability requirements. In other words, each specimen walking across the game is a combinatorial being: an instance of a virtual field of beastly possibilities. In the case of picture 3B, the CA-BIT-DOR-STER (walking towards a red apple) is the 'actual' beast, while tenths of thousands of analogue monstrous creatures are to be considered virtual in the sense that, in the instant when the screenshot was taken, they were possibilities within the combinatorial system that remained unexpressed.

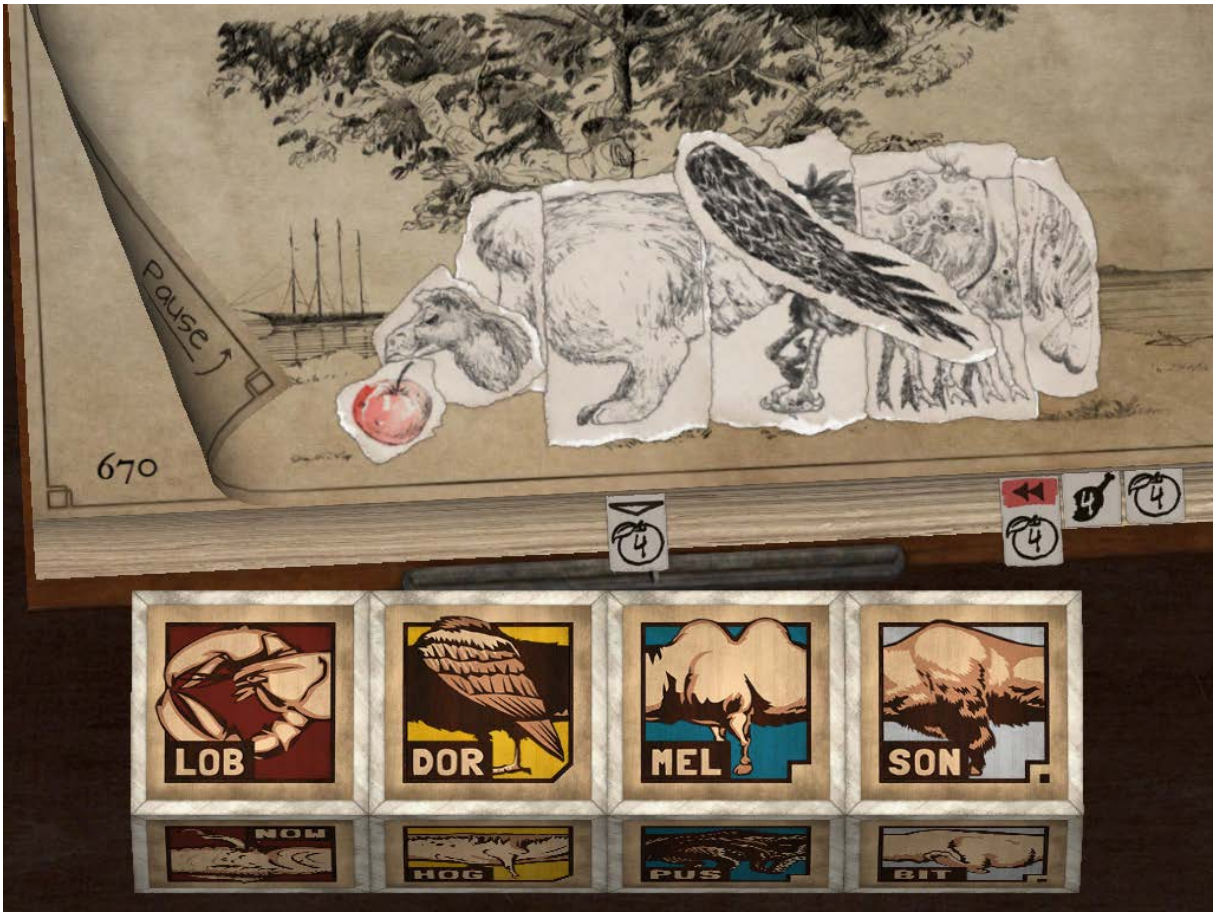

Figure 3B: A screenshot taken from *Gua-Le-Ni; or, the Horrendous Parade* (Double Jungle S.a.s., 2011 – 2013), showing a CA-BIT-DOR-STER parading across the screen (*iPad* screenshot used with authorization).

A second interpretation of the term 'virtual' is presented by Pierre Lévy as not in opposition to 'actual' in the sense of 'current' (presently existing), but to 'actual' in the specific meaning of 'pertinent to the world humans are native to' (Lévy, *Qu'est-ce que le virtuel?* in Goldberg (ed.), 2000, 161). This ulterior aspect of the definition of 'virtual' cannot be understood in the restricted context of a single, self enclosed world (as was the case with the first meaning), but requires the concurrent existence of more than one worlds, at least one of which needs to be indexed as the 'actual' one. Proposing an analogous interpretation, Michael Heim, as mentioned before, defined some thing as being 'virtual' when that thing is actual "not in fact, but in effect." (Heim, 1994, 109 – 110) Interestingly, the beasts that are not currently in play during a game of *Gua-Le-Ni* are virtual in both senses.

In this second meaning, Queneau's book is not 'virtual', but objectively real (see Figure 3A). The world that can be experienced in the video game *Gua-Le-Ni* is not only physically and behaviourally unworldly, but is ontologically independent from the world humans experience in their everyday life. Playing *Gua-Le-Ni*, the digitally simulated environment responds to human interaction and gives feedback to the player, but both of these actions are materially present to the players and are persistently intelligible to them. The environment where the playful taxonomy takes place must be recognized, according to the postphenomenological definition of world provided in the first chapter of this study, as a virtual world. Virtual

worlds are digital, artificial systems that are characterized by the qualities – largely depending on their computer mediation – of being modular, interactive and self-changing. Digitally mediated simulations grant access to the perception and the interaction with such worlds that, regardless of their virtual constitution, can disclose interactive experiences which are perceptually and cognitively effective.

All technologies can be interpreted as mediators: extensions of our biological possibilities for observing, understanding and interacting with reality, as notably contextualized – among others – by Ernst Kapp and Marshall McLuhan (Kapp, 1877; McLuhan, 1994; McLuhan, 2008). From a Merleau-Pontyan account of incorporation, Gordon Calleja proposed in his 2011 book *In-Game: From Immersion to Incorporation* a similar vision about the enhancement of the horizon of human cognition and of what Merleau-Ponty called "motor intentionality" (Merleau-Ponty, 1962). Calleja, however, did not understand this anthropological dynamic as the external 'extensions of man', but rather as the introjection of new, digital possibilities to relate to reality (Calleja, 2011). Regardless of which interpretation of the anthropological dynamic outlined above, it is a widely accepted statement the one according to which computers deepened the possibility for humans to investigate and act in the 'actual' world; particularly obvious instances of such extensions can be observed in the cases of a particle accelerator or the machinery necessary to pilot and track a space-shuttle. Next to computer applications practically oriented towards understanding the 'actual world' and interacting with it, the simulative applications of the digital medium affords human beings (or any being capable of meaningfully interacting with them) with a fragmented multitude of independent, digital worlds to expressively constitute, functionally structure, aesthetically explore and meaningfully interact with.

It is from this double cultural function of digital mediation, in analogy to the double cultural function of the sign as explained by Foucault and already outlined in the second chapter of this study (see chapter 2, note 7), that I propose a perspective according to which computers profoundly altered human beings in the sense that the interactive experiences of virtual worlds widened (and distorted, and fragmented) the horizon of possibilities in which they can structure their relationships with reality.

3.4 – FROM 'THROWNNESS' TO 'PROJECTIVITY'

At the dawning of philosophy of technology, a conceptual dichotomy between the concepts of 'tool' (or 'equipment) and that of 'technology' often served as the basic ontological standpoint to explore the mechanization of the world. This is the case, for instance, of Heidegger and French philosopher and sociologist Jacques Ellul (cfr. his 1964 book *The Technological Society*). From their standpoint, tools were recognized as offering direct (transparent) and proximal relationships with the world, whereas technology was understood as a quasi-inscrutable set of processes which, by its very own 'opacity', distances human beings from things and promotes an understanding of the world as an objective set of resources that can be used with a practical purpose in mind. Heidegger, in particular, structured his thought on technology before the proliferation of computers and prior to the cultural shift that they brought about. Concordantly, he could not fully anticipate the advent of a technology capable of extending and fragmenting the human possibilities for perceiving and understanding a multitude of virtual worlds and for interacting with them.

From a postphenomenological point of view, and despite their strongly mediated nature, several aspects and qualities of the functionalities of telepresence, artificial intelligence and digitally mediated simulations can be considered indistinguishable from the involvement with the world that Heidegger qualified as 'original'. To begin with, as argued by Hubert Dreyfus, experience and direct agency can now be part of both. Dreyfus also added that "so far as its psychological and (to some degree) moral significance are concerned, (the digital dislocation of human experience) lies on a continuum with ordinary, veridical, proximal experience." (Dreyfus in Goldberg, 2000, 79)

Similarly, De Mul argued in his 2010 book *Cyberspace Odyssey* that, for the individuals involved in simulations, video games and virtual realities, the digital environments they experience

> "[…] possess a reality that transcends the traditional opposition between reality and illusion. […] This appears to justify the prediction that the domestication of information, in a much more radical manner than the domestication of matter and energy within the mechanistic world picture, will lead us into a new world, or, to be more precise, into a multitude of new worlds, connected in multitude of ways with the physical world." (De Mul, 2010, 123)

The term 'ontology' is employed in the context of this study in a postphenomenological way, meaning that it is utilized to indicate a form of knowledge and 'doing' within a world which presupposes an inextricable relation with the world itself and is characterized by biological and historical dimensions. According to this interpretation, ontology can only offer a partial and derivative perspective on reality that cannot aspire to traditional epistemological goals such as absoluteness or objectivity. The consequent, and necessarily derivative, involvement with reality is what generally defines the notion of a 'world' in the continental tradition and in the phenomenology-related currents of thought in particular (also see chapter 1.3, points 1 and 2).

Resorting to Heidegger's terminology, human beings are characteristically 'thrown' in the world with a definite cognitive structure which corresponds to a certain characteristic understanding of space and time. In his work, Heidegger focused on what he considered to be the defining limitation of human being: being finite and bound to a specific an linear understanding of temporality. Heidegger acknowledged, however, that this fundamental quality of human existence is not the only boundary to their initial freedom: they are also obviously restricted by several other contextual aspects of their 'thrownness', for instance their spatial extension, the place and time of their birth, their consequent cultural and economic background, not to mention individual imperfections such as a poor hearing, colour blindness *et cetera*. 'Thrownness' indicates precisely the ineluctable facticity of one's existence (Heidegger, 1962, 173 – 174, 249 / SZ, 135, 205). In synthesis, in Heidegger's existential phenomenology, being human is always understood a combination and a compromise between the inescapability of one's 'thrownness' and the flexibility of one's 'projectivity', where 'projectivity' refers to a being's opening to the world in terms of possibilities of Being (Heidegger, 1962, 184 – 185 / SZ, 145) (also cfr. chapter 1.3, points 3, 4 and 5).

From a modal realistic perspective, digitally mediated simulations, allow for experiences and interactions that are necessarily unworldly (in the sense that they are ontologically and spatio-temporally separated from the one humans share as biological creature in their everyday lives) but that are, at the same time, perceptually effective. In conclusion, from the proposed postphenomenological framework, the digital medium can be understood as an ontological machine that affords the experience of worlds. With regard to the perspective adopted, it is interesting to notice that the modern modal sciences like synthetic biology, artificial life and artificial intelligence are branches of human knowledge which no longer primarily aim at the categorical description of nature or at the imitation thereof, but rather work in the direction of the creation of a new (a second) nature, the emergence of new worlds.

In the extract cited in the introductory chapter, Czech-Brazilian philosopher Vilém Flusser observed that the present cultural shift towards modality, that perhaps could be recognized as having reached its maturity with interactive digital simulations, has a profound ontological significance. According to Flusser, the change will allow humanity to progressively emancipate itself from its confinement to the 'actual' world and from the oppression of an exclusively subjective approach towards it (cfr. chapter 4.4 and chapter 5.3). This aspect of Flusser's thought is compatible with the perspective on digital media proposed by this study. I believe, however, that a literal embracing of his vision could easily be, and perhaps accurately so, accused of being naïvely utopian. Allow me to explain what I mean.

As previously observed in the 'theory of technological momentum', socio-cultural determinants participate to varying degrees in the different stages of the development and the establishment of a new technology. Similarly, in certain epochs – in the context of the development of socio-cultural processes – aspects connected to human 'thrownness' have a prevailing influence over those related to the opening of new possibilities. Other periods are, instead, characterized by a more balanced contribution of the two dimensions, and – finally – there are stages in the development of socio-cultural dynamics in which the projective qualities and activities of human beings are the dominant factors of change. This dissertation does not propose an understanding of history as being determined by technological development nor an understanding of humans as beings who will ever have the possibility to 'liberate' themselves from their finitude or the fundamental limitations of their possibility to develop and organize thought. It however understands this particular moment in the process

of Western civilization as one in which human projectivity is the dominant background upon which human beings and technology are mutually constitutive in their fundamental interrelation.

[1] In Russell and Norvig's exposition, what defines 'success' for an artificial intelligence bears an evident inspiration from similar perspectives in the field of game theory and is voluntarily treated in vague and general terms in their text.

[2] The initial observation that motivated my 2013 web-based critical game, *Necessary Evil*, is the following: the interactive worlds of video games materialize an idealistic perspective on reality.

According to a radical version of idealism, the qualities that we can encounter in objects (regardless of their actual or digitally mediated nature) are not objective properties that they possess 'in themselves'. The very existence of such objects is not an inherent property of theirs. It is our experience of such objects – for example in George Berkeley's subjective idealism – that is responsible for bringing them and their properties into existence as mental contents.

From a game design standpoint, video games and their worlds are customarily shaped with a certain player-experience in mind. Following an analogue approach, from the perspective of software architecture, video game worlds are literally materialized around the player's possibility to perceive them or interact with them: objects in the world that are too far from the player, whose sight is occluded by other objects (or that are momentarily irrelevant for gameplay) literally do not exist as far as the game states are concerned. This digital version of an idealistic mindset has the blatant functional scope of limiting the amount of calculations that are needed to suitably materialize the game world by a computer. Technically speaking it is a desirable, if not necessary, evil.

I believe that the idealism that characterizes the experience as well as the technical realization of video game worlds can also be recognized in the recently popularized argument according to which a game is not a game until someone plays it.

Necessary Evil problematizes and demystifies the unquestioned idealistic structuring of video games and ridicules the player-centrism of video game worlds. Game-design-wise, this is principally pursued by having the player control a contributory character: a generic and disposable evil minion. Following established conventions of the games industry, the evil minion will be a marginal character who plays a secondary role in the process of another character: the hero. In *Necessary Evil* the hero, who is habitually the playing character around whom the video game world and its narrative revolve around, will be a non-playing character. Playing a trivial creature that is trapped in a dungeon and is deprived of any meaningful interactive possibilities is meant to make the player experience feeling marginal and to reveal what a virtual world feels like, once it is designed around someone else's perceptions and desires

[3] If a social constructivist standpoint were to be embraced with regards to simulations, De Mul observed in one of our conversations, then they would need to be recognized as a social necessity that preceded the advent of the computers, a need that could be identified as having historically expressed itself in the form of board games, ergodic literature, pre-digital database aesthetics. The attempt of the French group *OuLiPo* (acronym for *Ouvroir de Littérature Potentielle*, Workshop for Potential Literature) to disengage literature from meaning, authorship, interpretation and even prescribed way of reading can be read as a particularly obvious example of the recognized cultural shift towards a simulational mindset.

[4] For a more detailed treatment of the two outlined and competing models to understand the social role of technology (as well as the instrumentalist approach, which was not openly taken into consideration by Hughes), please refer to the introductory chapter of this research, subchapter 1.2.

[5] Revelatory examples of such tendency and concern can be spotted in cross-media products such as *2001: A Space Odyssey* (novel and movie, 1968), the literary production of William Gibson, video games like the *System*

Shock saga (*Looking Glass Studios* / *Irrational Games*, 1994 – 1999), books, graphic novels, games and animations pertaining to the universe of *The Matrix* (*Andy and Larry Watchowsky*, 1999 – 2003), the scholarly work in the field of digital media of Pierre Lévy and Gilbert Simondon, *et cetera*.

[6] It might help to observe here that the (digitally aided) overcoming of traditional ontologies proposed by this study, that is to say ontologies which came from a stable and traditionally mediated relationship with reality, has several points of contact with the methodologies and aspirations of several post-humanistic currents (and, in particular, with transhumanism) but does not necessarily share its techno-optimistic attitude. This specific aspect of my work will be discussed in more detail in the next chapters of this text.

[7] I decided to employ the term 'context' instead of 'space' in relation to the understanding of the concept of 'world' proposed by this research in order to render the definition suitable also for ergodic media. Part of the abstract and encompassing definition proposed aimed precisely at embracing the persistent, intelligible and interactive environments that can be experienced with ergodic media as worlds. The choice of the term 'context' over the more specific 'space' is intended to make the definition of 'worlds' applicable also to interactive experiences which often do not feature any explicit spatial dimension, such as textual-adventure video games, book games, card games, paper-based role-playing-games, *et cetera*.

[8] An analogue understanding, overtly inspired by Heidegger's work, was proposed in Jean Paul Sartre's 1943 book *Being and Nothingness*. "Consciousness is the revealed-revelation of existents", he wrote, "and existents appear before consciousness on the foundation of their being." (Sartre, 2010, 18)

[9] An interesting definition of 'reality' that also aligns with the tradition of metaphysical thought in pointing out how sensations and impressions are neither sufficient nor necessary conditions to determine the objectiveness of any phenomenon was provided by Philip K. Dick in 1978. According to Dick "[r]eality is that which, when you stop believing in it, doesn't go away." (Dick, 1978)

[10] Quick-Time Events (QTE) are characteristic interactive sections of video games that are featured less and less frequently in contemporary titles. It is my understanding that such gameplay techniques fell out of favour due to their often abstract nature, their removing the players' direct control over the playing character and the consequent difficulty to coherently and elegantly integrating them in the game-world without damaging its behavioural consistency as well as the depth of the players' immersion.

CHAPTER 4: Mediaphysics and Augmented Ontologies

In his work, Argentine author of philosophical reveries and literary criticism Jorge Luis Borges often insinuated imaginative alternatives to the univocal and customary way Western thought understood and represented the world. In a short story titled 'The Analytical Language of John Wilkins', for example, Borges informed his readers that in 'a certain Chinese encyclopedia' (the 'Celestial Emporium of Benevolent Knowledge') the animals are divided into:

> "(a) belonging to the Emperor, (b) embalmed, (c) tame, (d) suckling pigs, (e) sirens, (f) fabulous, (g) stray dogs, (h) included in the present classification, (i) frenzied, (j) innumerable, (k) drawn with a very fine camelhair brush, (l) *et cetera*, (m) having just broken the water pitcher, (n) that from a long way off look like flies."[1] (Borges, 2001, 231)

A vertiginous ontological chasm separates the fictional taxonomy of the Chinese encyclopedia and the scientific cataloguing of fauna initiated by Carl von Linné halfway through the 18th century. In the face of the incongruence between the two epistemological approaches, Michel Foucault commented that Borges's fabulous categorization demonstrates, through the "exotic charm of another system of thought", the "limitation of our own, the stark impossibility of thinking *that*." (Foucault, 1994, xv)

In her 1996 essay 'The Time of Being and the Metaphysics of Presence' (referencing Heidegger's 1975 writing 'The Basic Problems of Phenomenology'), Carol J. White noted that within Borges's taxonomy "[a]n animal could change categories moment to moment or fall into more than one of these 'species' at once depending on its relation to the viewer, current activity and so forth." (White, 1996, 148) Focusing on Heidegger's understanding of the 'temporality of Being', White emphasized that the ontology which underlies the categorization presented by the 'Chinese encyclopedia' diverges radically from the aspiration to the univocality, consistency and stability of knowledge which characterizes and guides Western metaphysics and scientific thought.

White considered it to be particularly illuminating to observe such discrepancy through the lens of Heidegger's thought, focusing her attention on the defiance of the temporal stability of the traditional categories of Western metaphysics. Presenting the reader with taxonomic categories which are often impermanent or accidental ("belonging to the emperor", "frenzied", "having just broken the water pitcher"), the fictional metaphysics outlined in the 'Chinese encyclopedia' derided the aspirations of Western metaphysics for describing reality in a manner which is extensively consistent and temporally stable. In the words of Carol J. White, the 'Chinese encyclopaedia' categorizes animals in a way "that it involves no enduring Being of what-is united across past, present, and future or specifiable in every 'now'." (White, 1996, 148) The discrepancies between the 'Celestial Emporium of Benevolent Knowledge' and Western thought are, however, not limited to temporality. As an especially revelatory example, Borges's fantastic taxonomy distinguished certain beasts from others on the basis that "from a long way off look like flies", offering a

classification that, instead of striving for absoluteness, is relative to the spatial rapport between the animals and the observer. If this were not enough already, in the previously mentioned passage of 'The Analytical Language of John Wilkins', Borges stated that a possible metaphysical categorization of animals could rely on their being "drawn with a very fine camelhair brush", violating the traditional ontological hierarchy between beings and their representations.

In synthesis, Borges's insubordination to traditional metaphysical assumption consists in providing fictional, imaginative alternatives to the way humans customarily give order to the world and functionally relate to it.

The exhilarating and though-provoking ontological possibility evoked by the 'Celestial Emporium of Benevolent Knowledge', has additional qualities which can be recognized as inherited by the media through which they are articulated. In the case of Borges's fictional world-views, they are shaped around the limitations of written text, among which – most evidently – their being bound to certain semiotic codes, their being unchanging, non-interactive and impossible to be experienced phenomenally. Before tackling the central topics of this chapter, which is to say the relationship between the expressive constraints of different media and their possibilities for the 'overcoming' of traditional metaphysics, I believe it is important to posit a distinction which will be foundational for constructing an ontological perspective to digital media. The distinction I would like to elaborate on is that between the concept of 'simulation' and that of 'fiction'.

From the postphenomenological standpoint embraced in this study, digital simulations need to be recognized as artefacts capable of granting access to perceptually stable, self-changing and interactively intelligible virtual worlds. Such worlds are, in general, causally and spatio-temporally independent from those that humans share as biological creatures, although depending on it for their existence in what could be largely defined as a parental relationship. This fundamental physical, logical and aesthetical divide between a simulated world and the one labelled as 'actual' is evident even when simulations are overtly designed with the scope of mimicking or reproducing certain worldly phenomena: the possibility to pause and restart a simulation and the chance afforded by the simulative mindset of changing behaviours and parameters within the simulated worlds themselves are just a few manifest examples of the fundamental un-worldliness that characterizes simulations. Despite their evident incongruities when compared to the actual world, virtual environments can be defined as worlds due to the persistence in their perceivability and the possibility they offer human beings for forming stable and intelligible relationships with its beings (cfr. chapter 1.3, point 1). In this way, the simulated worlds of video games and virtual reality applications allow for user experiences which are virtual in the sense explained in the third chapter: real not in fact, but in its experiential and cognitive effects.

This specific quality of simulations – and of digital simulations in particular due to their potential granularity and complexity – sets them apart from the fictional alternatives to the world presented by traditional media. As for simulations, linear and non-interactive media of communication can disclose experiences which are also nominally independent from the actual world, but that are inescapably subjective and cannot be recognized as emerging from the relationship with a persistently

materialized and intelligibly interactive context: an objective world. As such, simulated experiences must be identified as holding a different ontological status than the ones offered by traditional media whose influence – relying on subjective imagination – remain confined within the boundaries of fiction. It is consequently relevant to begin this exploration determining which forms of mediation could be embraced by the postphenomenological framework of this study as capable of influencing the way humans perceive, organize and communicate information about the world.

In ancient Greece, only one word, *techné*, was used to denote both 'craft' and 'art'. From the onset of Western culture, the creations of craftsmen and artists depended on the mastery of specific tools. Since the coining of the word *techné*, art and technology have gradually developed in separate fields. De Mul observed, however, that the contemporary artists are no less reliant on technological instruments than their prehistoric predecessors and this is especially obvious in the case of the development of virtual worlds (De Mul, 2010, 139).

It is relevant to point out that Martin Heidegger proposed, in his 1938 essay 'The Age of the World Picture', a critique to the modern understanding of the Greek concept of *techné*, which he accused of being superficial and unfaithful to its original meaning. In the same essay, Heidegger explained that, in ancient Greece, *techné* denoted an epistemological approach:

> "[t]echné, as knowledge experienced in the Greek manner, is a *bringing forth* of beings in that it *brings forth* present being as such out of concealedness and specifically into the unconcealedness of their appearance; *techné* never signified the action of making." (Heidegger, 1977, 59)

Even earlier, as already discussed in the second chapter of this study, Heidegger's 1936 essay 'The Origin of the Work of Art', Heidegger presented the work of art as a specific artefact endowed with the potential for disclosing worlds, for opening up new ways in which reality can 'unconceal' itself. (Heidegger, 2008) "[T]*echné* belongs to bringing-forth, to *poiesis*; it is something poetic." (Heidegger, 1982, 13) The way in which art can engender such disclosure was never explicated in detail in his work, however its potential for experientially influencing the way human beings structure their relationships with reality (and thus allowing for the emergence of new worlds) was overtly recognized by Heidegger as the cultural role of artistic as well as poetic production.

The 1951 text 'Building, Dwelling, Thinking', written in the later phase of Heidegger's thought marks the following step in his development of the relationship between artefacts and thought. In 'Building, Dwelling, Thinking', Heidegger attributed the capability to "let come into being" and disclose worlds – reserved exclusively to artworks in the earlier phases of his thought – to all things (Verbeek, 2005, 89). I believe it is worth noting here that the Latin origin (*ars*) referring the practical dimension of 'doing' is something that the terms 'art' and 'artefact' have in common.

This dimension of the cultural role of artefacts is lost in Heidegger's subsequent focus on the development of a philosophy of technology. The later phase of his work, in fact, rarefied his understanding of technology to a 'zeitgeist', reducing *techné* to its transcendental conditions of possibility (what technology requires and presupposes as an abstract concept) and failing to connect it with specific, technologies and their practical affordances.

This study explores the role of *techné* (in particular in its digital manifestation) as an influential factor of socio-cultural change. However, in order to avoid the pitfalls of a transcendental and pessimistic understanding of technology, I decided to take an approach that diverged from the seminal path laid by Heidegger and that can be defined as postphenomenological. Such perspective is expected lead to a more balanced and constructive understanding of the role of technologies as mediators between human beings and reality.

4.1 – THE POTENTIAL OF PRE-DIGITAL MEDIA FORMS FOR INFLUENCING TRADITIONAL METAPHYSICS

Plato, whose thought and work lie at the very core of the Western metaphysical tradition, understood art as a second-order imitation (or *mimesis*, as will further be discussed in sub-chapter 6.5) (Plato, *Republic*, 605). Surprisingly, though, it was also within the Platonic tradition that alternative perspectives to the Platonic, mimetic conception of art was first proposed. In Plotinus' *Enneads*, for instance, works of art do not merely copy the already imperfect beings that can be encountered in the world, but operate next to the world: they materialize and express the artists' visions (*Enneads* I 6.3; V 8(31).1). As a consequence of this shift of perspective, the artists were no longer perceived as earthly craftsmen, but rather as somebody whose creative and socially valuable activities could be compared to those of the philosophers.

The passage from art understood as *mimesis* (imitation) to art understood as *poiesis* (creation) is particularly obvious in the tradition starting from Romanticism, where the artist openly replaced God (also figuratively) as creators, originators of new worlds (De Mul, 2010, 155). Gregory L. Ulmer analogously argued that modernism, especially via the use of techniques such as collage and montage

> "[…] does not reproduce the real, but constructs an object […] or rather mounts a process […] in order to intervene in the world, not to reflect but to change reality." (Ulmer, 1983, 86 in De Mul 2010, 155)

The aesthetical strategies adopted by Dadaism are exemplary with regard to the original expression of new visions of reality which assertively challenge the figurative canons that preceded modernism. It is, in fact, not uncommon for the works produced within this artistic current to feature uncanny compositions that implement multiple representation techniques, often logically and aesthetically incongruent with each other (see Figure 4A).

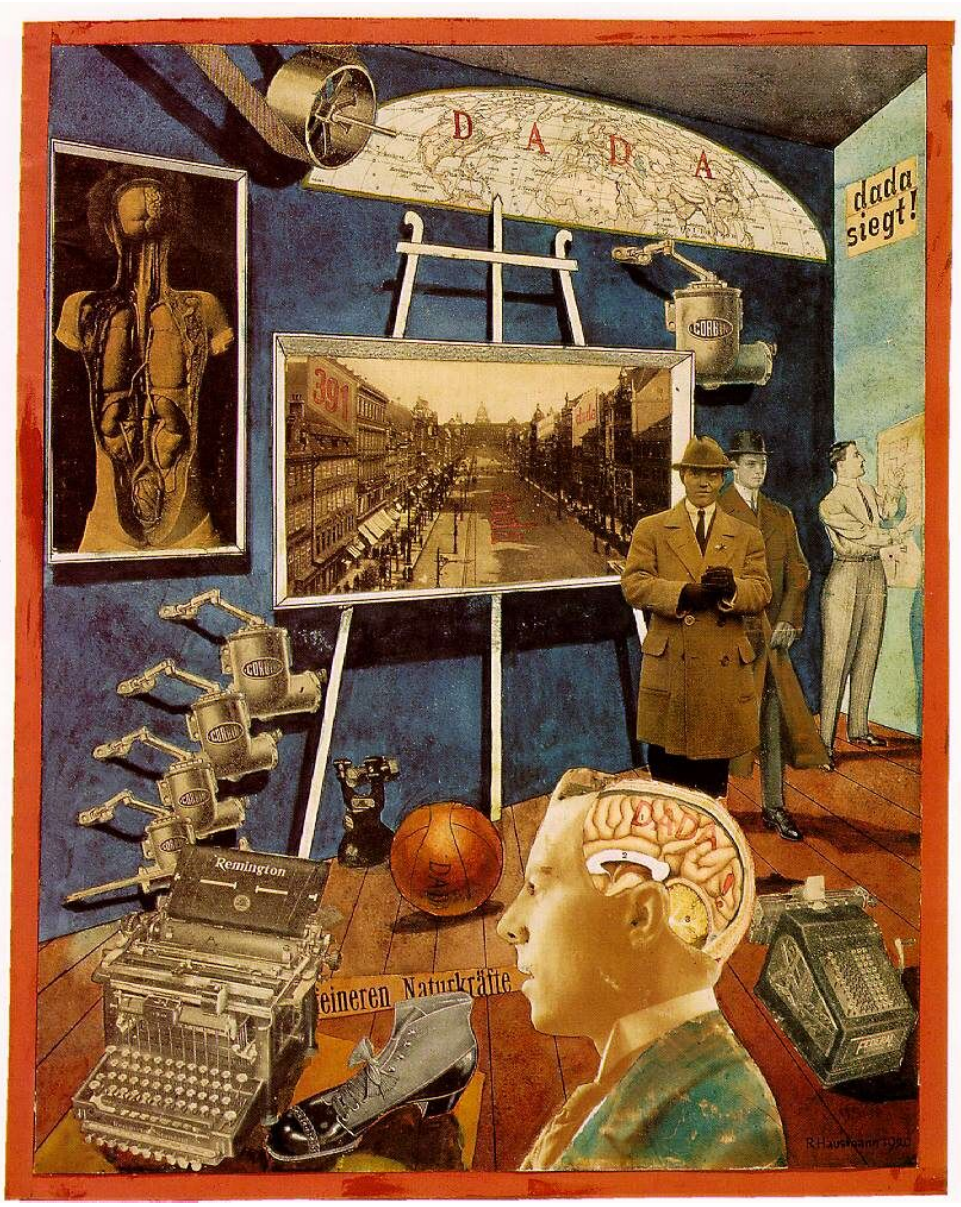

Figure 4A: Hausmann, Raoul, 1920, *Dada Siegt*, Watercolor and collage on wove paper mounted on board, Overall 23 5/8 in. x 17 3/4 in., Private collection.

Dada's artistic objective was admittedly that of weakening the totalizing grip of the traditional, means/end rationality on Western culture. Such intent was to be pursued by means of the distortion and decomposition of traditional aesthetics, the subversion of social canons and norms and the evocation of aesthetical possibilities non compatible with the sensory perceptions that humans can natively derive from the actual world (Gualeni, 2007; Gualeni 2013). The artistic production of Dadaism challenged traditional representational principles, and thus (metonymically) the way the world was commonly understood through the mechanistic sciences. The general insubordination of modernistic movements to the univocality and stability of the Western tradition of thought as well as the use of artistic expression as a catalyst of social change was explicitly avowed in their manifestoes[2]. Dadaism's rebelliousness to social and artistic convention was a precursor and an inspiration to radical avant-garde currents like Surrealism[3] in the fine arts or the current of Expressionism most

particularly in cinema (Chipp, 1968, 394). Theories on intellectual liberation via aesthetical appreciation arguably played a vital role in the social agendas of several strands of the artistic *avant-gardes* of the twentieth century and left a conspicuous trace in both the philosophical and literary production of the same period.

Philosophers and aesthetics scholars of the last century such as Hans Robert Jauss, a pupil of Heidegger's, Jacques Ellul or the later Heidegger himself, explicitly structured their work on technology as a reaction to the commoditization and alienation of human existence that they observed in the mechanization of work, transportation and in the general diffusion of technological mediation in social processes. From their technologically deterministic perspectives, the progressive objectification of the world appeared as the gloomy destiny of humankind. As a possible alternative to the technological mindset, they often proposed the free encounter with art as a means to achieve liberation from the canons and limitations of our system of thought. Albeit passively experienced, traditional forms of artistic expression were considered to hold sufficient rhetorical power to detach people from their everyday and functional existence and lead them into a freer realm of sensory appreciation (Panza, 2002).

At this point in the development of my argument, I consider it important to identify two parallel ideologies that contributed to the creation of this early 20th century myth:

- The first ideological framework, focusing on the removal of the individual from his customary and functional social context. This perspective on the socio-cultural role of art in the first half of the 20th century relies on the possibility of the work of art to stimulate a process which could be defined as one of 'estrangement' or 'distancing'. This perspective stemmed from the belief that cultural production is capable of suggesting the possibility for the world to be different than what it is. This position is shared, as already observed, by Heidegger's early stance in relation to the cultural role of the work of art. From this standpoint, the work of art can be understood as a socio-cultural instrument aimed at liberating the individual from the conventions and the practicality of everyday life. In a discussion about strategies of aesthetical reconfiguration, Italian epistemologist Silvano Tagliagambe observed that the role of modern art as a method of de-familiarization was probably first recorded by Russian critic Viktor Skolovskij. According to Skolovskij the goal of any aesthetic experience was that of revealing familiar, everyday details under an unusual angle, thus forcing the observer to see them for the first time instead of recognizing them. Such purpose was pursued in a particularly explicit fashion by the Russian constructivists through photography, installations, paintings and prints which focused on various (and often dynamic) combinations of mechanical parts, geometric cardboard shapes, and Cyrillic letters. The deconstruction of the shapes and structures that customarily pertain to reality imposes, according to Skolovskij a new perspective on things which is oriented towards the 'possible'.

- The second ideological framework takes an antithetical approach in relation to the first one. The salvific and emancipating potential that this perspective recognizes in art relates to its original meaning of 'doing' and is grounded in

> the belief that crafting, the expressive production of an object or a product, could lead the individual involved in the creative process to the establishment of a more direct and genuine engagement between himself (or herself) and the world. This vision opposed the encroaching and 'distancing' mechanization of the world: manufacturing, the active individual involvement with cultural production, was often embraced as a remedy to the already mentioned means/end rationality which underlies traditional Western metaphysics and scientific thought. According to this second ideology, art was considered to be infused with the power not only for realizing the liberating, creative potential of the author, but also of allowing things to manifest themselves in their 'real essence' to its potential recipients. According to an analogue perspective, the emancipative capabilities of artistic expression was also believed to reside in the bodily (non-mediated) and active re-appropriation of the world and in the consequent recuperation of what was believed to be 'authentic humanity'. Fauvism, the work of Paul Gauguin, the general fascination of modernism with tribal art and nudity, phenomena of regressionism in social production such as body art, land art and arcology are clear examples of this second myth at work.

Twentieth century theories of aesthetical liberation from the habitual relationship with the world (or rather its functional objectification) like the politically utopian vision of Herbert Marcuse, inevitably attributed the power to deeply affect human thought to traditional media of representation. 'Pataphysics and the Theatre of the Absurd are particularly evident cases in point of how such awareness distinctively affected the cultural production of last century.

Such aptitude for proposing alternatives to the way in which humans understand and relate to reality is not solely pertaining to literature, theatre, painting or to Dadaist techniques such as those of collage and photomontage. Besides the already mentioned case of German Expressionism, the movie production of David Lynch is an often cited and manifest aesthetical defiance of metaphysical conventions, as well as narrative ones. Similarly, the movies by Katsuhito Ishii are evident examples of how the moving picture is not an exception among traditional media of representation with regard to their possibility to present visions of fictional alternatives to the way humans relate to the world in their everyday existence. The same logic applies – for example – to ballet. In the last century, ballet proved capable of choreographing fictional world-views which are drastically different from the ones that human beings are able to experience in their customary and unabridged involvement with the actual world. One evident example of these possibilities in dance can be identified in the abstract, moving geometry of Oskar Schlemmer's 1922 *Triadic Ballet*[4]. The observations extended to dance are equally valid for all other traditional media, which consequently need to be recognized as capable of representing world-views as well as their distortions, subversions and fragmentations. Such quality of traditional media characterizes the combinations of traditional media as well like, for example, the unsettling and absurd illustrated novels of Edward St. John Gorey (see figure 4B).

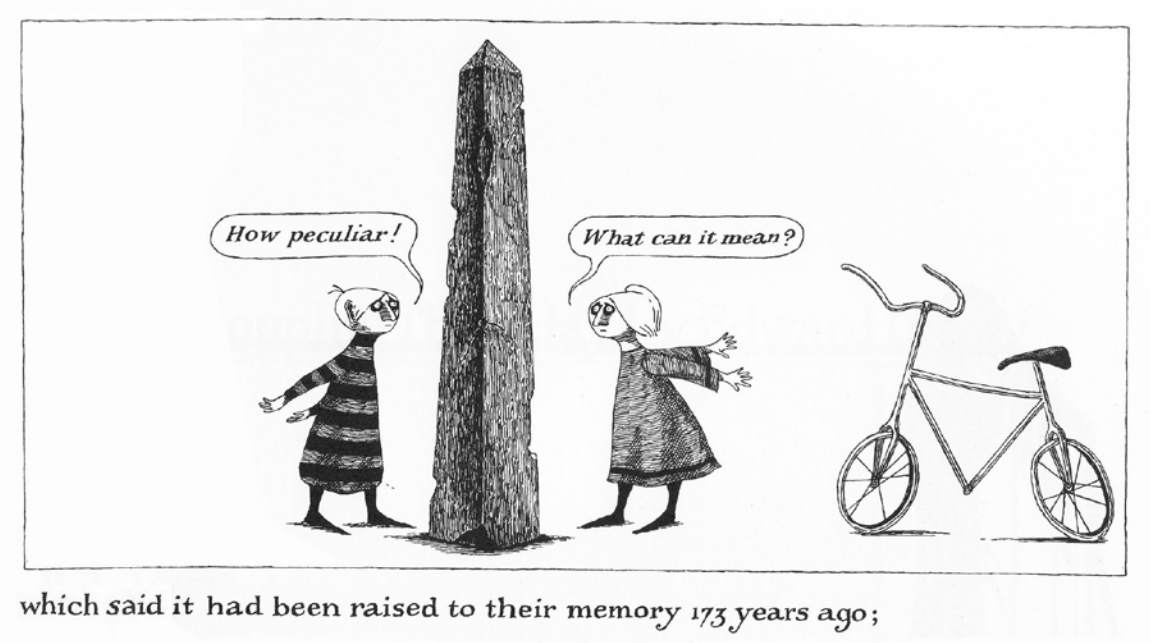

Figure 4B: Edward Gorey's *The Epipleptic Bicycle* (1969), Plate 29. Embley and Yewbert return home to discover there was nothing to be seen apart from an obelisk which had apparently been raised to their memory 173 years before.

As already mentioned, the central theme of the literary work of Jorge Luis Borges reflected on the capabilities of literature for suggesting imaginative alternatives way to understand, categorize and imagine worlds. As can be surmised by the title of his most critically acclaimed book, *Fictions* is a collection of non-interactive, literary infringements of traditional metaphysical conventions. His novels could be described, using the author's own words in 'Tlön, Uqbar and Orbis Tertius', as "[…][t]he conjunction of a mirror and an encyclopedia": a deliberate and deceptive use of the possibility of the textual medium not only to embed re-presentations of the world, but also for abstracting, replicating and distorting such representations. In other words, text, as well as any traditional form of mediation, not only can describe[5] what is actual, but can fictionally – and thus subjectively – evoke what could be possible.

According to the postphenomenological approach embraced by this study, the limitations inherent to text as well as any other representational medium would disqualify them as instruments capable of influencing and altering human kinds of ontologies. The reason for this exclusion lies in the very postphenomenological acceptation of what an ontology is: the rationalization of the mutually constitutive relationship between a being and a world. What I am arguing here is that the experiences and sensations evoked by representational forms of mediation do not amount to a world according to the definition embraced by this study and explicated in the first chapter of the present text. This is due to the fact that the beings represented in traditional media are neither characterized by the objective perceivability nor by their capability for establishing stable (and possibly interactive) relationships with the subject engaged with the various media. Not having the possibility to effectively materialize worlds, traditional media cannot be expected to ever engage a subject at the ontological level. The subjective and representational

horizon of traditional mediation defines, instead, the boundary of the concept of 'fiction'. Heidegger manifested the same understanding of the specificity of representational media in the 'Memorial Address', where he described how human beings are being entranced by films and radio shows and given "the illusion of a world that is no world." (Heidegger, 1966, 48)

Having observed how, in general, traditional forms of mediation cannot be properly considered ontological instruments, it is important to also mention the fact that less conventional and more flexible uses of the textual medium were attempted and experimented with in the past century. For instance combinatory literature and gamebooks managed to not only overcome the traditional limitations of the textual medium such as those of linearity and stability of textual compositions, but pioneered the exploration of the boundaries of the simulational mindset. Such literary experiments are often cited as tangible expressions of a society whose values, whose needs and whose technological environment were inexorably changing.

Still in the context of the non-traditional, simulational possibilities of text, it is certainly worth mentioning the work of cultural theorist Jean Baudrillard. In the second half of the last century, Baudrillard produced a suggestive and influential literary body that, similarly to Borges's, questioned and defied the relationship between reality and its representations. Unlike Borges, Baudrillard did not offer fictional infringements of conventional understandings of ontology, instead he simulated theoretical frameworks relying on the possibilities and on the ambiguous cultural positions of signs (the 'double standard' discussed by Foucault in his 1966 *The Order of Things*). Baudrillard utilized text to craft books and essays that had only the appearance of referring to an alleged reality, but in fact had no connection with any other system other than their internal semiotic logics. Confusing his readers into believing his constructions and insights referred to actual things, Baudrillard created the literary space for the simulation of an analysis to happen. Falling into his linguistic trap, the academics who criticized his texts, elaborated on his theory or built new conjectures upon his insights effectively made his books into simulations[6].

Exploring Baudrillard's 'simulacrum theory' from a semiotic perspective, Hans Bouwknegt noted that:

> "like an analysis, a simulation is a specific application of the semiotic network that, in contrast with an analysis, loses its obligation to directly refer to reality. […] What we end up with are two products that look exactly alike, but that have different rules to obey: the analysis cannot escape the real, while the simulation cannot escape semiotics." (Bouwknegt, 2010, 111)

As observed in relation to traditional forms of mediation in the third chapter, the fundamental tenet of media theory applies to simulation too, which is to say that simulated content also necessarily inherit the specific qualities and restrictions of the medium that it is experienced through. Having analysed a literary simulation from a semiotic standpoint, Bouwknegt identified the limits of the expressivity and intelligibility of Baudrillard's simulations in the limits of the textual form that mediates them. Textual simulations cannot, in fact, escape the semiotic boundaries of

language (Bouwknegt, 2010, 111). In the case of textually mediated simulations, both their authors and the recipients are faced with a medium that does not offer an objective, aesthetical environment that allows for interactive possibilities exclusively in terms of its ergodic and hermeneutical dimensions. The latter is precisely the literary dimension in which Baudrillard orchestrated his text-based simulations, where literary constructions gain the status of a 'world' only insofar that their representations are persistently shared and intelligibly interacted with in the contexts of academic hermeneutics and cultural discourse.

In his already discussed 2003 essay 'Simulation vs. Narration: Introduction to Ludology', Frasca observed that the full sway of simulation has been unleashed from its technical (textual-representational) limitations with the invention of the computer (Frasca, 2003, 2). Computers grant access to the materialization of virtual worlds that are characterized by the possibility of persistently perceiving and intelligibly interacting with its beings. Their ontological stability, as well as the level of detail of the aesthetical stimuli they offer in comparison to traditional media, has often been embraced by theorists and philosophers as crucial factors in what needs to be recognized as a full-fledged cultural shift. Michael Heim, for example, openly identified the advent of interactive digital media as responsible for a decisive ontological event in the history of philosophy. According to Heim, this is due to the fact that the interaction with digitally simulated worlds involves the whole spectrum of the mutually constitutive processes through which humans relate to worlds instead of being bound to subjective evoking by means of fictional representations[7] (Heim, 1994, xiii). This shift could perhaps be encapsulated, utilizing Heidegger's lexicon, as the transition between media that give the 'illusion of worlds' to media that give 'access to worlds'.

Both Bouwknegt and Frasca noted, also in accordance with Heim, that with the advent and the cultural penetration of the digital medium, the logical, aesthetical and interactive possibilities of simulation increased immensely – as well as the complexity of the systems they grant access to – and that the encounter between a simulative mindset and digital media opened a new, wider horizon of possibilities for mankind (Bouwknegt, 2010) (Frasca, 2003). According to the perspective proposed by this study, the new horizon that virtual worlds are opening up is an unworldly[8] experiential field in which human ontologies can project, fragment and extend.

The interaction with virtual worlds is a particularly revelatory example of the ways in which the digital medium can provide a form of transcendence of the experiential and thought possibilities traditionally (pre-digitally) affordable for humans. From this standpoint, I advocate the need for a broader and more basic perspective for digital media studies as well as game studies, a perspective capable of understanding digital technology anthropologically. In particular, it is my belief that this new standpoint necessarily calls for an approach which is deeply seated in the ways in which human beings structure their relationships with worlds and beings. As already outlined, this inquiry will explore the possibilities of the digital medium for transcending traditional (pre-digital) human kinds of ontologies.

Borrowing Herbert Marcuse's words, traditional media are recognized as extending and insuring the prevailing *Lebenswelt* without altering its existential structure, without envisaging a new mode of 'seeing' (originally in relation to the scientific

method; Marcuse, 1991, 165). What I am arguing here is that, differently from traditional media (relying on a passive absorption of content and on subjective imagination), interactive digital media can objectify ontological alternatives to the status quo. From the postphenomenological approach to philosophy of technology proposed by this study, computers can hence be understood as (heuristic) ontological instruments. A similar understanding of the cultural role of digital media can be found in Pimentel and Teixeira's 1993 *Virtual Reality: through the new looking glass* and Michael Heim's book *The Metaphysics of Virtual Reality*, published in the same year (Pimentel, Texeira, 1993) (Heim, 1993). In the next sections of this study, the virtual worlds that can be encountered and experienced in video games and simulations will also be treated as contexts where technology and art can return to the semantic unity of their ancient Greek origin.

In order to favour the aforementioned understanding of virtual worlds and the cultural shift inherent in recognizing their ontological role and philosophical relevance (over their derivative persuasive, scientific, educational and strategic applications), this study proposes the introduction of the concept of *mediaphysics*. In the acceptation offered by this study, *mediaphysics* is the sum of all virtual kinds of human ontologies possible with or without the mediation of the digital medium. Similarly to what was observed for metaphysics, *mediaphysics* aims at the description and categorization of worlds in a general and comprehensive manner. However, differently from classical metaphysical thought, the concept of *mediaphysical* thought does not strive for an extensive logical consistency. This last quality is a derivation of the fact that *mediaphysics*, by definition, does not attempt to encompass a single universe, but a fragmented multitude of worlds.

Mediaphysics thus embraces virtual worlds, augmented ones and telepresent ones as having the same phenomenological status as the world that is familiarly mediated by the sensory and intellectual systems that are native to humans. As already observed, such worlds can influence each other by means of designed interaction possibilities or by means of relationships of dependence such as parenthood or instancing. They can also be impermeable to one another and non-communicating, like in the case of two single-player video games played separately. From a *mediaphysical* perspective, not considering the quality of their mediation and of the relationships of dependencies that characterize worlds, all worlds are defined by their individual *mediaphysics* that are, in principle, ontologically independent from all the others.

In summary, *mediaphysics* is a rationalization built upon any available world, regardless of the nature or artificial nature of their mediation. In this sense, traditional metaphysics must be recognized as a subset of the wider horizon of *mediaphysical thought*: one of its *mediaphysical* instances. While within the mechanistic world-view the 'laws' of nature were the basis for prediction and control, within some *mediaphysics* these 'laws' themselves are the objects of manipulation. In the specific case of virtual worlds, such laws take the form of affordances and design choices which affect the qualities of time and space in the various components of the worlds, the quantities of the digital beings present in such worlds as well as their *mediaphysical* relationship to one another and the rules and conditions which regulate their changes in time.

4.2 – WHAT IS IT LIKE TO BE A (DIGITAL) BAT?

In explaining the difficulties in the articulation of an objective physicalist approach to the philosophy of mind, philosopher Thomas Nagel argued in his 1974 essay 'What is it Like to Be a Bat?' that human subjectivity is confined within the experience of what it is like to be human beings. Nagel started from the assumption that empirical observation provides the basic material for the ways in which humans organize their knowledge of the world as well as for their capability to imagine and to adopt alternative world-views. On this basis, he maintained that it is impossible to widen or alter the unique way human beings establish their relationship with the world and are capable of conceiving alternatives to them uniquely by resorting to the subjective representation of phenomena. This observation aligns with the understanding of the difference between 'fiction' and 'simulation' outlined above.

According to Nagel, imagination can only suggest what it would be for a human subject to behave how a bat behaves, but that is not the question that his text is trying to give an answer to. Nagel wanted explore whether humans could be capable of knowing what it is like for a *bat* to be a bat. Nagel purported that only the experiences that have the quality of being objective can be utilized in a physicalist model. As a consequence of this fundamental stance of Nagel's – and as already hinted in the formulation of the very question that he poses in the title of his essay – it is evident that the answer he is looking for cannot be found in context of the capabilities of the human mind to abstract and imagine. What Nagel means, in very practical terms, is that, in trying to understand what it is like to be a bat, it does not help to:

> "[…] imagine to have webbing on one's arms, which enables one to fly around at dusk and dawn catching insects in one's mouth; that one has very poor vision, and perceives the surrounding world by a system of reflected high-frequency sound signals; and that ones spends the day hanging upside down by one's feet in an attic." (Nagel, 1974)

Setting up his argument, Nagel further observed that the ways humans understand the world and relate with it have an unavoidably subjective character. According to Nagel, such subjective quality implies that no world-view can be objectified in the truth of propositions describable in human language (Nagel, 1974). The impossibility to complete the objectification of alternative phenomenologies is not confined to perceptually alien cases like those of a bat, a whale or a mosquito, but it is also commonly experienced between one human being and another.

Having recognized that the answer to his question cannot be handled objectively within the limitation of human kinds of relationships with reality as it is, and cannot therefore be elaborated in human language, Nagel decided to conclude his essay with a speculative proposal which temporarily set aside the philosophically problematic relationship between the mind and the brain. He envisaged the hypothetical possibility of closing the gap between subjective and objective knowledge from another direction than from human imagination. What Nagel hypothetically proposed is the creation of an alternative phenomenology that is not based on imagination, that is to say, not based on subjective representations[9].

> "Though presumably it would not capture everything, its goal would be to describe, at least in part, the subjective character of experiences in a form comprehensible to beings incapable of having those experiences." (Nagel, 1974)

'What is it Like to Be a Bat?' was written before the social diffusion of computers, and its insights and suggestions could not anticipate the consequences and the opportunities offered by the advent of a technology capable of materially disclosing interactive and persistent experiences of virtual worlds as well as virtual alternatives to the 'self'. This section of my study tries to integrate the speculative proposal of Nagel's essay with Heidegger's prophecy about the salvific potential of technology in relation to the tradition of metaphysical thought. According to the definition of reality provided in the third chapter and the observations elaborated upon in the previous section of this text, media content encountered in the form objective phenomenologies will be recognized as granting access to what must be considered effectively real experiences.

Particularly obvious examples of how objective, alternative phenomenologies can be encountered and experienced through the mediation of computers are video games. *Miegakure*, for instance, is an experimental puzzle-platformer video game (still in development) by Marc ten Bosch that challenges the players to actively solve puzzles in four spatial dimensions[10]. While characterized by a fairly classical ludological structure, *Miegakure* has the overt objective of offering its players the experience of an interactive reality which was deeply unworldly. Commenting on the discrepancies between the physical environment commonly labelled as 'actual' and the qualities of the digital world of *Miegakure*, award-winning game designer Jonathan Blow stated the following in an interview with *The Atlantic*:

> "It's a valuable contribution to human experience, right? […] The games I like are ones that have shown me something I wouldn't otherwise have seen, and Marc's creating an experience that would not have been possible to have, had he not made it." (Clark, 2012)

Another didascalic example of a deliberately uncanny video-ludic phenomenology is afforded by the *Independent Games Festival* 2010 student showcase entry *Haerfest*, a video game that was developed under my supervision by team Technically Finished at the *International Game Architecture and Design* program at NHTV, University of Applied Sciences of Breda (the Netherlands) (Technically Finished, 2009). Similarly to *Miegakure*, *Haerfest* offers the interactive experience of a distinctively extraordinary phenomenology: in both pieces of software, the players willingly engage experiences which are not in line with the way human beings customarily relate to the world in their everyday life. In the specific case of *Haerfest*, the game was developed as a digital formulation of the questions posed in Nagel's 1974 essay 'What is it Like to Be a Bat?' Both in Nagel's text and in our experimental video game, the choice of a bat was motivated by the fact that it is a creature that is relatively close to the human animal from a phylogenetic point of view (mammal, chordate) and yet, at the same time, is endowed with a cognitive equipment which is deeply different from the one humans can utilize in their everyday life. It is for this

reason that Nagel referred to being a bat as an example of 'a profoundly inhuman subjectivity'.

Accepting Nagel's standpoint according to which there is no way of knowing or reproducing the real consciousness of a bat, *Haerfest* tries to objectify part of the subjective character of what it is like to be a bat for a bat. The game allows the player to experience having very limited eyesight, flying by flapping flabby wings and being able to perceive volumes via the discontinuous input of a sonar system (see Figure 4C)[11]. The design objective of materializing an alien phenomenology in the least opaque of ways was pursued in *Haerfest* with the use of the first-person perspective and the diegetic quality of the in-game music and sound effects.

Figure 4C: A screenshot of *Technically Finished*'s 2009 video game *Haerfest*, showing a first-person simulation of the combination of a bat's short eyesight and one instance of its echolocation system (used with permission).

The relationship between the persuasive potential of computer applications and the immersive quality of the experience of media content has been the focus of studies and publications from a broad spectrum of academic perspectives: aesthetical, narrative, biometric, *et cetera*. It is reasonable to think, reasoning through analogy, that qualities such as immediacy and transparency would also cognitively facilitate the formation of augmented ontologies.

Going back to *Haerfest* and its immersion strategies, it is perhaps relevant to observe that the narrative structure that supports and guides its gameplay is accessed through the digitally simulated pages of an old, illustrated novel book about vampires and self-discovery. The player can consult and look through the pages of the virtual book in prescribed occasions. This fundamental design choice was adopted to ensure aesthetical and logical consistency, providing a more thorough feeling of immersion through the whole experience. The book-like nature of *Haerfest* also permitted to experiment with the conveyance of abstract information in a rather original fashion. Allow me to illustrate this point more in detail: in order to meaningfully interact with the world of *Haerfest*, the player needs to be able to access a number of quantitative data about the game-state such as, for example, the amount of 'screech-points' stored, how many '*lumoths*' were captured, *et cetera*. Such abstract information is of a different aesthetical (as well as logical) order than the transparent and immediate representation of the game-world shown onscreen during play. How was this discrepancy brought to an integrated whole via game design?

In terms of its fictional dimension, as already mentioned, *Haerfest* asks the player to imagine to be accessing the different areas of the game world through some illustrations of an old novel. This aspect *Haerfest*'s design was conceived in order to be able to utilize the textual parts of the book with the objective of immersively conveying abstract information and textual messages regarding the game-state or its narrative development to the players. In other words, by relating abstract information and abstract feedback in a way which is integrated with the game world – a book with playable illustrations and helpful captions – the players' immersion in the latter should be maximized. This cognitive effect is achieved by showing, when needed, an on-screen interface that looks and behaves as if the players were temporarily peeking at a different page than the illustrated one in which the current level is accessed and interacted with. Such design choice relied on the analogy with notions that already are established in the *Lebenswelt* of the players: illustrated novels are familiar objects and established forms of mediation composed of several different pages on which different representational techniques and pieces of information at different levels of abstraction and granularity customarily coexist without any perceived contradiction from the point of view of media users.

Haerfest grants access to a world that can only be explored with a particularly non-human system of perception and that, although unverifiable in its correspondence to that of actual bats, is incongruous with the way human beings relate to the actual world in their everyday life. Even if contemporary virtual technology cannot yet objectively reproduce the subjectivity of a bat, it does effectively offer ways to reveal previously inaccessible aspects of the way we can potentially relate to reality. In other words, computers are recognized as both prompting and allowing human beings to apply their perceptive, cognitive and operational equipment to virtual contexts which often configure themselves as worlds. The crucial point in this understanding of the ontological relevance and cultural role of interactive digital mediation is that several phenomenological aspects of the virtual worlds that they disclose simply could not be encountered and experienced by human beings in the ordinary relationships that they can establish with the world they are biologically native to. In synthesis, by materializing alternative phenomenologies and granting the possibility to establish stable cognitive and interactive relationships with them, computers function as (heuristic) ontological instruments as well as mediators of philosophical thought. As

such, they can be recognized as onto-logical machines capable – through the disclosure of interactive experience of virtual worlds – of fragmenting, reproducing and distorting human kinds of world-views.

I would like to clarify, here, that the proposed understanding of computers as onto-logical machines does not align with the perspectives or the agenda of 'object-oriented philosophy', a contemporary subset of speculative realism that is characterized by the rejection of ontological anthropocentrism (or 'correlationism'). With my work, I do not intend to suggest that human beings will ever be able to utilize the digital medium to objectively disclose the alien phenomenology of bats, mosquitoes, plastic bags or tacos or afford the exotic experience of their (alleged) inner world. As explained in the introductory chapter, in fact, this study has a large and encompassing understanding of humanism as its fundamental context and, as a consequence, always understands the ontological effects of interactive, digital simulations on human beings as extensions, fragmentations, multiplications and distortions of a family of pre-established structures that I indicated as 'human kinds of ontologies'. From these premises, follows that any pretentions of ever experiencing or understanding alien phenomenologies and object-oriented ontologies are not only outside of the philosophical scope of this study, but also appear to be motivated by a form of anthropocentrism which is more naïve and conceited than the 'correlationalistic' one that 'object-oriented philosophy' condemned.

Non dissimilarly from the approach outlined in the previous paragraph, in the conclusive passages his famed essay, Nagel himself contended that humans have no way of objectifying an alien world-view and, as a consequence, no way of knowing what such experience is like from the frameworks of neither phenomenology nor neuroscience. Nagel further observed that, even if we could ever be able to reproduce the perspective of a bat, a mosquito or a whale objectively, such experiences would be received by a human subject as anything like the experiences of those animals without the possibility of fundamentally altering human subjectivity; such a shift would, however, inevitably require a fundamental (and drastic) modification of human biology (Nagel, 1974).

For the reasons advanced in 'What is it Like to Be a Bat?' it should be apparent that it by no means defensible to state that *Haerfest* can effectively afford a phenomenological account of the experience of what it would be for a bat to be a bat. *Haerfest* is patently a technological artefact: the materialization of a world that was designed by humans to be engaged by humans and that is mediated by a machine characterized by logics which are simplifications, extensions, distortions and repetitions of certain aspects of a human kind of rationality[12]. Accordingly, virtual worlds can never be understood as machines capable of disclosing radically new phenomenological and ontological horizons, however they can be recognized – as *Haerfest* demonstrated – as pragmatically opening new persistent and interactive horizons of thought and ways to understand time, space, properties, causation, *et cetera* that are supplementary to, and often alternative to, the ones through which human beings structure their everyday relationships with the world labelled as 'actual'.

The claim according to which computers can, in their capability to sustain and grant interaction with virtual worlds, extend, fragment, multiply and distort original human

world-views does not only apply to video games, but is a quality that is inherent in any interactive digital experience, from working with a digital text-editor to customizing a pizza for home delivery to writing the code for an artificially intelligent behaviour in a simulation. It is particularly interesting to notice that, in video game worlds as instances of the possibilities offered by onto-logical machines, the laws of physics as well as established metaphysical assumptions are not only deliberately defied, but are increasingly often interactive and modifiable elements of the activity of 'play' themselves.

4.3 – HOW TO PHILOSOPHIZE WITH A DIGITAL HAMMER

The video game *EXP* (a game-concept of mine, developed under my supervision at the *IGAD* program) is another evident example of the contemporary game-design tendency to pursue innovation via insubordination towards traditional, pre-digital, world-views (UBIK productions, 2011). *EXP*, inspired by Philip K. Dick's 1969 short story 'The Electric Ant', materializes the philosophical possibility, proposed by the original author, of understanding artificial ontologies as formal, modal constructs. During gameplay, the player can in fact interactively experience the progressive deconstruction and the eventual removal of video game elements both aesthetically and from the point of view of game mechanics. Progressing in the game, its very graphical style regresses from figurative, to symbolic, to completely abstract. A less-than-optimal performance in *EXP* leads to the degrading of the game's graphical detail; a few minutes into the game, the hint system abandons the player. Soon after the vanishing of the player-support system, the score system does the same, removing all quantitative feedback from the game (and consequently its meaning from a ludological perspective).

In 'The Electric Ant', the fictional novel that inspired the video game EXP, the protagonist Garson Poole is shocked to discover that he is not a human being, but an android. Poole owes this revelation to having found a cavity in his chest where, among other pieces of hardware, a 'reality tape' is rolling. The tape, Poole discovers by tampering with it, feeds his mechanical consciousness with all his worldly perceptions: it is his phenomenology, deterministically formalized in a plastic strip. In the video game *EXP* the player is exposed to a persistent and interactive world whose phenomenology, similarly to that of Poole's experimentation, undergoes an objective process of degradation and subtraction that eventually renders the very formal structure of the game meaningless (see figure 4D).

Figure 4D: Three images taken form screenshots of the PC game EXP, showing three different moments in the progress – and degradation – of the gameplay experience (used with permission).

Unlike *Haerfest*, the video game *EXP*, does not directly tackle the question of overcoming the cognitive and interactive horizons of human kinds of subjectivities. Similarly to *Haerfest*, however, it discloses worlds which allow the player to objectively explore philosophical arguments, notions and possibilities. Both *Haerfest* and *EXP* practically exemplify how the interactive experiences of virtual ontologies are, in both their constructive and experiential aspects, viable experimental instruments for the treatment, the testing, the explanation and the diffusion of philosophical ideas as well as the development of new, digitally augmented ones.

In the context of interactive simulation with a philosophical agenda, I consider it interesting to also examine *Gua-Le-Ni; or, The Horrendous Parade*, an *Apple iPad* and *iPhone* action-puzzle video game that I originally designed in 2011 and was developed together with *Double Jungle S.a.s.* (the game was already introduced in the third chapter in the context of illustrating the doubly virtual dimension of the elements of interactive digital worlds). As will be discussed more thoroughly in chapter 6.6.1, *Gua-Le-Ni* was originally designed with the intention of disclosing for the player the Humean notion of 'complex ideas' in the interactive and negotiable form of mediation afforded by interactive, digital simulations.

Hume's thought was utilized, in the last videoludic example, with the intention of exemplifying the potential that is inherent in virtual worlds to function of mediators of philosophical thought, that is to say for materially and interactively disclosing and diffusing philosophical notions, alternatives and experiments. The way in which I remediated a fragment of Hume's thought might stimulate the criticism that the work of the British empiricist cannot be directly put in relation with the philosophical work of either Martin Heidegger or Helmuth Plessner. Although elements of the twentieth century phenomenological movement can be recognized in earlier philosophers such as Hume, the philosophical project of the latter is indeed, and in several aspects, incongruous with the phenomenological tradition upon which the perspectives offered in this study are structured. The key to understand the choices behind the philosophical contents that are interactively re-thematized in *EXP* (2010), *Gua-Le-Ni* (2011) and in *Necessary Evil* (2013) is once again to be found in the characteristic way in which computers mediate and systematize information:

- exploring a reality which is explicitly presented as a formal construct in *EXP*,

- deconstructing and reconstructing monstrous, modular beasts in *Gua-Le-Ni* from a combinatorial database, and

- going through the brief, functional, contributory existence of a game asset from its being called to life by the game to its deactivation to save memory in *Necessary Evil*

are ludic experiences that purposefully embrace (respectively) the formalism, the combinatorial logics and the technical limitations of the digital medium in the very philosophical allegories that they were designed to materialize. This is not to say that video games can only be successfully employed when the philosophical hypothesis or notion that is intended to be explored digitally and interactively reflects on formal, technological or combinatorial qualities of digital simulations themselves.[13]

As a counter-example, the textual medium has successfully been utilized for thousands of years to articulate and divulge ideas, thoughts and world-views which were not necessarily or restrictively linear or univocal. All media forms allow for certain flexibility in their use and disclose expressive possibilities which can transcend their structural limitations. Hypertexts and ergodic literature are evident examples of how non-linear and non-prescriptive expressive affordances were attained in the context of textuality. Similarly, video games can grant access to virtual environment which do not simply and explicitly re-assert the formal, technical and combinatorial qualities of the way the medium shapes information.

I believe that my experimental game design titles demonstrate that the versatility and the programmability of the digital platform can already foster the development of novel approaches to old philosophical problems as well as the rise of entirely new ones (for example, those concerning identity, agency and ethics in relation to artificial intelligence or telepresence). On these premises, it is expectable that, facilitated by the increase of computer literacy, the growing accessibility of video game development tools as well as the progressive diffusion of digital media in social practices, more philosophical questions will arise and will be tackled specifically within virtual worlds. From the same perspective, it is also likely that the new generations of philosophers will more and more frequently develop, test and distribute their ideas in the form of interactive digital media content. I propose to call this new field of applied philosophy ‘augmented ontology’.

An approach to the digital medium which combines a postphenomenological understanding of technology with media philosophy is likely to grant twenty-first century thinkers, designers and ‘doers’ unprecedented freedom and flexibility for hands-on experimentation. The expressive and interactive possibilities of the digital medium already transcend many of the limitations and the effects that its traditional association of thought with text had on mental processes. Since Plato, in fact, the history of philosophy has been the history of written philosophy (Carr, 2010). Among the first to advocate for a critical attitude towards the exclusive and unquestioned association between thinking and writing was philosopher Ludwig Wittgenstein who, according to philosopher Kristóf J. Nyíri, was almost addicted to

going to the movies and often used film to illustrate his philosophical positions (De Mul, 2007). Apart from a few remarkable exceptions, among which Wittgenstein's *Tractatus Logico-Philosophicus* (1929) and Jacques Derrida's *Glas* (1974), philosophical books did not seek to support their visions and arguments through the way their texts were spatially designed and/or structured from a material point of view.

Motivated by a critical standpoint that has evident affinities with the one outlined above, philosopher and game designer Ian Bogost went as far as accusing the exclusivity of the practice of writing to be detrimental for philosophy and scholarly practice in general. In his 2012 book *Alien Phenomenology, or, What is it Like to Be a thing*, Bogost emphatically voiced his concerns according to which

> "[i]t is not because writing breaks from its origins as Plato would have it, but because it is *only one form* of being. The long-standing assumption that we relate to the world only through language is a particularly fetid, if still bafflingly popular, opinion." (Bogost, 2012, 90)

When discussing interactive digital media, or rather their artistic or cultural merits in comparison with traditional expressive forms, it is not uncommon to observe how the various analyses tend to polarize around the specific affordances of computers, which is to say on the way in which they frame and shape information. That was the way the topic of digital mediation was introduced at the beginning of this chapter or the way in which an artistic perspective on game development commonly labelled 'proceduralism' supports its claims about the specificity of the video-ludic medium. According to the 'proceduralists', in fact, the way video games can allow for the emergence of meaningful play fundamentally resides in the qualities and structure of their in-game affordances (game mechanics). Specifically, from a proceduralist perspective, meaningful play is a derivation of the game mechanics in the sense that the exchanges between the computer and the player or among players via the machine arises from the players' action within the logical-aesthetical system that the mechanics structured. Expressed more simply and broadly, meaning in interactive digital media does not emerge from *decoding* media content, as is the case of textual information, but from acting within the medium: from *doing*.

Working with (and within) the flexible and programmable worlds afforded by computers twenty-first century philosophers can objectively craft, experience and divulge their claims within simulated environments. Through the interactive mediation of digital simulations, their work is no longer experienced restrictively through the subjective filters of the individual capabilities for abstraction and imagination. From the point of view of the recipient of a digitally simulated philosophical claim, I believe that the fact the medium allows and encourages *active doing* within its virtual worlds offers unique cognitive opportunities. Gaining access to specific interactive possibilities within stable, objectively perceivable and persistently intelligible worlds (that are also interactive in the case of video games), the 'players' of alternative phenomenologies have the opportunity of dialectically negotiating and internalizing notions and hypotheses that are materially presented to them. In this context, the 'player' is – to an extent that depends on the game genre

and on the degree of interactive freedom granted to the 'player' by the developers – co-author of the virtually materialized philosophical arguments.

Understood in this way, the mediation of thought via interactive virtual worlds appears as a particularly promising horizon. It is, in fact, capable of both simulating actual situations as well as affording virtual ones. In digital worlds, existential phenomenological hypotheses can be experimented with and new questions concerning the nature of human experience can arise. To quote Dourish once more, I believe that "it is hard to imagine *a more* philosophical enterprise." (Dourish, 2004, viii)

Don Ihde phrased a similar belief in *Experimental Phenomenology*, writing that "[w]ithout entering into the doing, the basic thrust and import of phenomenology is likely to be misunderstood at the least or missed at the most." (Ihde, 1986, 14) It is from this framework that, I believe, society could benefit from utilizing gameplay beyond what Italian game designer Paolo Pedercini called "the dictatorship of entertainment" (cfr. www.molleindustria.org).

The material activity of 'doing philosophy' through which I propose to use gameplay as an ontological instrument and as a way to mediate philosophical thought has definite analogies with the concept of 'building' as an academic practice in the connotation introduced by Davis Baird in his 2004 book *Things Knowledge: A Philosophy of Scientific Instruments*. According to Baird's view, 'building' – doing, constructing as a heuristic practice – offers an opportunity

> "to correct the discursive and linguistic bias of the humanities. According to this view, we should be open to communicating scholarship through artifacts, whether digital or not. It implies that print is, indeed, ill equipped to deal with entire classes of knowledge that are presumably germane to humanistic inquiry." (Ramsay and Rockwell in Gold, 2012, 78)

Baird's notion of 'building' has evident affinities with the more recent idea of 'carpentry' explained by Bogost in his previously mentioned *Alien Phenomenology*. Blending the perspectives of Graham Harman and Alphonso Lingis, Bogost defined 'carpentry' as the "practice of constructing artifacts as a philosophical practice" which "entails making things that explain how things make their world." (Bogost, 2012, 93)

In two aspects, I believe, Baird's 'building' and Bogost's 'carpentry' are analogous to the approach to the mediation of thought that I am proposing here:

1. their openness in relation to non-textual options for the mediation of philosophical concepts. For *Alien Phenomenology*, for *Things Knowledge* and for this study, this proposition is a reaction to the exclusivity of text and its largely unquestioned effects and limitations on the very activities of thinking and disseminating philosophical notions and hypotheses.

2. their vision according to which the very crafting and framing of thought in a medium which is not necessarily concerned with the communication and production of semiotic meaning, is itself a deeply philosophical activity.

In *Alien Phenomenology*, Bogost tackles what I believe is a very interesting question: how can mankind perform ontological carpentry without having godly powers and creative abilities? "Through the practice of building a video game engine" was the first answer to this question proposed by the author. A game engine is the software framework that provides basic, commonly needed tools for the construction of interactive, virtual worlds. Given his object-oriented approach, Bogost willingly disregarded the philosophical merits of the contents that the different forms of 'carpentry' can channel in terms of meaning. A thing-oriented philosophy, in fact, deliberately recoils from focusing on the experiences that the things themselves might disclose for their potential observers, users, consumers, players, *et cetera*.

Differently from Bogost's approach, the postphenomenological perspective I decided to adopt also incorporates the qualities and the ontological consequences that proceed from having experienced the interaction with a philosophical artefact. In other words, my proposition is to embrace also what such experiences disclose and explain in terms of ontology, not just how they do it. Going back to the instance of philosophical carpentry within video games, I argue that not only the tools and qualities afforded by game engines can be understood as having ontological repercussions, but so does the specific ludological structure of the game: the way it structures the relationship between players, objectives, resources, the way in which it provides aesthetical feedback, the way in which the logical structure of the system is metaphorized and communicated, *et cetera*. Consequently, as far as 'augmented ontology' is concerned, *doing philosophy* is not trivially a matter of crafting thought in interactive, non-textual media, but can also be philosophically relevant in terms of the qualities of its contents.

A common criticism against the exclusive philosophical employment of interactive digital media contends that books are (and always will be) needed and desirable because written words have the capacity to symbolize and organize complicated arguments. This is something that simple simulations cannot do. My perspective, however, does not advocate for the abandonment of written text and does not advance the claim that computers are (or are going to be) the ultimate philosophical media. The same critical observation could, however, be directed towards the generic dismissal of simulations and video games as never having the possibility to be philosophically viable media. In my opinion there is no reason why producers and critics of cultural production should not meaningfully embrace a vaster and more compromising media horizon to develop and divulge ideas. This is even more true and cogent, I believe, in the age of interactive digital media and human enhancement.

Far from being a neutral way of exchanging information, writing has evident as well as inevitable constraining effects on thought that have been the focus of philosophical debate since its first introduction in ancient Greek culture. Analogue to the way video games might not be suitable for presenting abstract concepts in their intricacy and subtlety, books cannot give the reader either agency or the possibility to negotiate with the objectified thought they mediate and only allow for hermeneutical forms of freedom. In addition to that, I believe it is relevant to note that, as forms of

mediation, books cannot embed objective representations of spatial contexts, while digital simulations, instead, characteristically materialize spaces accurately and interactively.

I would like to conclude my proposition for 'augmented ontology' as a novel philosophical context with a cautionary remark borrowed from the field of media philosophy. In his seminal 1964 book *Understanding Media: The Extensions of Man*, Marshall McLuhan observed that technology not only provides advantageous enhancements of the human mental and bodily capabilities, but that it is also a form of self-amputation. In other words, new ways of establishing relationships with reality through media necessarily entail a balance between the increase in acuity of certain cognitive functions and the desensitization of others (McLuhan, 1964). With these effects in mind, the embedding of video games and computer simulations in social practices (philosophy being one of them) might best be pursued with the awareness that, as any other form of mediation, they disclose reality in specific ways and that such ways are always inherently both revealing and concealing.

4.4 – FROM A SUBJECTIVITY INTO A PROJECTIVITY

Like any other technology, computers can be understood as machines designed to satisfy the fundamental need of mankind for transcending certain (physical, perceptual and intellectual) limitations. As observed in the previous chapters, several media scholars like Pierre Lévy, Gonzalo Frasca and Ian Bogost recognized a profound shift in Western culture as a consequence of the diffusion of computers in social practices, in particular with regards to their interactive applications.

I believe that, despite the economical relevance and the progressively becoming more entrenched and influential of interactive digital applications in Western societies, very little attention has been given to the anthropological consequences of the diffusion and establishing of such technology on what it is like to be humans. One of the first academics who argued that the cultural changes promoted by computers needed to be epistemologically understood in terms of quality, rather than quantity of operations was philosopher and computer linguistics pioneer Margaret Masterman (Willard McCarty, 2012, 114). Writing in 1962 for *Freeing the Mind*, a collection of essays in the *Times Literary Supplement*, Masterman encapsulated her vision of the potential of the digital medium for expanding and transforming the human world in the metaphor "a telescope for the mind" (Masterman, 1962, 38). Her intuition established a perspicuous analogy between the advent of computers and impact on the knowledge of cosmology as a consequence of the developments of optical technology in the seventeenth century. In her text, Masterman further explained that, by extending the perceptual scope and reach of mankind, computing does not simply and neutrally bring formerly unknown and never before experienced things into view, but is also forcing society into an epistemological crisis from which wider and novel world-views arise.

At the beginning of last century, Martin Heidegger and Karl Jaspers laid the foundations for an understanding of technology which is indissolubly conjoined with the ways in which humans structure their relationship with reality. In the last thirty

years, their heritage was notably valorised, criticized and expanded upon by Don Ihde and the postphenomenologists in the general context of philosophy of technology and by Michael Heim in the specific field of computer mediation. Adopting a postphenomenological approach to digital mediation, my claim with regards to the core of the cultural shift brought about by computers is that their affordances 'overcome' some of the phenomenological and ontological restrictions inherited by Western thought from its previous mediatic forms. Such limitation, I argue, derived from the fact that, until the introduction of simulations, human beings had exclusively been shaped, in terms of their cognitive skills, by the experience and interaction with the world indexed as 'actual'. From this perspective, I propose to understand computers as a particular declination of simulational media whose specific, cognitive contribution to the development of thought consists in allowing human beings to experience and materially project thought in the form of interactive, persistent worlds that are logically and aesthetically independent from the one commonly labelled as 'actual'. Such contribution will be specifically identified, in the following chapters of this study, as a fragmentation and an extension of human kinds of ontologies beyond their biological and contextual limitations.

The outlined position with regards to augmenting the possibilities for human thought to categorize and imagine worlds as well as interacting with them could also be meaningfully associated with the understanding of technology as a constitutive part of what it is like to be humans. From that standpoint, humans are 'artificial by nature': they had always been shaping and being shaped by their artificial extensions. This is at least true, according to Plessner, from the moment that *Homo habilis* manufactured the first stone tools. *Homo sapiens sapiens* was unquestionably dependent on cultural artefacts to compensate for his physical and mental shortcomings since his debut on the scene of the world (Plessner, 1975, 385). According to this perspective, it is meaningless to refer back to a utopian arcadia, an original and unabridged human involvement with the world.

Not differently from the tenets of cyborg theory, McLuhan's understanding of technology as the "extensions of man" outlined above or Plessner's theory of positionality (which will be explained in the next chapter), Jay Bolter argued that humans are now natively integrated with digital media and that their subjectivity was dynamically integrated and augmented with artificial means from the very onset of civilization[14] (Bolter, 2000, 41 – 44).

By and large, the perspective on technology embraced by this study embraces that "we have always been cyborgs" and that any form of technology has an impact as a factor of change in culture due to its inherent capability for altering and extending the horizon of the possibilities for humans to understand worlds and interact with them. It also, and complementarily to the vision outlined above, understands technology as a way in which human beings materially 'objectify' themselves in matter, allowing them a particular form of self reflection and self-discovery. This auto-gnostic epistemological aspect of the way in which human beings extend and objectify themselves in technical artefacts and system is clearly present in the work of several academic in the field of philosophy of technology. As Donna Haraway puts it: "the cyborg is our ontology", it shows the fundamental structure of being human (Haraway, 1991). Similarly to Haraway, in his 1992 book *Beyond the machine* (*De machine voorbij*), philosopher Maarten Coolen openly clarified that he too was

"interested in precisely those anthropological ideas that one can associate with the act of technological transformation itself. What can man learn about himself from his own fabrications?" (Coolen, 1992, 165, 166, English translation by Paul Verbeek in De Mul, 2013, 234).

In the present age of human enhancement, mankind no longer simply design its existence from an existential standpoint, but also from a biological and a phenomenological one. This form of anthropological projectuality is a process that, by definition, cannot take place without ontological consequences. In a paper that explored the concept of immersion in simulations – and in a way that closely reminds of Plessner's work as well as the postphenomenological position adopted by this study – cultural historian Erkki Huhtamo pointed out that technology has always been involved with humanity and has, as such, always effectively been a second nature for mankind. For Huhtamo, the dynamism in the relationship between humans and technology in the digital era is particularly evident in the fact that the design of digital interfaces no longer seems to pursue integration (a symbolic association with similar functions in the actual world) or transparency (the quality of being perceptually as close as possible to a non-mediated experience) but also explicitly relies on functional conventions that are inherited by the tradition established by previous interactive technologies "simply because it is not felt to be in contradiction to the 'authenticity' of the experience." (Huhtamo, 1995, 171)

Whereas the mechanistic technologies (which are what the later Heidegger mainly focuses on) reflect the purpose of the rational domination of a world which is objectified and reduced system of usable resources, the informationistic sciences pursue the creation of new worlds. "These sciences", wrote Jos de Mul, "transform the world into a field of virtual possibilities. Beings are regarded as recombinatorial information. […] From a *thrown* project, *Dasein* (the specific name Heidegger gives to the characteristical human way of being in the world) seems increasingly to become a thrown *project*." (De Mul, 2010, 153) Discussing the social impact of digital technology from an analogue perspective, Vilém Flusser wrote that:

> "[W]e begin to liberate ourselves from the tyranny of an alleged reality. The slavish attitude, with which we, as a subject, approach objective reality in order to master it, has to give in to a new attitude, in which we intervene in the fields of possibilities in- and outside us, in order to intentionally realize some of these possibilities. From this perspective, the new technology means that we are starting to raise ourselves from a subjectivity into a projectivity[15]." (Flusser, 1992, 25)

The framework adopted to explain how interactive digital media can influence human kinds of ontologies implies that the experiences virtual phenomenologies are effectively real experiences. As will be explored in the subsequent chapters, the metaphysical liberation potential of interactive digital media does not uniquely reside in the unfamiliarity and the enhancement of the offered perceptions, but can be also identified in the alien and often bizarre qualities of the interactive virtual *mediaphysics* that can be experienced digitally. With the proliferation of digital media as well as the increasing production of interactive virtual worlds, human kinds of

ontologies can, in a mutually shaping relationship with digitally mediated simulations, extend and fragment into worlds that were previously (pre-digitally) inaccessible. Human ontology becomes, as a consequence of the diffusion and penetration of digital media in social processes, an increasingly *mediaphysical* context: a labyrinth weaved by men to be deciphered by men and whose rigor, as Borges warns in the pages of 'Tlön, Uqbar and Orbis Tertius', is not that of angels, but that of chess-players (Borges, 1994).

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[1] This passage of Borges can be found in the essay 'El idioma analítico de John Wilkins' (*The Analytical Language of John Wilkins*) included in the collection *Otras Inquisiciones* (*Other Inquisitions*) first published in 1952. The complete translated text can also be found in Borges, 2001, 229 – 232.

[2] Such central features stand out, for example, in the words of Romanian poet, essayist and founder of the European Dada Tristan Tzara, who concluded his famed 'Dada Manifesto 1918' as follows: "The abolition of logic, which is the dance of those impotent to create: DADA; […] every object, all objects, sentiments, obscurities apparitions and the precise clash of parallel lines are weapons for the fight: DADA; abolition of memory: DADA; abolition of archaeology: DADA; abolition of prophets: DADA; abolition of the future: DADA […]. Freedom: DADA DADA DADA, a roaring of tense colours and interlacing of opposites and all contradictions, grotesques, inconsistencies: LIFE."

[3] Susan Laxton's 2003 essay 'The Guarantor of Chance: Surrealism's Ludic Practices' focuses on Surrealism's resistant to object-production. Laxton designates those strategies as the Surrealist ludic "an early deployment of chance meant to militate against means/ends rationality." (Laxton, 2003)

[4] Oskar Schlemmer's 1922 *Triadic Balled* (*Triadisches Ballett*) was organized around the idea of the holy trinity. It has 3 acts, 3 participants (2 male, 1 female), 12 dances and 18 costumes. The costumes were essentially composed of geometric primitives that made the dancers look like marionettes. Schlemmer considered the artificial precision of the movement of puppets and marionettes as aesthetically superior to the way humans move and traditionally danced. Schlemmer designed and produced many similar performance pieces, including his 1923 *Figural Cabinet*, described as a 'mechanical cabaret', and the futuristic *Men in Space*. For more information and deeper insights in this topic, I suggest to read Susanne Lahusen's 1986 article 'Oskar Schlemmer: Mechanical Ballets?' (The complete text can be found in Dance Research, Autumn 1986, Vol. 4, Issue 2, 65).

[5] In a very revelatory way, the verb 'to describe' derives from the Latin *scribere* (to write) and indicates, in its original meaning, the act of providing a written account of something. What Wittgenstein recognized as the primary role of language, that of mapping and appropriating the world with an artificial logical system, is evident in this etymology.

[6] Bouwknegt noted that "Baudrillard succeeds in creating logical versions of recognisable, cultural patterns by stating that «all exchanges occur under the regime of the code». Exchange, in its manifestation as recognisable pattern, term, and structure literally becomes semiotically encoded, with the aim to confront readers with the (semiotic) version of the original economic, social or technological mechanisms. Due to these mechanisms and terms, readers refer the simulated mechanisms to mechanisms in the real. Similar to Neo in *The Matrix*, their minds make the simulation real." (Bouwknegt, 2010, 111)

[7] The adjective 'virtual', as used for example by Heim, connotes an aesthetical alternative to the world that can be interacted with through digital media, while the adjective 'fictional', encountered for

instance in Borges's texts, indicates a traditionally mediated, and thus non-interactive, form of representation.

[8] As introduced in the third chapter of this text, the adjective 'unworldly' is utilized in the present study with reference to mediated content that is not necessarily constrained by the relationship humans structure with reality in their everyday existence in terms of its interactive behaviours – the world commonly labelled 'actual' – but is connected to the latter in a number of ways (first and foremost the conceptual and material dependence of virtual worlds from the 'actual' one for their existence).

[9] The importance of transferring content with phenomenological immediacy, which is to say not in fictional and/or representational ways, was professed by 19th and 20th-century novelists, philosophers, playwrights and movie directors that aligned to the existentialist current. The existentialist method embraced by Jean Paul Sartre openly aimed at the transferring experiences to the reader as well as eliciting first-hand emotions in him/her. This purpose was pursued relying on the immersive and familiar quality of the situations and sensations represented (Sartre, 2010) (cfr. sub-chapter 6.5). For the reasons explained in chapter three and in the second section of the present one, the textual medium (especially when utilized in a linear fashion) must be recognized as unsuitable for this purpose, due to the opacity and limitations of its code as well as its having to rely on the mind's capability for abstracting and imagining, rather than on immediate sensations. It is perhaps for this reason that Sartre himself relied on theatre plays as well as books to spread his thought, or that existentialism had had a particular success with cinema. Along Nagel's perspectives, I consider new media a new and exciting medium to present and divulge philosophical ideas and, inherently, to transcend the horizon of Western metaphysics and its traditional forms of mediation.

[10] On the official website for *Miegakure*, the author Marc ten Bosch explicitly notes that "[o]ur world is three-dimensional: width, depth, and height. But what if there was a fourth physical dimension that we cannot see, in addition to the other three? This game is about exploring the consequences of being able to move in four spatial dimensions + time. It plays like a regular three-dimensional platformer, but at the press of a button one of the dimensions is exchanged with the fourth dimension, allowing for four-dimensional movement." (http://marctenbosch.com/miegakure/ – retrieved on April the 12th, 2012)

[11] Another video game which famously borrowed inhuman perceptual systems from the animal world as part of its gameplay is the 2006 *Legend of Zelda: Twilight Princess*, in which Link, the young and anthropomorphic main character, can enter a magical dimension in which he takes the form of a wolf. As a wolf, Link acquires the possibility to follow olfactory trails, which the players perceive spatially as paths of permanent, coloured smoke (Nintendo EAD, 2006). *X-Men Origins: Wolverine* (2009), *Batman: Arkham Asylum* (2009) also famously feature protagonists whose beastly nature grants them (and their controlling 'hyperstasis', the player) abilities that transcend the physical and perceptual limitations of humans (including echolocation, visualization of smell trails, thermal vision, *et cetera*. (Raven Software, 2009; Rocksteady Studios, 2009). *Haerfest* and the video games mentioned above have the peculiarity of providing the player with sensory systems which are augmentations or synesthetic replacements of the one that humans are biologically bound to. Had this analysis been less focused on video game content, it would have recognized similar influences on human subjectivity in the way heads-up displays, for example the fighter jets', enhance the human sensory apparatus and extend human kinds of ontologies.

[12] As will be elaborated in more detail and in relation to the work of Alan Turing in chapter six, every element that composes the computer from both a logical and mechanical perspective presents traits which are inescapably anthropomorphic. Austrian philosopher Wittgenstein, who had been a colleague of Turing's in the Cambridge years, expressed this awareness with great clarity, stating that: "Turing's machines. These machines are humans who calculate." (Shanker, 1987, 615) Turing widely is considered to be one of the fathers of modern computing and several aspects of the ways digital computers are built and function still bear traces of their origins as Turing machines (cfr. chapter 6.6).

[13] In this sense, Galloway proposed an interpretation of the experience of playing any titles in the life-simulation video game franchise *The Sims* as inherently political as it reveal with a striking immediacy "the muted horror of life lived as an algorithm" (Galloway, 2006, 103). Clearly, this interpretation would suit any simulation as they necessarily disclose a world of possibilities which are not only trivially combinatorial but also countably limited. Braxton Soderman proposed a reading of Molleindustria's 2009 political game *Everyday the Same Dream* as precisely relying on that aspect of the medium specificity of computers. *Everyday the Same Dream* explicitly depicts, in fact, the social condition of labour which, according to Soderman is also achieved by making the movement through the game space repetitive, by making play laborious and by offering very limited choice (Soderman, 2010).

[14] From Plessner's perspective, the enhancements of the humans' possibilities and the extension of their subjectivity is a native, ontical need which clearly predates the development and social diffusion of the digital medium. For a more complete explanation of those topics together with practical examples of their application and applicability in the fields of media philosophy as well as game studies, please refer to the sub-chapter 5.3.

[15] In Martin Heidegger's 1927 *Being and Time*, a text which was also influenced Flusser's early work, the term 'projectivity' indicates a Being's openness to the world in terms of possibilities of being (Heidegger, 1962, 184 – 185 / SZ, 145). In this study, inspired by Flusser's work in the field of philosophy of technology and Plessner's 1928 *Die Stufen des Organischen und der Mensch*, the concept of projectivity is understood as the characteristic drive of human beings for constructing themselves and their world by means of technical artefacts. In this sense, this study proposes a fundamental understanding of technology as the materialization of mankind's tendency to overcome its physical, perceptual and communicative limitations.

CHAPTER 5: BEING in those worlds

5.1 – A PREMISE TO CHAPTERS FIVE AND SIX

Chapters five and six should complete my postphenomenological framework aimed at understanding interactive digital media as factors of cultural change. Their objective is that of articulating an anthropological understanding of both the ontological affordances of the digital medium and the expressive potential of virtual worlds.

The reason why I am using the conditional in the opening paragraph of this chapter ("should complete") reflects the awareness that, regardless of the thoroughness of my dedication, several topics discussed in this work are bound to remain incomplete and many others relevant ones remained out of its scope. If the vastness and the ramifications of this endeavour were not enough already, this study also tries to map and describes the dynamic and mutually influencing relationships between human kinds of ontologies and digital technologies well aware that both the poles of this relationship are in a permanent and fluctuating (beta) state (cfr. chapter 2, note 16). As will be elaborated upon in both chapters five and six, certain aspects of my answer to 'the question concerning digital technology and projective humanism' are also bound to remain unfinished due to the necessarily 'open' structure of human existence.

Chapters five and six will explore the relationships between human kinds of ontologies and digital media from several different perspectives which I decided to divide in two groups that I consider bound together by 'family resemblances'. The logics of their thematic subdivision into two chapters, as well as their underlying thematic unity, should already be evident to the reader in the respective titles for the two chapters.

- The fifth ('BEING in those worlds) will structure an understanding of the experiences of alternative, virtual worlds disclosed by digital simulations from an anthropological standpoint. While the fifth chapter will lay the ground to answer the question at the core of this study from the human side of the human-computer relationship,

- the sixth ('Being in THOSE WORLDS') will shift the focus of this enquiry more closely on the technological pole of the relationship, that is to say digitally simulated worlds and their potential for crafting and disclosing interactive experiences on virtual phenomenologies and ontologies.

As a consequence of the editorial split outlined above, chapter six will embrace human beings not as embodied explorers of virtual worlds but as the founders and designers of the latter. It will not understand digital simulations as virtual extensions of their native bodies, but rather as interactive, heuristic metaphors. This last aspect of chapter six will serve as a premise to the conclusive one, that will explicitly verbalize my answer to 'the question concerning digital technology and projectual humanism', elaborating on the expressive limits of digital simulations as ontological instruments as well as mediators of philosophical thought.

In other words, while the fifth will elaborate on how the digital medium can fragment and overcome traditional human ontologies, the sixth will explore to which extent human ontologies can be distorted, multiplied and extended in virtual worlds.

The separation of these aspects in two distinct chapters could be (mistakenly) interpreted as rehearsing the Cartesian schism between subject and object of inquiry. I believe it's important to state that, by subdividing my work in this fashion, I do not intend to conclude the present study with a dualistic bifurcation. The arguments presented in this text build, in fact, upon the belief that neither human ontologies nor digitally simulated worlds can be thoroughly explored and rigorously understood independently from one another or as disembodied phenomena.

The perspective outlined above was already outlined in the introductory chapter of this study when presenting, in its general traits, the adopted postphenomenological approach to philosophy of technology. In the codetermining engagement between mankind and the relative technological environment specific 'objectivities' of reality arises (worlds), and so do specific 'subjectivities' of human beings. Consequently, subjectivity and objectivity are not presented here as two independent poles between which an ontological relationship takes place, but as products of the relationship itself that should be never isolated or absolutized. Similarly, the textual separation between chapter five and chapter six is not meant to mirror a conceptual polarization or dichotomy, but is simply ascribable to the will of providing the reader with material which is more efficiently organized from a point of view of thematic analogy and is hopefully easier to follow.

Further supporting the idea that the division between the two upcoming sections of the present text reflects a simple editorial decision and not a structural one for my argument, it is perhaps relevant to mention that chapter five and chapter six were originally envisaged as a single one. On this note, their frequent overlaps and cross-references should not be, hence, surprising for the reader. And, I believe, neither should the fact that the foundational human aspiration to the *'irrealis'*, the effects on human kinds of ontologies, the expressive potential of artificial worlds or the role of technological artifacts as mediators of the relationship between human beings and reality are recurrent and foundational topics for both chapters.

5.2 – INTRODUCTION TO CHAPTER FIVE

The capability to manipulate objects is a sophisticated behaviour which is highly evolved in all kinds of primates (Umiltà et al., 2008). As a crucial evolutionary achievement, primates are able to interact with objects not only by using their 'natural effectors' (such as hands, arms, teeth, *et cetera*), but also through the use of non-bodily tools. Recent experiments on monkeys revealed that, from the framework of neurology, basic utensils like sticks, stones, and small rakes become – with use – part of the bodily equipment of the test-subjects (Iriki, Tanaka, Iwamura, 1996; Umiltà et al., 2008). As explained by Umiltà et al. in the 2008 paper 'When pliers became fingers in the monkey motor system', normal pliers as well as reversed pliers become equivalent, with practice, to natural effectors as far as the acting body schema of the monkey is concerned (Umiltà et al., 2008).

In the first half of last century, French philosopher Maurice Merleau-Ponty first proposed a theory of embodied relations: an interpretative framework that was built on observations concerning the ways in which human beings engage with devices as well as other beings in the world. His phenomenological perspective had its foundations in the belief that the engagement outlined above is, for humans, always fundamentally

corporeal. In his book *Phénoménologie de la Perception* (*Phenomenology of Perception*), Merleau-Ponty proposed an understanding of the relation that beings establish with artificial effectors which has a strong correspondence with the neurobiological one presented above. Characteristically deriving his examples from everyday life, he observed that:

> "[a] woman may, without any calculation, keep a safe distance between the feather in her hat and things which might break if off. She feels where the feather is just as we feel where our hand is. If I am in the habit of driving a car, I enter a narrow opening and see that I can 'get through' without comparing the width of the opening with that of the wings, just as I go through a doorway without checking the width of the doorway against that of my body. The hat and the car have ceased to be objects with a size and volume which is established by comparison with other objects. They have become potentialities of volume, the demand for a certain amount of free space." (Merleau-Ponty, 1962, 143)

Accepting this perspective on embodied action, Marshall McLuhan's understanding of technology as 'the extension of man' not only remains an insightful metaphor of the functioning of a primary factor of change in Western culture, but can be understood as a factual cognitive process that is a distinguishing component of the way certain beings (superior primates as well as – to a lesser extent – inferior primates and birds) relate to reality (Boswall, 1977).

Almost exactly a hundred years before McLuhan's media theory cornerstone *Understanding media: The Extension of Man* was published (in 1964), Danish inventor Hans Rasmus Johann Malling-Hansen created the world's first commercially produced typewriter: the Writing Ball (see figure 5A). According to literary sources, a few years after Malling-Hansen's invention, Friedrich Nietzsche ordered one 'writing ball' for himself. Having never fully recovered from the injuries he suffered in his early twenties, with his health worsening by the day and at wit's end, Nietzsche thought the quirky typewriter would help him resume his writing activities (Carr, 2010, 18, 19; Emden, 2005, 27 – 29). Upon Nietzsche's adoption of the writing ball, one of his closest friends, the writer and composer Heinrich Köselitz, noticed a change in the style of the philosopher's writing. "Perhaps you will through this instrument even take to a new idiom," Köselitz wrote in a letter to Nietzsche dated the 19th of February 1882, also adding that – in his own work – "my thoughts in music and language often depend on the quality of pen and paper." "You are right," Nietzsche replied, "our writing equipment takes part in the forming of our thoughts." (Nyíri, 1993)

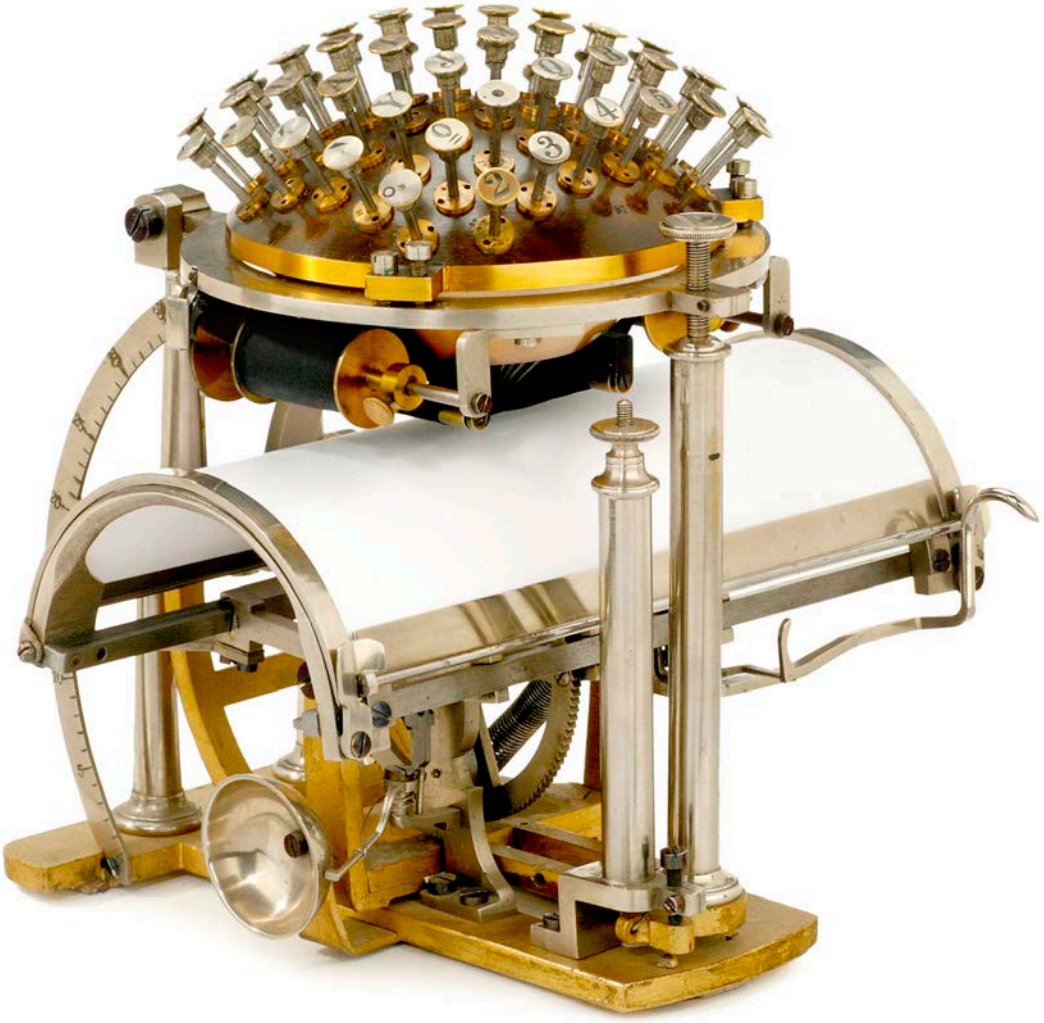

Figure 5A: One of Rasmus Malling Hansen's 'writing balls' for the blind (ca. 1865). Source: image © 2009 by Auction Team Breker, Cologne, Germany.

A remarkably similar observation to those of Nietzsche and Köselitz was offered by Merleau-Ponty himself, who utilized the term *body schema*, or *bodily space*, to indicate the organizing structure through which a body understands itself and relates to its environment. Reflecting on the relationships that humans habitually establish with tools, and also utilizing a typewriter as a particularly evident example, he commented that "the subject who learns to type incorporates the key-bank space into his bodily space." (Merleau-Ponty, 1962, 145) According to the core vision proposed by Merleau-Ponty, bodily extensions, tools – as well as any declinations of technology – do not simply (temporarily) enhance the physical capabilities of mankind together with its aptitude for manipulating entities in the world, but necessarily engender a more profound and longer lasting influence on human kinds of world-views.

The understanding of the cognitive and socio-cultural roles and effects of technology outlined above can be ascribed to – and was openly inspired by – a phenomenological account of human existence. Similar perspectives on the mutually shaping relationships between technologies and the possibilities for humans to observe, understand, imagine and create worlds (as well as interact with them) can in fact be clearly discerned in the

ways in which both Helmuth Plessner and the early Martin Heidegger wrote about technology in the first half of the last century[1].

The recognition of the decisive influence of technology on the possibilities for humans to collect, rationally organize, objectify, transfer and preserve information dates a few centuries before neurological experiments on monkeys, before Marshall McLuhan's publication, before Merleau-Ponty's feathered hats and even before the decline of Nietzsche's career as an author. It can in fact be traced back at the very dawning of written philosophy, that is to say in concomitance with Plato's writing of the Socratic dialogue *Phaedrus*.

In Plato's *Phaedrus*, Socrates and his Athenian interlocutor are spending a torrid afternoon outside of the Greek capital and take advantage of a quiet spot under a shady plane tree to rest, wait until the mid-day heat becomes more tolerable while discussing the fine points of rhetoric. Their dialogue departs from a written speech that Phaedrus presents to Socrates to discuss the fundamental qualities of speech-making and carries on to discussing topics such as the nature of desire and the journey of the immortal soul. Towards the end of the Socratic dialogue, Plato's work turns its attention to the crucial impact of one alpha-technology, namely writing, on the way humans develop thought and pursue truth and beauty (Plato, 1995, 79, 80). At the time when *Phaedrus* was written, the practice of writing was novel and controversial in Greece. Unlike Plato, Socrates resolutely opposed the adoption of writing and was dubious about the consequences it could have on the production and circulation of thought and, ultimately, on Greek society. In the conclusive part of *Phaedrus*, Socrates openly argues against the transition of culture from its traditional oral form to a literary one that relies on the externalization of thought and memory in the form of arbitrary symbols.

In support to his arguments, Socrates recounts the mythical anecdote of the encounter between Thamus, one of the ancient Kings of Egypt, and the god Theuth, whose many creations included, according to ancient Egyptian mythology, the alphabet. In the story, Theuth presents the invention of the written word to Thamus, trying to convince the king of Egypt that his latest divine creation "will make the Egyptians wiser and will improve their memory." (Plato, 1995, 79) King Thamus, however, is sceptical and raises the concern that writing might lead the very opposite effect of the one that the god originally intended for the Egyptians: "it will […] introduce forgetfulness in the souls of those who learn it: they will put their trust in writing, which is external and depends on signs that belong to others, instead of trying to remember from the inside, completely of their own." (Plato, 1995, 79)

In *Phaedrus*, Socrates grants that there are practical benefits in the framing of thought within a system of material symbols. Socrates argues that writing can indeed lead to obvious advantages and a higher efficiency in certain contexts and practices, enumerating, for instance, the cases of book-keeping, accountancy or when in need of preserving memories from the forgetfulness that comes with old age. However, vicariously speaking through Thamus, Socrates contends that writing entails a progressive dependence of the mind on technological artifacts, which will inevitably lead to alterations in the way humans utilize their very minds. Socrates believes that substituting external signs for internal memories and sensations will only supply humans with the shallow 'semblance' of knowledge, preventing them from achieving the intellectual depth that leads to 'true' knowledge and happiness.

One of the crucial claims of contemporary media philosophy closely reflects Socrates' and Nietzsche's intuitions among many others in the history of philosophy with regards to the adoption of any form of mediation of thought. The same attitude towards thinking is evident in an often-cited passage of the early work of Ludwig Wittgenstein. According to what was noted in his *Blue Book* (a collection of notes dictated to his class at Cambridge between 1933 and 1934) "[w]e may say that thinking is essentially the activity of operating with signs. This activity is performed by hand, when we think by writing; by the mouth and the larynx, when we think by speaking." (Nyíri, 1993) The production of thought was not embraced by the mature Wittgenstein as an activity that could be conditioned by the use of media or that could be pursued through the use of media but rather depended on the contextual circumstances: the spatial and temporal surroundings in which it occurs. Hungarian philosopher of language Kristóf J. Nyíri observed, however, that Wittgenstein did not seem to have been alert to the fact that the spatio-temporal contexts of thought are indeed – and deeply – affected by several components of everyday life and social life which are either directly mediated or to some extent establish a relationship with technology. "Thinking by writing", Nyíri purported, shapes linguistic surroundings that are different from those built through "thinking by speaking" (Nyíri, 1993).

Accordingly, the foundational assumption of media philosophy postulates that neither the contents of thought nor its contexts can be abstracted from their mediatic forms. A practical manifestation of this belief that is commonly encountered in the present age of digital mediation can be identified in the text that is stored in word-processor files, such as the ones that compose this study. These files possess no temporal existence of their own and, being always open to reorganization, addition, revision and deletion are constantly in a beta stage that is characterized by a limited objectivity both in the formal sense and for what concerns its very textual contents (Bolter, 2001). "[Text files] are no longer objects of thoughts, but thoughts themselves, thoughts in flux." (Nyíri, 1993)

At this point in the development of my argument, I deem it relevant to observe that, in his 1982 book *Orality and Literacy*, historian and philosopher Walter J. Ong argued that the transition from orality to literacy led to a fundamental shift in the ways in which human beings develop and structure their thought. Focusing their academic efforts in the second half of the last century on the transition in Western culture from orality to literacy, both Walter J. Ong and Eric Havelock supported the thesis according to which Plato's 'doctrine of Ideas' can be historically recognized as a direct consequence of the cultural adoption of the textual medium in ancient Greece (Ong, 1982; Postman, 2005).

According to the perspectives proposed, among others, by the later Nietzsche (post-'writing ball') and by Walter J. Ong himself, the emergence of theoretical thought in ancient Greece is specifically suited to be interpreted as a by-product of the externalization of mnemonic and thinking processes entailed in the adoption of phonetic writing. In his 1982 book *Orality and Literacy*, Ong specifies that:

> "By separating the knower from the known, writing makes possible increasingly articulate introspectivity, opening the psyche as never before not only to the external objective world quite distinct from itself but also to the interior self against whom the objective world is set." (Ong, 1982, 105)

One of the most striking functional advantages of recording and producing thought in a written form as opposed to the canons of the preceding oral cultures lies in the fact that the knowledge which was necessary for survival and fundamental for the promotion of cultural values was no longer bound to the imperfect and constraining biological system of recording information[2], but could be objectified, duplicated and consulted with a better fidelity and on a more durable and reliable support. As mentioned in the previous chapters, establishing relationships with reality through media necessarily entails a balance between the increase in acuity of certain cognitive functions and the desensitization of others (McLuhan, 1964). While objectifying and extending the capabilities of human beings for preserving, communicating and organizing thought, textual mediation can be understood as inherently rendering the process of developing and communicating knowledge less personal than the oral tradition, less flexible and makes it impossible to establish a dialectical negotiation of meaning with the mediated information (while still preserving hermeneutical freedom).

As previously noted, the introduction of every form of media technology in social practices should be pursued with the awareness that they disclose reality in ways which are both revealing and concealing. In this sense, the invention of writing is understood as having initiated a profound transformation in Western culture which had momentous repercussions not only from a cognitive standpoint, but also from an anthropological one. Notwithstanding its foundational influence on Western metaphysics, writing is not the only technology that had (and still has) a cognitive, metaphysical and even evolutionary influence on human beings. All technologies externalize and extend certain human possibilities and facilitate the transportation and manipulation of beings, resources and information. As such, they co-determine the shaping of new world-views and disclose broader interpretative horizons to understand what it is like to be in the world as humans in a certain historical contexts.

5.3 – REJECTING DUALISM

> "She could see the image of her son, who lived on the other side of the earth and he could see her… «What is it, dearest boy?» … «I want you to come and see me.» «But I can see you!», she exclaimed. «What more do you want?»… «I see something like you… But do not see you. I hear something like you through this phone, but I do not hear you.» The imponderable bloom, declared by discredited philosophy to be the actual essence of intercourse was ignored by the machine." (Forster, 1985 in Goldberg, 2000, 48)

Inspired by Forster's 1909 pioneering techno-pessimistic novel *The Machine Stops* (already mentioned in the introductory chapter of this study), a remarkable portion of the science-fiction production of last century focused its attention on what Hubert Dreyfus called the humans' "progressive loss of touch with reality […]." (Hubert Dreyfus, *Telepistemology: Descartes's Last Stand* in Goldberg, 2000, 48 – 63) The work of Philip K. Dick is a particularly evident example of such concerns: socio-political themes as well as ethical and fundamentally ontological ones are treated – in the body of his literary work – as consequences of the potential of technology for simulating reality, for imitating it and eventually for replacing it wholesale. This particular vision can be recognized as a

pivotal recurrence in many novels and short stories among Dick's best-sellers such as *The Three Stigmata of Palmer Eldritch* (1965), *Do Androids Dream of Electric Sheep* (1968), *UBIK* (1969) and *We Can Build You* (1977).

In science-fiction, Dreyfus maintained, the recurrence of themes that deal with the detaching of humans from a direct, intimate relationship with reality (until a complete refashioning or replacement of the world itself) is not a mere dystopian fantasy, but it is a vivid metaphor of the development of epistemology in the Western world (Dreyfus in Goldberg, 2000, 50). What Dreyfus referred to is the foundational dualistic stance that wrought Western thought and led its growth until its present, theoretical form of 'scientism'. This dualistic heritage was traced back, in the second chapter of this study, to the work of the British Empiricists, further upstream to René Descartes, to Plato and finally – even before the Athenian initiator of written philosophy – to Pyrrho of Elis and the sceptics in the fourth century BC[3].

Following the outlined epistemological tradition, and as already explained, in the seventeenth century Descartes explicitly posited a methodological distinction in the structuring of his thought between the immaterial *res cogitans* (thinking thing) and the material *res extensa* (extended thing). This fundamental divide considered the mental content of human beings as immaterial, self-contained and independent from the world as well as its sensory impression. On the other side of the dichotomy are things that have a material extension like inanimate objects, human bodies, the physical dimension of other living creatures, *et cetera*. The essential Cartesian belief – 'I think, therefore I am' – is metaphysical solipsism: a certainty that cannot be anchored to anything external to the mind of the thinking subject himself. This metaphysical isolation is also apparent in "the presupposition that man as an autonomous subject must be guided solely by his own reason. As such the Cartesian concept of subject is part of the foundation of the modern-day liberal view of man." (De Mul, 2010, 167)

In his writings, Descartes never denied that the mental content of individual human beings depends in several ways, along the course of their biological existence, upon their sensory equipment as well as their various tools and artificial extensions. In other words, according Descartes, at least a portion of the way humans organize and develop knowledge is directly involved in the physical world, but in his view it can also exist independently of it. In his 1640 *Meditationes de Prima Philosophia* (*Meditations on First Philosophy*) he defined the human mind as a *thing*, an immaterial substance which, differently from material objects, is *timeless*. Following the Platonic and Christian tradition, Descartes, identified the *res cogitans* with the immortal soul. (Descartes, 1641)

The ancillary role that Descartes assigned to sensory experience in his epistemological framework as well as the Cartesian disregard for the bodily foundations to the structuring of ontologies (or the production of any mental content for that matter) was met a strong opposition from philosophers embracing empiricist and materialistic perspectives. The latter argued that knowledge and, even more basically, the very process of thinking would not take place without a physical substrate for it[4]. In the twentieth century, the work of phenomenologists like the already cited Martin Heidegger, Helmuth Plessner and Maurice Merleau-Ponty, pragmatists like William James and John Dewey, and so-called 'philosophers of ordinary language' such as John L. Austin and the later Ludwig Wittgenstein problematized and countered Descartes's dualism with alternative epistemological approaches. Adducing each their own specific reasons, the cited branches and figures of modern philosophy disputed that the Cartesian doubts are compatible with

the experience of the world humans are exposed to in their ordinary existence and argued that Descartes's position can only be understood as a derivative form of thinking about knowledge: an understanding that necessarily depends and builds upon an already established and more fundamental involvement between human beings and reality.

Focusing on interactive digital simulations, and in particular on the possibility of computers to objectify, sustain and offer experiential access to alternative phenomenologies, this study is concerned with areas of contemporary philosophy in which the scepticism upheld by Descartes's dualistic ontology seems to be well motivated. What the digital medium appears to be capable of is precisely taking the cunningly persuasive (if not openly deceptive) role of the Cartesian 'evil genius' (cfr. chapter 2, note 4). Computer were presented in the previous chapters as artificial systems that can grant access to interactive, virtual worlds which, with the development of the technical capabilities of computers, grow progressively more granular and convincing in terms of the aesthetical stimuli they provide as well as the responsiveness of the interactivity that they disclose. It is, hence, more and more common for digital simulations to also allow its users to actively and contemporaneously share virtual experiences that are not only increasingly more immersive as noted above, but that are also progressively easier to encounter and access.

Confronted with more and more sophisticated and available simulated worlds, it is expectable that human beings might come to think of their being-in-the-actual-world as a specific, relative instance of a more encompassing way of relating to reality rather than their essential grounding of their world-views. Embracing this standpoint, the social diffusion of interactive digital media is likely to appear as stimulating the rebirth of questions about the authenticity of human experience to the fore of the cultural debate, possibly leading – as in the seventeenth century – to the raise and the adoption of purely rational epistemological stances. Once again in the history of thought, and this time supported by the encompassing rhetorical potential of digitally simulated worlds, human beings could be persuaded to understand themselves as brains in vats and to relate to their sensory systems as if they were data-encoders.

In the age of digital media (and especially so when trying to map concepts like agency, identity and presence in virtual worlds), the most salient critiques to the dualistic, theoretical approach explained above come from approaches which embrace the vision proposed by the already mentioned *Phénoménologie de la perception* (*Phenomenology of Perception*)[5]. In his influential 1945 book, Merleau-Ponty carefully presented objections against both empiricist and rationalist theories on human perception and agency and advocated what he later called the "primacy of perception": the belief that the individual perceptive and interactive bodily involvement with the world precedes, in human cognition, the possibility to theorize about the world itself.

Merleau-Ponty believed that when basic, everyday engagement in the world is going as expected, one does not perceive oneself as a subject with inner experiences who relates to objects in the external world. This perspective of Merleau-Ponty was heavily inspired by Heidegger's notion of something being *ready-to-hand* (something that human beings – with a functional purpose in mind – can establish an immediate relationship with, something whose intuitive handling cognitively anticipates the possibility of a theoretical approach). Consequently, in Merleau-Ponty's perspective, the embodied involvement of human beings in the world must be understood as a pre-intellectual or, as Plessner would

define it, a 'pre-empirical' activity, on the basis that it anticipates the possibility to structure observations within the frameworks of empirical sciences.
The embracing of the concept of embodiment as having the quality of being pre-intellectual introduces an interpretation of the human corporeal relationship with reality as cognitively anticipating the theoretical separation between subject and object which characterized scientism. From this phenomenology-inspired perspective, the two traditional poles of human knowledge (subject and object of observation) are understood not as independent ontological 'absolutes', but rather mutually interdependent components of what it is like to be in the world as humans, components (or 'aspectivities') of the same process which are inextricably tied together via one's body.

Maarten Coolen noted, however, that in Merleau-Ponty's phenomenology "the body itself seems to 'vanish' when it perceives something or puts itself into action, in favour of the world that is opened by it. It gets, so to speak, swallowed up in being attuned to the world." (Coolen, 2013, 66). In the essay from which the previous passage was extracted from, revelatorily titled 'Bodily Experience and Experiencing One's Body', Coolen claimed that a phenomenological framework giving the primacy to the bodily point of view does not necessarily have to exclude the pre-reflexive sensitivity towards the fact that beings are always positioned in the world through their bodies. To be complete, according to Coolen, a theoretical account of perception and action must also take into account the capability of human beings to reflect on their own corporeality and on the engagement possibilities and the affordances offered by their bodies. This defining quality of human beings allows them to establish a cognitive distance from the world they inhabit and distinguish the objective features in their surroundings (Coolen, 2013, 65).

For Helmuth Plessner, the actualization of the self-reflexive relationship mentioned in the paragraph above was at the centre of his philosophical anthropology[6]. Similarly to Coolen, I believe that a perspective relying on philosophical anthropology, and especially on Plessner's second anthropological law – that of 'mediated immediacy' – will more thoroughly and efficiently capture and describe what it is like to be in 'those worlds' than a dualistic perspective on philosophy of mind or a classical phenomenological standpoint ever could.

The anthropological principle of 'mediated immediacy' affirms that human beings are wrought by two parallel and simultaneous ways to relate to their world: an immediate one in which they are intuitively immersed in their world and a mediated one in which the humans can reflect upon the world itself and themselves as parts of it. Given its dualistic character, this perspective could reminisce of a Cartesian stance. In his 1928 book *Die Stufen des Organischen und der Mensch* (*The Stages of the Organic and Man*), however, Plessner gave an explicit account of what he meant by a relationship between two terms that is governed by 'mediated immediacy'. A mediated-immediate relation is

> "that form of binding […] in which *the mediating intervening term is necessary in* order to establish or ensure the immediacy of the connection." (Plessner, 1975, 324 in De Mul, 2013, 69, translated by Maarten Coolen)

Starting from Plessner's second anthropological law and relying on his theory of 'positionality' – or rather its elaboration in the age of digital media by De Mul – I will structure an understanding of interactive, digital simulations as capable of enhancing and expanding their native *body schemas* of human beings with supplementary, virtual *body*

schemas. This sub-objective will be pursued with the final goal of being able to structure a framework to understand human ontologies in virtual worlds. In the context of discussing the rejection of a dualistic perspective in the context of (digital) media studies, it is important to observe that, in the second part of *Die Stufen des Organischen und der Mensch* articulates a fundamental refutation to Cartesian dualism and the proposition of Plessner's alternative standpoint which departs from the notion of 'double aspectivity of the living thing' and will be explained in the next sub-chapter.

5.4 – HUMAN ECCENTRICITY AND VIRTUAL HOMELESSNESS

In my perception, the most efficient way to introduce Plessner's theory of 'positionality', consists in relating it to a philosophical topic that held a central relevance in the debates of what is often referred to as the 'continental philosophical tradition'. I believe this is the case not only due to the centrality and recurrence of the topic I am about to introduce in the last three hundred years of Western thought, but also because it has a crucial role in the structuring of the central question that this study attempts to answer.

This fundamental topic is that of human finitude and it constitutes the nucleus of Heidegger's analysis of the human condition. In Heidegger's work, the treatment of human finitude includes reflections and philosophical traditions developed from the groundlessness of the modern, secularized culture. No longer guaranteed truth and absoluteness of knowledge and social values by a transcendent God, the Western man needed to embrace the absence of a metaphysically stable foundation and thus re-shape his culture and re-construct his identity independently from theology. Observed from this angle, modern philosophy is characterized by the conjoined epistemological, social and psychological efforts to cope with the uncertainty and the finitude which defined the human condition during modernism and (at least part of) post-modernism.

It is in modern context that Johan Gottfried Herder understood man as a "being that lacks" and Helmuth Plessner famously referred to the indeterminate and unfathomable nature of the human condition as "an open question"[7]. The ambiguous and unknowable anthropological constitution of human existence is expounded by Plessner in his aforementioned 1928 book *Die Stufen des Organischen und der Mensch* in the form of three 'anthropological laws'. Plessner's 'anthropological' laws present man as an incomplete creature, an open project whose natural aspiration are that of

- reaching a state of completeness, a condition of balance which man innately pursues by means of culture and technology, and of

- cherishing dreams of home, of finding a reliable ground on which to establish stable values and construct one's existence (Plessner, 2006; De Mul, 2010, 204 – 205).

Nietzsche's famed statement according to which man is that being that needs to be surpassed – that is to say a transitional being, not the ultimate goal of either culture or biology – might as well be understood in that way: existence is a task in itself for mankind, a challenge. The fact that human beings are bound, as Plessner explained, to experience permanent imperfection and dissatisfaction entails the endless assignment of

transcending themselves. “In this way, Plessner radicalizes the philosophical anthropological theme of man as a *deficient* being.” (Verbeek, 2013, 236)

Given its dynamic and self-reflexive existence, in Plessner’s vision, man is defined by not being definitively definable. This is due to the fact that every ethical, scientific or religious frame of reference for a possible definition of man is inherently an historical product of man himself. Mankind, understood in this way, is always also a product of the culture he himself has created. (Safranski, 2002, 206) First the man made the hammer, then the hammer made the man. The characteristical openness and indeterminacy of the human condition also constitutes the foundation of Plessner’s concept of power in his reflections about politics, where indeterminacy is recognized as endowing human beings with freedom and potentiality to engender change.

Similarly, philosophers like Heidegger and the already mentioned Flusser elaborated significant portions of their thought on – or rather towards – an understanding of man as an unfinished project, a groundless being. According to Heidegger, *Dasein* (human existence, literally ‘being-there’) can only be fully comprehended as a project who shapes, and is relentlessly shaped by, his environment on the background of its own finitude. It is in this sense that, in a recent interview, philosopher Graham Harman defined ‘finitude’ as “the idea that we cannot speak of reality outside its givenness to us” (Iliadis, 2013). This wider acceptation of what human finitude means clearly resonates with Heidegger’s understanding of human beings as fundamentally unfinished – and unfinishable – projects.

It is interesting to note, after what was observed on the topic of human finitude, that in *Being and Time*, Heidegger offered an understanding of man as a being who is always characteristically ‘ahead-of-himself’ (Heidegger, 1962, 235 – 241 / SZ, 191 – 197). In his vision, the human being incessantly engages in a confrontation which takes place between two coexisting aspect of that being itself: one immersed in the present and one projected towards future possibilities. This projectual dimension of human being towards future possibilities and ways of being in the world is generally understood by Heidegger as a form of ‘care’ and is always presented in his work as being a consequence of their awareness of their very mortality (Heidegger, 1962, 235 – 241 / SZ, 191 – 197).

In the context of Heidegger’s thought, finitude is primarily understood (as suggested by the title of his *magnum opus*) as temporality: in his interpretation, human beings are fundamentally defined by their impermanence in time. Heidegger’s analysis of the human condition is not a philosophical endeavour with an end in itself, rather it serves as a foundation, a preliminary analysis, for the overall objective of his philosophical project: the proper structuring and the tackling of the “question of being” (outlined in the second chapter of this study). Given the high level of theoretical rarefaction of his task and having focused on the temporal dimension of being in the world, Heidegger’s thought placed a lesser emphasis to the spatial (corporeal) dimension of ‘being-there’ as humans.

Relying on what he considered a scientifically valid approach of anthropological theories (in particular preferring the ‘open’ approach proposed by Jakob von Uexküll over Charles Darwin’s original and anthropocentric one), in his work, Plessner assigned a central role to its spatial and corporal dimensions as far as the understanding of human existence and its finitude were concerned (Rasini, 2010, 170 – 173; De Mul, 2010, 194, 195). In Plessner’s *Die Stufen des Organischen und der Mensch*, the perceived finitude of the human being is essentially understood as a product of a specific kind of autonomy in

relation to his own body as well as his environment. (Rasini, 2010, 173; Plessner, 2006, 132 – 135) The essential difference between Heidegger's and Plessner's phenomenology-inspired reflections on human finitude, can be summarized as follows:

- Plessner's perspective gives methodological primacy to the concept of space, thus chiefly comprehending human finitude bodily, that is to say in terms of the restricted relational horizon of a the human body in his environment, while

- Heidegger's perspective focuses on the temporal dimension of human existence, thus mainly understanding its finitude as coinciding with mortality.

For a long time, Plessner's work remained relatively unknown to the English speaking world, obscured by the long shadows cast by his contemporaries. In particular, I am referring to both Max Scheler, Plessner's mentor and central figure of philosophical anthropology, and to Heidegger, whose *Being and Time* was published just one year before Plessner's *The Stages of The Organic and Man*. The influence and international recognition of Heidegger's work marginalized Plessner's, whose diffusion also suffered – as far as the academic interest and diffusion of his philosophical enterprise were concerned – from the fact that only a few of his works had been (and still are) translated into English. Only recently, his work gained an academic momentum that is mainly due to his notion of ('eccentric') positionality and its application to the study of information and communication technologies. *The Stages of The Organic and Man* offers, in fact, an insightful anthropological framework to understand the relationship between our biological bodies and their extensions in virtual or telepresent environments. In the subsequent sections of my text, I will argue that Plessner's work can be utilized as the starting point to structure a rich and encompassing interpretation of processes like transference and incorporation (as well as the relationship between in-game spatial orientation and ordinary spatial orientation) that are alternative to dualistic perspectives and can complement more widely read and discussed classical phenomenological frameworks.

As already outlined, in Plessner's vision, human finitude is essentially a matter of relationships in space. Embracing the principle of immanence, Plessner understood the body as the periphery of the organism, a boundary which is as much part of the internal world as it is of the external world (Plessner, 2006, 82). Such a boundary is intuitively perceived and understood as the limit with which it encounters other beings (Plessner, 2006, 127). The relationship between a living organism and its boundary is what Plessner designated as its 'positionality'. In his philosophical biology, 'positionality' defines the spatial structure and cognitive autonomy of an organism, which is to say its freedom in relation to its surrounding environment and its own bodily instincts and possibilities.

'Positionality' individuates a fundamental quality of organic life. Its spatial structure and its degree of cognitive autonomy determine the difference between plants, animals, human beings and can be used to explain the perceived finitude of the 'human animal' in anthropological terms. In the fifth chapter of *The Stages of The Organic and Man*, Plessner borrowed from biologist Hans Adolf Eduard Driesch the concepts of 'open form' and 'closed form' to explain the dissimilarities between the vegetal kingdom and the animal one in terms of spatial organization and independence from the environments they live in. According to Plessner, a plant – defined by its open form – is not yet in a positional relationship with its boundary. The inside of an 'open form' is not endowed with a centre of experience. In other words, a plant is limited by a bodily surface whose

behaviours are not regulated by a consciousness, as a consequence of this structural absence, a plant is a non-independent part of the life-cycle of the environment it is in (Plessner, 2006, 244). In more synthetic terms, an 'open form' does not have a consciousness to structure a positional relationship with either its organism or the surrounding environment: an 'open form' *is* its body.

A basic structuring of a positional relationship can start to be identified, instead, with what Driesch call 'closed forms'. In the case of animals, which are defined by that very structure, everything that crosses their bodily boundaries in either direction (for example in the cases of feeding, mating, defecating, *et cetera*) is mediated by an experiential nucleus. According to Plessner, this centre can be identified, at the physiological level, with the nervous systems of animals and, at a psychical one, as the conscious awareness of its environment. Plessner observed that, thanks to the mediation and articulation wrought by its centre, an organism defined by a 'closed form' not only acquires a higher level of coherence in relation to its environment, but – to an extent – becomes independent from it (Plessner, 2006, 251). Unlike a plant, an animal not only *is* a body, but it is also *in* its body (as inner experience) (see figure 5B) (Plessner, 2006, 251).

As epitomized in the experiment on the monkey motor system outlined at the beginning of this chapter, the use of technical artifacts can mediate the relationship between a centre of experience and its environment. Any form of mediation discloses new possibilities for living creatures for the deepening and the extension of their relationship with the reality.

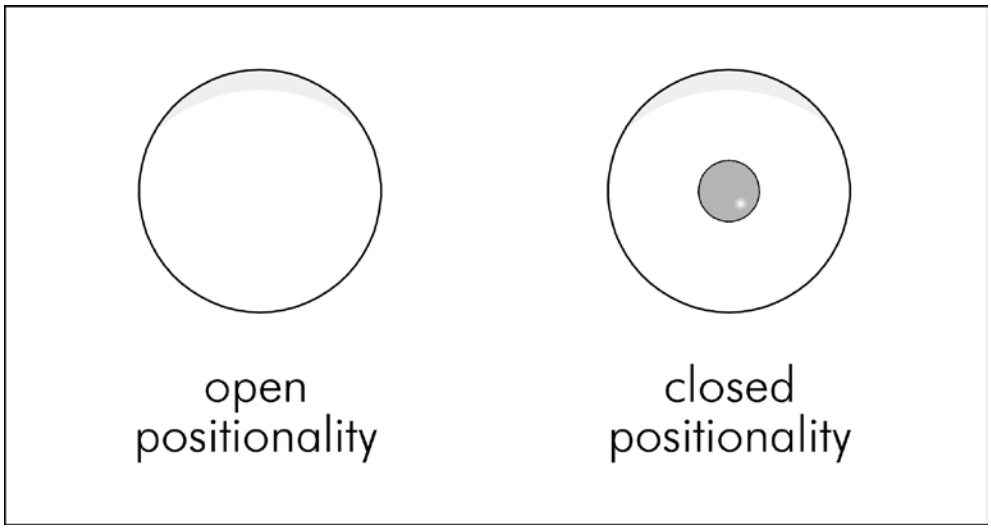

Figure 5B: The first two positionalities of organic life according to Plessner in the visual interpretation of Jos de Mul (De Mul, 2010, 204). The diagram on the left represents an 'open form': a form that has no autonomous relationship with its environment, as in the case of plants. The one on the right exemplifies a 'closed form': a type of positionality whose centre of experience allows an organism to develop awareness of its world as well as a degree of independence from it. The latter is the case of animals: animals can in fact take several decisions with regards to their behavior and in relation to the world.

Plessner's theory of positionality does not, however, only apply to plants and animals. In fact, as already hinted, it was mainly devised in order to give a solid conceptual footing to a philosophy of humanity that would be able to overcome a dualistic perspective. According to Plessner, human beings innately establish a relationship with their bodily

boundary which is more complex than the positionality structured by a 'closed form'. Not only they maintain a central relationship with their individual exterior limit, but also establish a cognitive relationship with their very centre. Human positionality can be defined, at least initially, as closed: the humans-animal has a body whose relationships with the world and other beings are directed by its nervous system.

Being human, however, is characterized by the capabilities of self-reflection and self-objectification which, according to what was observed before with regard to the closed positionality, transcends the univocality and the simplicity of the way animal life forms establish relationships with their environments. Human beings are intuitively aware of their centre of experience, and it is this awareness in particular that sets mankind apart from plants and animals. Human positionality must therefore feature a second experiential nucleus, a second, parallel aspectivity which, in order to be able to self-reflect on its original centre, needs to be external to it (and to a degree separated from it, and thus off-centre, 'eccentric') (see figure 5C).

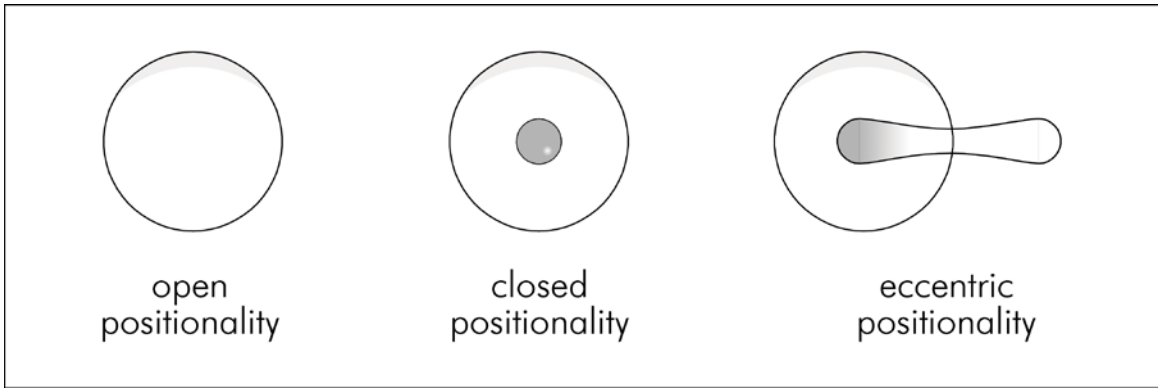

Figure 5C: The three possible 'stages of the organic' according to the theory of positionality proposed by Plessner in 1928 in the visual interpretation of Jos de Mul (De Mul, 2010, 204). The 'eccentric positionality' of human beings, features two coexisting and connected nuclei: one within the body (the bodily experiential centre accountable for inner experiences) and the other outside of it (an aspectivity that allows for the possibility of self-reflection and for interpreting one's own body as an object).

Please note that, in the diagram above, the dark grey color qualifies an experiential centre, that is to say a cognitive nucleus which is relative to a body. The fact that the external aspectivity of the eccentric positionality is not colored indicates precisely that the latter is not a proper experiential centre, but rather an abstract, disembodied standpoint.

Similarly to what was observed in the case of beings defined by a closed form, the mediation of the experiential centre in the eccentric positionality grants the human animal the possibility to enhance and extend one's own body scheme beyond his or her natural effectors. As a common experience in their everyday existence, humans can develop an close familiarity with tools (from the proverbial hammer to the layout of a keyboard, to the dimensions of one's car) up to a point when, with practice, technical artifacts are perceived and utilized as native effectors. Heidegger labels this characteristic aspect of being-in-the-world as encountering objects in a way that they are 'ready-to-hand'

(*Zuhanden*), a term that – in Heidegger's texts – refers to the embodied and direct functional relationship with tools that precedes the cognitive possibility objectify them and theorize about them (Heidegger, 1962, 137 – 143 / SZ, 104 – 110).

When defined by an eccentric positionality, according to Plessner's theory, beings are capable of establishing separate and coexisting relationships with each side of their constitutive boundary: with the interior as well as with the exterior (Plessner, 2006, 126 – 132). In other words, humans are innately defined by a structural ambiguity in the way they relate to themselves. De Mul encapsulated this internal fracture, the lack of constitutive balance that is inherent in being in the world as humans stating that "as eccentric beings we are not where we experience, and we don't experience where we are." (De Mul, 2010, 196) The liminal position of human cognition recognized by Plessner closely resonates with the concept of the 'transcendental subject' in Kantian philosophy, where the subject is neither in the world it lives in (so, neither in fully its body), nor far from it (nor fully removed from its body). "It stays right on the border of experience." (Compagno, 2008, 185)

From this brief outline of key concepts of Plessner's anthropology, it appears that the particular positionality that characterizes a living human being is basically determined by its innate duality (Plessner uses the terms 'duplicity'). Despite proposing a perspective which is still structurally dualistic, Plessner openly rejected the Cartesian extreme epistemological dichotomy between *res extensa* and *res cogitans*. Instead, he understood the dimensions of interiority and exteriority as distinct aspects of what is really a psycho-physically unitary organism: a 'living thing'. According to Plessner, in fact, maintaining at the same time both the positions of actor (centre) and spectator, the subjective pole of the theoretical separation "is no longer transferable to the position of object" (Plessner, 2006, 314, 315).

According to the 'theory of positionality', a living human *is* a body, is *in* a body and is, at the same time, outside his or her own body. Specifically, Plessner collocates that aspect of the human positionality "behind oneself" (Plessner, 2006, 312 – 317). Here, it might be interesting to recall that Heidegger also indicated something along the lines of a double 'temporal positionality' as the essential structure of how human beings are in the world. Plessner spatially collocated the second cognitive centre of a person as metaphorically "behind oneself", while – according to Heidegger – this second aspectivity is always presented as temporally "ahead of oneself"[8].

Each in their own terms, both Heidegger and Plessner structured a philosophy which recognized in the inherent duplicity and ambiguity of the human cognitive structure the fundamental cause of the homelessness and incompleteness which characterize the human condition. It is precisely due to this particular complication, to the insurmountable chasm within oneself, that human beings experience themselves at the same time as objects as well as subjects. The self-reflection and the possibility to objectify oneself as well as one's processes inherent in the eccentric positionality entails that the way human beings exist is not univocally established by nature and carried out instinctually, but it has to be constantly worked on, reshaped, redirected. The human condition is, thus, always an open project, an open question (Plessner, 1980-1984, IV, 383 – 385). In this sense, the whole of Western civilization could be interpreted as the interconnected set of philosophical, religious, artistic, social and productive systems aimed at compensating the finitude and the uncertainty (as well as the consequent dissatisfaction and anxiety) that are structural to being human.

Concordantly, in Plessner's work, the artificial dimension of culture is presented a necessary second nature for human beings. Culture is precisely the context where human beings "make something of themselves" and pursue the balance and completeness they inherently aspire to (Boccignone, 2009, 5). In this second nature, man is supposed to find his, the 'rootedness', a stable ground which is not possible to attain in the context of its first, fractured, nature. In Plessner's *The Stages of The Organic and Man*, technology is presented as inextricably conjoined with the eccentric positionality of humans. Even before being introduced as a set of tools, products and notions necessary for survival, technology is presented by Plessner as a constitutive part of culture and, as such, an ontic necessity. (Plessner, 2006, 344).

> "Man tries to escape the unbearable eccentricity of his being, he wants to compensate for the lack that constitutes his life form. Eccentricity and the need for complements are one and the same. We should not understand 'need' in this context psychologically or as something subjective. It is something that is logically prior to every need, drive, pulsion, tendency or will. In this fundamental need or nakedness can be found the *movens* for everything that is specifically human, the focus on the *irrealis* and the use of artificial means, the ultimate foundation of the *technical artifact* and that which it serves: *culture*." (Plessner, 2006, 334)

From these premises, Plessner elaborates his understanding of the human being as the 'apostate of nature' or, as explained in his first anthropological law, as "artificial by nature", that is to say innately in need of complementation of an unnatural, non-grown kind. (Plessner, 1980 – 1984, IV, 382 - 385) In other words, Plessner believed, as contextualized in the quote above, that it is the destiny of mankind's positional structure to attempt to aspire to the transcendence of its original (natural) condition through the establishment of new, artificial worlds (Plessner, 1980 – 1984, IV, 385).

The embracing of any form of technology as an artificial way to compensate for human incompleteness and finitude is not a unique trait of Plessner's thought but it is relatively common in Western thought and in the field of media philosophy in particular. This interpretation was subject to a radicalization and an impulsive increase of its academic significance with the advent and extensive social impact of digital technology. Instances of this frame of reference can often be encountered in this very text: in the third chapter, for instance, Peter Weibel was quoted as having developed precisely that understanding of teletechnology, structuring his work on the belief that "[e]very form of technology […] serves to overcome spatial and temporal distance. […] The real effect of the media lies in overcoming the mental disturbance […] caused by distance and time, by all forms of absence, leave, separation, disappearance, interruption, withdrawal and loss." (Weibel, 1992, 75) With a similarly techno-optimistic slant, the transhumanist movements prophesize a future where culture understands and promotes technology as the evolutionary complement and continuation of biology on the background of the Platonic and Cartesian dreams of immortality and detachment from the material world. From a similar philosophical standpoint, in his 1993 book *The Metaphysics of Virtual Reality*, Michael Heim defines the mental dissociation that is entailed in interacting with virtual technologies as "Platonism as a working product"[9] (Heim, 1993, 88).

The study of the socio-cultural as well as biological influence that technology exerts on human beings is not a recent focus of academic interest. Section 23 of Heidegger's 1927 book *Being and Time* already addressed the import and the constitutive role of primitive precursors of virtual technologies (like for example the telephone, television and radio) had on the way human beings are in the world, related to it as well as to other human beings. From Heidegger's standpoint, *Dasein*'s relationships with other entities in the world feature "an essential tendency to nearness".

> "All kinds of increasing speed which we are more or less compelled to go along today push for overcoming distance. With the 'radio', for example, *Dasein* is bringing about today [de-distancing ('de-severance' in the original text)] of the 'world' which is unforeseeable in its meaning for *Dasein*, by way of expanding the everyday surrounding of the world." (Heidegger, 1962, 140 / SZ, 106)

In the next sections of this chapter, in a way that is re-thematized and reinforced by the work of De Mul, I will explain in which sense and in relation to what theoretical frameworks I consider Plessner's positionality to be particularly suitable in describing the cognitive and psychological shifts that ensue from the social adoption and diffusion of virtual- and tele- technologies.

5.5 – THE DIGITAL POLY(EC)CENTRIC POSITIONALITY

As outlined in the conclusion of the previous sub paragraph, this study considers Plessner's heritage and insights to offer a potentially more efficient, balanced and original approach than the ones offered by the dualistic tradition or by traditional phenomenological perspectives. I believe, however, that a critical aspect of Plessner's philosophical anthropology jeopardizes his promising contribution to contemporary philosophy of technology, media philosophy and game studies. The problematic aspect mentioned above is recognized in the exclusion from his theoretical work of the possibility for historical developments of life beyond the eccentric positionality. In other words, Plessner considered technology to be an anthropological factor only capable of having cognitive and psychological influence on the human condition, thus essentially ignoring its evolutionary effects in terms of human kinds of phenomenologies and on human kinds of ontologies. According to Plessner, in fact, the eccentric positionality is the ultimate stage of development of the organic, a stage from which it is impossible to attain further evolution. An overcoming of the eccentric positionality, Plessner wrote, "is impossible, as the living thing is now really positioned 'behind itself'." (Plessner, 2006, 315)

With the objective of re-thematizing and supplementing Plessner's positionality theory in the age of virtual- and tele-technologies, Jos de Mul proposed the addition of an extra form of intentional 'boundary-realization' that is afforded by, and is typical of, the present technological horizon and its simulational orientation. In *Cyberspace Odyssey: Towards a Virtual Ontology and Anthropology*, De Mul added to the three stages of the organic originally outlined in *The Stages of The Organic and Man* an additional evolutionary dimension: a fourth type of positionality – called poly(ec)centric positionality – which emerges from the structural hybridization between human biology

and interactive digital technologies capable of displacing human cognition like telepresence and virtual reality (De Mul, 2010, 193, 194).

De Mul's re-thematization and supplementation of the Plessner's work started with the recognition of the crucial anthropological importance of a specific affordance of virtual- and tele-technologies, an affordance which he identified as the possibility disclosed by such apparatuses of partially 'outsourcing' of the human centre of experience (De Mul, 2010). In other words, when observed from the perspective of Plessner's philosophical anthropology, the cognitive effects of the mediation on human positionality through digital technologies were understood by De Mul as those of a technological objectification of its eccentricity (De Mul, 2010, 202). More specifically, rather than simply displacing the human intentional 'boundary realization', virtual- and tele-technologies were recognized as being capable of multiplying it. For this reason, De Mul named this additional form of intentional boundary-realization 'poly(ec)centric positionality' (De Mul, 2010, 202). He further explained that, on a psychological level, the mediated multiplication of one's centre of experience should be understood as a dissociation[10].

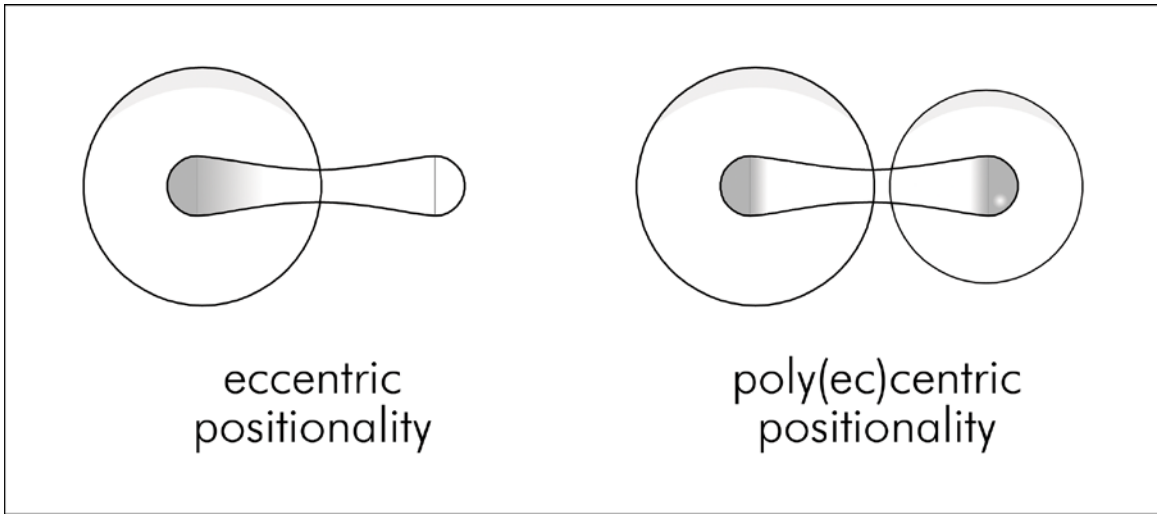

Figure 5D: Whereas in the eccentric positionality only one of the two centers corresponds to a body, in the case of the 'poly(ec)centric positionality' both centers are colored indicating the possibility for bodily cognition. In the poly(ec)centric positionality, also the second pole of the eccentricity can, hence, accurately be understood as a complete and additional, artificial experiential centre. It must be further noted that, in the case of the poly(ec)centric positionality, each experiential pole is colored in a less complete fashion if compared with the eccentric positionality where all the consciousness was concentrated in a single centre.

At this point, I would like to focus the attention of the reader on a qualitative difference between the mediated extensions and fragmentations that takes place in a poly(ec)centric cognitive structure and the augmentations that we have observed in relation to the incorporation of tools in the body scheme of closed positionalities as well as eccentric ones. In the latter, the functional purposes that instigated the changes in the *body schema* were actual ones, that is to say that the cognitive augmentations were motivated by needs and applications that were relative to the physical world that is native to humans. As such, they needed to be compatible to the scale as well as the physical and intellectual capabilities of the human beings in their relation with the 'actual' world. It is from this

perspective that traditional technology cannot be thought apart from the laws of physics, social conventions, the epoch of human history in which they were devised in, *et cetera*. In the case of the mediation of virtual- and tele-technologies, instead, the dependence of content and functionalities of human kinds of ontology from human a socio-historical context no longer presents itself as a necessity.

If on a psychological level, the 'poly(ec)centric positionality' can be interpreted as a dissociation (as a separation from human kinds of ontologies developed in relation to the 'actual' world), on the physical one it can be understood as allowing experiential access to artificial, supplementary bodies that exist simultaneously with their biological one. The reason behind the qualifier 'supplementary' when talking about virtual, embodied extensions of the 'self' resides in the fact that the bodies specifically afforded by virtual technology can never (or at least not yet) fully override and replace the 'actual' ones[11]. From the proposed standpoint, and with a specific focus on the ontological effect of interactive, digital simulations as a sub-set of virtual technologies, this study identify the specificity of digital mediation in its unique affordances of extending and fragmenting the perceptual, cognitive and operational capabilities of humans beyond what is 'actually present' and towards what is 'virtually possible'[12]. From this perspective, relying on Plessner's theory of positionality offers the initial advantage of presenting any forms of mediation as always being determined by a necessary dependence on a (actual, biological) bodily substrate.

As illustrated in figure 5D, the 'cyborg' that emerges from the hybridization of biology and digital technology is characterized by a positionality which departs from what was recognized as a simple eccentric structure. The reaching of this added positionality has, I argue, a series of far-reaching implications as far as media philosophy is concerned. The most fundamental aspect of this novel anthropological stage is that the external pole of its eccentricity is also defined by a boundary, a body. In virtual reality and telepresence, the affordances of the digital extensions of the cybernauts' bodies effectively become part of their individual (actual) *body-schemas*. This merging was not only proved empirically, to the extent that the use of computer simulation is a common practice – for instance – in the training of aviation pilots, but is also a common experience in the everyday interaction with digital media, where both virtual interfaces (HUD, GUI, avatars, *et cetera*) and hardware controllers become familiar extensions of our bodily boundaries. In the context of interactive digital mediation, the concept of 'presence' can thus be understood as a consistent feeling of immersion in a simulated world, the intensity of which depends on the smoothness and coherence of the incorporation of one's virtual *body-schema* into one's actual (or, better, 'biological') *body-schema*[13].

From an anthropological take on media philosophy, the relationship that human beings establish with their bodies, when hybridized and complemented by interactive digital media, must be embraced as defined by multiple, coexisting experiential centres corresponding to their artificially multiplied bodies, regardless of their organic, telepresent or virtual constitution. As a corollary of this approach, the proposed anthropological perspective to philosophy of technology also opened the way for the structuring of a phenomenological account of biometry in relation to interactive, digital experiences. From the applied work in the field of psychophysiology, which I initiated at NHTV Breda University of Applied Sciences, the use of biometric analysis emerged as an important 'lens' that complements already established practices in media user research as well as its emergent employment in game research. All the mentioned application of biometry can be fruitfully understood in the light of the 'poly(ec)centricity' which

characterizes the ‘extended human’ condition. The alleged existence of a necessary connection between a cybernaut’s virtual body and his or her biological one can in fact be observed in the schematic representation of figure 5C, where the two, coexisting experiential centres of the ‘poly(ec)centric positionality’ are represented as interconnected poles of the same, bipolar anthropological structure. In other words, the worlds and events that a cybernaut experiences through his or her supplementary virtual bodies have direct effects on the actual, biological, body of the cybernaut himself / herself.

In other words, in the De Mul’s elaboration of Plessner’s positionality theory in the age of virtual technologies, a being’s virtual centres of experience (or virtual bodies) are always implicitly understood as physically supported by that being’s biological body and always cognitively and emotionally connected with it. This anthropological account of biometrics in relation to virtual bodies is easily detectable psycho-physiologically in its correspondence with events in virtual worlds or, in the specific case of digital entertainment, with changes in game states and in-game performance. Also, a direct correlation between embodied virtual experiences and actual bodily reactions can be realized first hand in relation – for example – with particularly touching or intense sections of a video game, where players can detect biological variations such as changes in their actual heart frequency, in their actual blood pressure, in the dilation of their actual pupils, *et cetera*.

The vision according to which experiences and qualities of virtual worlds can be observed and assessed by tracking changes in certain biological dimensions of the creatures for which the experience or the world was designed for is further reinforced and encouraged by the growing scientific interest and industrial employment of biometric methodologies to assess and understand the influences of interactive digital experiences on humans and animals (see chapter 7, note 1).

In conclusion, as a consequence of its novel possibility for additional ‘boundary-realizations’, the external aspectivity of the eccentric positionality that is typical of the human being can effectively constitute additional experiential centers. By the very definition of ontology adopted in this inquiry[14], the newly acquired ability to engage worlds through a point of view which is no longer univocal or exclusively bound to one’s actual body necessarily entails cognitive and ontological consequences. The effects and consequences of the introduction and integration of digital technologies in social processes are understood by this study as novel, projectual fields of possibilities for fragmenting and extending human kinds of ontologies beyond their traditional biological and contextual limitations. The expressive qualities and the limitations of virtual ontologies in particular are the topics of the next two chapters of this study.

5.6 – POLITICAL CYBORGS?

Heidegger's 1927 *Being and Time* had a profound influence on the twentieth century philosophy, in particular, and especially so in the fields of existentialism and hermeneutics. In the incomplete philosophical project of which *Being and Time* is an initial part, Heidegger ventured to answer the single question that he considered the most fundamental and overlooked questions of Western philosophy since its ancient Greek inception: "what is the meaning of Being?" In the introduction to *Being and Time* Heidegger explained that the 'question of Being' can only be tackled once the being for whom the 'question of Being' is important is clearly analyzed and understood. *Dasein* (literally being-there) is, for Heidegger, the being asking the 'question of Being', the being for whom Being matters. Consequently, in order to elucidate and give a solid footing to the decisive question he was trying to answer, he started his philosophical enterprise by analyzing the fundamental characteristics of *Dasein*. With these objective in mind, the first section of *Being and Time* was structured around the most essential dimension of *Dasein*: its temporality (Heidegger, 1962, 32 – 33 / SZ, 12). Heidegger's analysis of the human being can be understood, as a rarefied understanding of the individual existence and its finitude. In the past century, both the level of abstraction and the focus on the individual temporality of Heidegger's philosophical work had been critical points in the reception and the diffusion of his work and led to its standing reputation as a highly speculative philosophy which remains poorly applicable to actual socio-political issues and questions.

On top of what has just been observed, it must be noted that the public dimension of being humans plays a very marginal role in *Being and Time*. Being in society is reductively understood, in the early developments of Heidegger's thought, as a moment where a human being's authentic, individual self is contrasted with a social 'mask' that he or she is forced to wear, leading to an inauthentic mode of existence. Instead of adhering to personal inclinations and aspirations (thus exerting authentic will), in the public sphere one (*das Man*) acts impersonally; in public as well as in any social context, the individual is conditioned to behave in the way that is expected of him or her in that context, as "that is what one does." On these premises, and strongly influenced by Heidegger's disappointment with the Weimar republic fiasco, *Being and Time* also belittles the social role and relevance the political debate, addressing it as unconstructive chattering (Heidegger, 1962).

Heidegger's disregard for the social dimension as well as one's political involvement could be interpreted as the secularization of the ideological separation operated by Martin Luther between the public sphere and the private one, the private one being the one in which salvation could be earned according to the iconic figure of the Protestant Reformation. On the other hand, in his 1959 book *Die verspätete Nation* (*The Nation in Delay*, originally published in 1935 with a different title), Plessner addressed the dismissal of the political dimension as foundational to human existence (frequent in German culture at the time) and the intellectual elites' abandonment of the communal sphere as being among the crucial factors that allowed racist biology to become the dominant ideology of an authoritarian state (Plessner, 1959).

Similarly to Heidegger, the early Plessner also explicitly distanced himself from any radical notion of community, distinguishing the sphere of intimacy from the public façade which is necessary for individuals to meet on the common ground of social relationships (Boccignone, 2009, 2, 3). Differently from Heidegger, however, Plessner

recognized a necessary, indispensable role to both dimensions of the human *Doppelgänger* (with reference to his characteristic and dual positionality). In his later writings, Plessner no longer focused on only one aspect of the duality 'social / individual' as, for him, it was unreasonable to consider one as authentic and worthy of philosophical attention while marginalizing the other as idle and inauthentic. For him, the separation perceived by a person between the private context and the social one of his being is a social consequence of the irreparable fracture which is positionally constitutive for the human being.

In Plessner's later theoretical framework, the socio-political sphere is understood as one of the possible contexts in which man, the 'apostate of nature', can collaborate and take responsibility in setting up a new world, giving it structure, promoting socio-cultural changes on a larger scale than the individual one (Plessner, 1980 – 1985, IV, 395). For him the role of politics is precisely that of engaging humans in the endless and inscrutable process of structuring their artificial 'homeland' (an existential state where human beings could finally – and in an overtly utopian manner – experience balance and completeness).

For the sake of thoroughness, it must be added here that Plessner's understanding of the foundational role of active social involvement in the construction of one's existence and identity directed towards collaborative creation, discovery and the opening of new possibilities (as well as the forming of new constraints) was partially shared by Heidegger in the second phase of his thought. Synthesizing the position of Heidegger towards social practices that can be reconstructed in his texts published after *Being and Time*, Hubert Dreyfus and Charles Spinoza specifically clarified that: "[a]ccording to Heidegger our nature is to be world disclosers. That is, by means of our equipment and coordinated practices we human beings open coherent, distinct contexts or worlds in which we perceive, feel, act, and think." (Dreyfus, Spinoza, 2006, 265)

In Dreyfus and Spinoza's quote reported above one word is – I believe – worthy of a particular attention: 'equipment'. As explained in the second chapter of this study, Heidegger's early philosophy of technology hinges on the (questionable) separation between the concepts of 'equipment' and that of 'machinery'. In Heidegger's work, the term 'equipment' designates instruments that are controllable and transparent in their functionality: tools that human beings can utilize in their attempt of building an authentic relationship with the world (Tabachnick, 2006, 96). While the term 'equipment' has positive connotation in Heidegger's early thought, one that aligns with the human scale and their genuine needs and capabilities, a second, darker implication of technology characterizes his more common and darker interpretation of the term. Heidegger, in fact, understood 'machinery' as apparatuses with possibilities and dimensions that transcend those of human beings. Such technologies are opaque in their inner workings: they are only transparent in their functioning and behaviours for an elite group of technicians. Machinery is thus defined by its relative independence from the projectuality and the control of human beings. In Heidegger's framework, the progressive mechanization of the world in conjunction with the autonomous and opaque effect of 'machinery' on social processes amounted to a scenario of impending doom for humanity.

I believe that it is useful, at this stage in the development of my argument, to draw a parallel between Heidegger's classification of types of technologies on the basis of their degree of automation – which corresponded in his philosophy of technology with their unpredictability and uncontrollability – and the stages of technological development

proposed in the 1950's by Schmidt and Gehlen. In particular, as already pointed out in chapter 3 when introducing the concept of 'techno-optimism', their understanding of 'tools' as organic extension of the human beings' natural effectors as well as of their perceptual and resonate with the direct simplicity of Heidegger's understanding of 'equipment', while the semi-independent qualities of 'machines' have a direct correspondence in Heidegger's concept of 'machinery'.

In the second phase of his thought, Heidegger presented an understanding of machine technology as an objectifying form of thinking that will culminate in the functional interpretation of the world as standing-reserve (*Bestand*): a collection of objects that lay available as resources to be employed with a functional purpose in mind. This technological mindset amounts, for Heidegger, to a supremely dangerous ontological 'enframing' through which men seek a lording over and total mastery of nature (Tabachnick, 2006, 96).

On the topic of the risk of human objectification and the potential harm that arguably follows the adoption of the technology-enforced perspective recognized by Heidegger as well as numerous techno-pessimists, I believe it is relevant to mention here that, in his work, Plessner opposed the idea of a direct correlation between the diffusion of technologies in social practices and the risk of alienation as well as segregation for human beings. Arguing against the validity of a causal connection between 'artificiality' and 'alienation', Plessner claimed that the 'alienation theorem' is mistakenly founded on the romantic understanding of the relationship between individuals and society, according to which people can only find their (natural) balance when harmoniously integrated in their respective communities. (Boccignone, 2009, 3) From Plessner's perspective, it would in fact be illogical to blame the mechanization of production or the social diffusion of technology for human alienation which, instead, could be more suitably attributed to the fundamentally 'broken' constitution of the human beings, rather than to the specific qualities of the technological environments (which are themselves derivations of human nature as contextualized in Plessner's already discussed first anthropological law, that is to say that alienation is, to a degree, a by-product of the characteristically incomplete and project-oriented positional structure of human beings).

In the first chapter of this study, technology was introduced, borrowing De Mul's phrasing, as "a conglomerate of technological artifacts, specific forms of knowledge and capabilities […], the necessary geographical and social infrastructure, economic interests and societal norms and values." (Van den Berg, 2009, 24) Given the relevant role of the social adoption of technology in the definition provided above and the significant interest expressed in the theoretical frameworks that inspired and guided the present study towards the socio-political consequences and opportunities relative to the introduction, the adoption and the diffusion of technologies in societies, it is evident that 'the Question concerning digital technology and projectual humanism' cannot be understood or even properly formulated apart from its involvement and effects in social practices.

Accordingly, I believe it is important to – albeit briefly – discuss the possible roles of the 'digital outsourcing' of one's consciousness can have (and already has) in instigating or facilitating social change. The socio-political dimension of my inquiry is not supposed to be exhaustive or definitive, rather it is an outline the possible horizons that the cultural shift towards virtual ontologies could entail in the social context. I believe the topic is too vast (and too interesting) to hope to be able to do it justice treating it as a contributory topic of this study among others. I take the liberty, however to introduce some

fundamental, initial insights and suggestions of how the perspectives and ideas presented in this study might help understand certain social dynamics or are likely to emerge or take a progressively more formative influence with the progressive integration of digital mediation and a modal, simulational mindset in education, leisure, modes of representation, modes of production, interpersonal relationship, scientific research, philosophical enquiry, *et cetera*.

As a necessary premise to a brief, initial treatment of the socio-political dimension of my study, I would like to clarify that I will not attempt a delineation of the socio-cultural consequences of the ontological shift explored in this dissertation from the large perspective of the development of the relationship between technically-mediated social practices and political power. That kind of interpretation is common in 'social science-fiction' literature and, as observed in earlier chapters, was an focal aspect of the work of a varied array of scholars among which the already mentioned Michel Foucault and Daniel Bell. In my opinion, their perspective offers insights on the macroscopic effects of technology on society which are both valuable and relevant to the digital era. It suffices to mention how, interpreted in the light of Foucault's 1975 book *Discipline and Punish: The Birth of Prisons*, video cameras as systems of urban security and surveillance transformed cities into open-air digital-panopticons whose functioning largely rely on people's self-censorship and on the objectification of one's own behaviour (the same could certainly be said about online services and the way they store personal information, behaviours and preferences). Notwithstanding the merits and advantages of a perspective relating the social-productive use of technology and political power towards the development of theories of social philosophy and for supporting political ideologies, it is open to discussion whether it would be the most appropriate angle to analyse the effects of digital mediation from the microscopic, anthropological point of view proposed in this text. From this theoretical framework, I believe the political consequences of the 'augmented ontologies' should be better analysed at the scale of the individual and observed as the modification of the relationship between the individual private sphere and his (or her) public one.

In my understanding, the possibility to extend traditional human kinds of ontologies by accessing and experiencing a vaster, fragmented realm of virtual alternatives to the way worlds are perceived and organized can take two possible directions as far as the individual participation in the socio-political debate is concerned. These directions, I believe, can be conveniently encapsulated as follows:

1. the 'fluidification' of the thought process as a consequence of its polarization towards modality, and

2. the 'trivialization' of the roles of the involvement with the actual world in one's existence that is enthused by the combinatorial and malleable qualities of digital ontologies.

These two envisaged effects of virtual technologies on the individual engagement in the socio-political aspect of his or her existence should not be understood as alternative to one another, but rather as two aspects of the mode of being of an individual in relation to the public aspect of his (or her) existence which can coexist and contribute to one another as factors that influence individual behaviours and world-views. It is interesting to notice how a definite parallel can be traced between the two proposed understanding of the political role of digital media and the two modernist 'myths' that were recognized as

underlying the social relevance of modernist art in the fourth chapter of this study (see chapter 4.1 – THE POTENTIAL OF PRE-DIGITAL MEDIA FORMS FOR INFLUENCING TRADITIONAL METAPHYSICS.)

In the subsequent sections, I will offer a more detailed explanation of both the influences.

5.6.1 – The 'fluidification'

The first potential socio-cultural effect of the diffusion of digital technology in social practices made its appearance in the aesthetical debate during modernism in the arts. As explained in the fourth chapter, and as notably contextualized in Walter Benjamin's 1936 essay 'The Work of Art in The Age of Mechanical Reproduction', the artistic production of Dadaism in particular challenged traditional representational canons as well as the classical social and political role of art. The general insubordination of modernistic currents to the established univocality and stability of human phenomenologies as well as world-views together with the explicit use of artistic expressive forms as catalysts of social change were, in fact, overtly avowed in their manifestoes. Contending the existence of absolute values, the aesthetical rhetoric of Dadaism intended to demonstrate that no object (or, metonymically, no set of values) could legitimately be privileged or considered ontologically superior to another (Gualeni, 2007, 23).

I believe it is not a coincidence that say pre-digital works of recombination, were first introduced in the history of art by the modernist current of Dadaism. Traces of their French-dada origin are in fact evident in the names of practices like assemblage, collage and photomontage. A remarkable contribution to the Dadaist movement, especially in terms of its politically subversive stance, came from German photomontage artist John Heartfield[15]. Heartfield's politically insubordinate works consisted in reassembled black-and-white photographs paired with seditious slogans. In his compositions, Heartfield proposed alternative visions of reality through the newly introduced technique of photomontage, allowing him to achieve a form of persuasion which was at the same time more 'hypermediated' and more disquieting than any previously utilized form of artistic (or propagandistic) expression (see figure 5E).

Figure 5E: John Heartfield's 1935 photomontage, 'Hurrah, die Butter ist alle!' - His parody of Nazi propaganda shows a family eating together at a kitchen table, where a nearby portrait of Hitler hangs. The wallpaper of the dining room is decorated with swastikas. Below the title, Heartfield reported a famous quote by one of the leading members of the Nazi party (Hermann Goering) during food shortage: *"Hooray, the Butter is finished! Iron has always made a Nation strong, Butter and Lard have only made the People fat."*

In a way which is conceptually analogous to the way in which the Impressionistic currents (and the Dutch renaissance before them) demonstrated the possibility to conceive and produce works of art without the necessary involvement of mythology, religion or themes that did not attempt to idealize or justify power, Dadaism disclosed the possibility for works of art to take directions that were supplementary to (or even detached from) aesthetical gratification. Disentangled from both the established aesthetical tastes and dependencies from structures of power (both religious or political, as Walter Benjamin noted in relation to the socio-cultural role of traditional artistic expression in 'The Work of Art in The Age of Mechanical Reproduction'), the modernistic artistic production could take an independent ethical dimension.

In the twentieth century, such dimension became the preferential context from which artists and philosophers could develop and elicit a sense of possibility, that is to say "[t]he ability to conceive everything that there might be just as well as to attach no more importance to what is than to what is not." (Musil, 1996, 11) As already explained, this "subjunctive mood", borrowing Musil's words, has been customarily pursued and awakened by means of the specific, univocal and – for the most part – passively-received, rhetorical potential that characterized traditional art forms.

Not unlike the way in which Heartfield recognized and exploited the persuasive potential of traditional media, Alexander R. Galloway argued in his 2006 book *Gaming: Essays on Algorithmic Culture*, that "video games do nothing but present contemporary political realities in relatively unmediated form" and that, differently from traditional and passively experience forms of mediation, they "achieve a unique type of political transparency" (Galloway, 2006, 92). Analogously, Bogost argued in his 2007 book *Persuasive Games: The Expressive Power of Video games* that virtual worlds, thanks to their specific procedural mode of representation and interaction, constitute a new and peculiarly momentous form of rhetoric. Bogost labelled the unique and novel form of persuasion that can be achieved by means of interactive digital media 'procedural rhetoric', and acknowledged first and foremost its dependence from the core affordances of computers: running processes and executing rule-based symbolic manipulation (Bogost, 2007).

When I will elaborate on the second aspect of the possible cultural and political effects of the diffusion of digital technologies in social practices (5.6.2 – the 'trivialization'), I will argue that the very procedural elaboration of database ontologies intrinsically promotes a specific kind of persuasion: an inherent, nihilistic levelling of values. For the moment, however, let us remain focused on the less pessimistic and more open and socially oriented political applications of interactive digital media. In pursuing this objective, I believe that two determining qualities of the rhetorical form of digital simulations should be given a particular attention: its orientation towards modality and its. In the next paragraphs, with support and inspiration from my friend and philosopher Dario Compagno, I will briefly elaborate on both points.

In order to apply Arthur's Schopenhauer's notion of 'transcendental will' to the interaction between the player and *Link* (the protagonist of the *Nintendo* video-game series *Legend of Zelda*), Compagno clarified that having 'freedom of action' in a video game specifically means that the player can do what his or her will wants, while having 'freedom of will' indicates that the player can choose what to will. Compagno observed that

> "[Shopenhauer] claimed that we have freedom of action, but we do not have freedom of will. In fact we cannot consciously choose what to will. [...] The representation of *Hyrule* (the virtual, mythological world where the series *Legend of Zelda* takes place) is connected with *the true will of the player*. I really manifest my will in the game. Whenever I play, I am *Link* because my will is *Link*'s will,

> and *Link* is my consciously perceived body in *Hyrule*." (Compagno, 2008, 184 – 188)

In discussing further possible advancements of his reflections, Compagno added that one crucial difference between expressing will in the real world as opposed to expressing it in *Hyrule*, or in any virtual world for that matter, resides in the concept of 'choice'. According to him, humans do not have freedom of choice in the world indexed as 'actual' simply because in the actual world they cannot know exactly what the outcome of their possible choices would be.

In the temporally linear perception of our existence, Compagno argued, the options for action available to them – although possibly based on intuition or on rationalization of the experiences of analogue situations – are always blind of their consequences. In his interpretation, those are not real choices, but insufficiently informed decisions which have the quality of being irrevocable. In video games, instead, each alternative possibility for action, regardless of its narrative or performative relevance, can be explored into its minute causal details through gameplay, or rather via the affordances for reverting causality granted by the formal, modal nature of interactive digital simulations.

Since the very pioneering titles of interactive digital entertainment video games allowed for basic ways to reset or revert the casual-temporal state of their specific worlds via the use of 'save game' options and the possibility to reset and restart the virtual experience at any given time. With simulations and games becoming more sophisticated both from the design perspective and from the hardware one, for example with the larger amount of memory available on personal computers and home consoles, the newly born video game industry witnessed the emergence of new ontological affordances like those of 'checkpoint' elements and mechanics (either spatialized or in the form of in-game codes to be input by the player), which permitted more frequent and often automated regressions.

More modern game releases, like the already mentioned *Legend of Zelda: Majora's Mask* (Nintendo EAD, 2000), *Blinx: The Time Sweeper* (Artoon, 2002), *Prince of Persia: Sands of Time* (Ubisoft Montreal, 2003) and *Braid* (Number None, Inc., 2008), embraced time-reversal an the core of their interactive experience. The exemplary user-controlled smooth manipulation of game-causality that all the titles above have in common (to different degrees and for different scopes) reveal to the players materializations of the virtual consequences for any of their actions and, at the same time, grant them the possibility to manipulate and chose the desired course of action. In other words, for the first time in the history of culture, through games and simulation featuring interactive time-manipulation mechanics, human beings can truly decide what to will.

I believe that Compagno's perspective encapsulates two essential components which constitute the rhetorical power of virtual technologies, namely:

1. The fact that their contents inevitably show, with their several different ergodic iterations, that the current state of things (in digital worlds or the actual one) could be different than what it actually, presently is, effectively 'fluidify' human thought. In this sense, I believe that digital simulation, materializing the possibility that things could be

different than what they are experientially ‘present’ and thus more familiar. What I am arguing here is that the user of interactive, digital simulations is more prone to embracing ‘what could be’ over ‘what it is’, thus likely facilitating the proposition for alternatives and fostering the involvement into processes which guide and promote socio-cultural change. Along this interpretation, computers do facilitate the shift from a culture focused on human subjectivity to one pivoting on projectivity as envisaged by Vilém Flusser (Flusser, 1992, 25) (cfr. chapter 3). As already mentioned, more freedom of manipulate and generate worlds as well as more possibilities to interact with them will expectably influence human thought in a way which will favour its polarization towards modality[16].

2. The second aspect presented by Compagno which I believe is foundational for the thorough understanding of ‘procedural rhetoric’ is its interactivity, a quality which allows for both the aforementioned exploration of virtual possibilities in digital worlds and for the in-game expression of the player’s will. Similarly to the position towards the oral transmission of thought that we have observed as being held by both Socrates and Wittgenstein in the third chapter of this study, I believe that interactivity allows for a less abstract and univocal kind of rhetoric and a more personal and flexible approach to ideas, worlds and courses of action than text could ever structurally offer. It should also be noted that, similarly to orality, the interactivity and procedurality of computers inherently afford a dynamic negotiation of meaning which was could never be attained with pre-digital forms of mediation. As explained in the fourth chapter of this study, the recognition of the rhetorical and cognitive effects inherent in interactive digital simulations were the core inspiration behind the idea of utilizing virtual technologies to test and disseminate philosophical ideas with the objective to overcome the influence and consequences that text had on the production and development of thought.

5.6.2 – The 'trivialization'

In his 2004 essay 'Video games of the Oppressed: Critical Thinking, Education, Tolerance, and Other Trivial Issues', Gonzalo Frasca identified a specific belittlement of the (actual) historical process that ensues from an interpretation of existence as a branching system of possible alternatives:

> "A video game about Anne Frank", writes Frasca, "would be perceived as immoral, since the fact that she could survive or die depending on the player's performance would trivialize the value of human life. We all know that Anne Frank died and the reason for her death; her story serves to convey a particular set of values." (Frasca, Gonzalo, in Wardrip-Fruin, Harrigan, 2004, 86)

The trivialization acknowledged by Frasca is not a specific effect that video games have on social values, but is rather an effect which is common in the experience (and interaction, when possible) with what were often indicated in this text as 'database ontologies'. Database ontologies are the artificial, combinatorial world views which conceptually underlie simulations (regardless of their digital nature) as well as ergodic literature, card games, *et cetera*. Proposing a combinatorial interpretation of reality, as explained in the third chapter of this study when explaining the various interpretations of the qualifier 'virtual', works of recombination suggest the latency and the validity of states of the world which are potential and alternative to the 'actual'. This quality is inherent in any forms of expression relying on database ontologies, and I argue that is especially evident and rhetorically powerful when the media through which database ontologies are being experienced offers a degree of interactive manipulation of their content.

The ontological levelling and the indifference in value as the ultimate 'meaning' of any simulation or combinatorial phenomenon was notably encapsulated in the 'infinite monkey theorem'[17] first envisioned in 1913 by mathematician Émile Borel (1871 – 1956) with the purpose to demonstrate the relevance of timescales in statistical mechanics (Gualeni, 2007, 51).

The belittlement of the actual historical process as well as culture and life itself (the latter phenomenon is especially common in video games) by means of (countably) infinite iterations of possible permutations was also the central theme of Borges' 1941 short story 'The Library of Babel', that describes an unthinkably vast library consisting of seemingly endless desolated, interconnected hexagonal storing shafts. The shafts of 'The Library of Babel' together contained every possible four-hundred-and-ten-pages volume that could be composed reconfiguring the letters of the alphabet and certain punctuation characters (Borges, 1994). In his 1939 essay entitled 'The Total Library', Jorge Luis Borges explains how Borel's 'infinite monkey theorem' could be conceptually traced back to Aristotle's *Metaphysics*. In the same text he anticipated on the themes that would then constitute 'The Library of Babel' (published two years later), in particular I am referencing the idea that a boundless, combinatorial library would contain every book imaginable regardless of its intelligibility. Such a combinatorial library would contain everything…

> "[e]verything: the detailed history of the future, Aeschylus' *The Egyptians*, the exact number of times that the waters of the Ganges have reflected the flight of a falcon, the secret and true name of Rome, the encyclopaedia Novalis would have constructed, my dreams and half-dreams at dawn on August 14, 1934, the proof of Pierre Fermat's theorem, the unwritten chapters of *Edwin Drood*, those same chapters translated into the language spoken by the Garamantes, the paradoxes Berkeley invented concerning Time but didn't publish, Urizen's books of iron, the premature epiphanies of Stephen Dedalus, which would be meaningless before a cycle of a thousand years, the Gnostic Gospel of Basilides, the song the sirens sang, the complete catalog of the Library, the proof of the inaccuracy of that catalog. Everything: but for every sensible line or accurate fact there would be millions of meaningless cacophonies, verbal farragoes, and babblings. Everything: but all the generations of mankind could pass before the dizzying shelves – shelves that obliterate the day and on which chaos lies – ever reward them with a tolerable page. […] I have tried to rescue from oblivion a subaltern horror: the vast, contradictory library, whose vertical wilderness of books runs the incessant risk of changing into others that affirm, deny, and confuse everything like a delirious God." (Borges, 2001, 216)

By analogy, what I am suggesting here is that when interacting with virtual worlds, human beings can undergo the same confusion as the imaginary visitor of 'The Total Library'. As explained in the previous section of this study, cyborgs – which we perhaps can start recognizing as beings defined by technically-mediated poly(ec)centric positionalities – can effectively gain experiential access to new, supplementary artificial bodies that exist simultaneously with their biological one. What this means in terms of their ontology is that they are exposed to a multitude of incoherent and often bizarrely unworldly set of virtual phenomenologies which, as mentioned above, can contradict, confuse and trivialize traditional values, notions and beliefs while asserting the negligible relativity of knowledge itself.

In the third chapter of the present study, the philosophical video game that I designed as a complement to this study (*Gua-Le-Ni; or, The Horrendous Parade*) was introduced as a practical example to explain how the term 'virtual' can be used to indicate the latency of certain possibilities inherent in a world. During a game of *Gua-Le-Ni*, only one beastly combination is displayed at any given time, traversing the illustrations of the digital, illustrated bestiary which constitutes the main allegorical context of the game. In other words, each paper specimen walking across the screen (a page of the bestiary) is literally a combinatorial being: an instance in a virtual field of beastly possibilities. The individual beast that is presented to the player was previously generated by the game code and chosen (by an algorithm I designed) among many other beasts which fit certain difficulty and solvability requirements.

Not only all the creatures that parade relentlessly through the pages of the game's virtual bestiary are instances of a 'database-taxonomy', but so are the textual contents of the pages themselves. The text that can be read in the book is an instance of a field of textual possibilities: procedurally sequenced cut-ups of excerpts from the last three chapters of the present text that are subject to change and reshuffling every time the digital pages of the book are turned. In that way, paragraphs and pages are presented to the player in potentially infinite random sequences with repetitions, and redundancies. An analogue combinatorial strategy can be noticed in essentially every aspect of the game design and interaction design. The type of flying food-items available for the player to feed the beasts or the order by which cubes are added to the playing field when an alien slime is eaten, are similarly designed to follow the same procedural logics. By design, this insistence on combinatorial behaviours and mathematical series was meant to suggest a general trivialization and flattening of literary meaning and authorial input. In a database-ontology, no combination or series of events can be logically considered to be inherently better, more meaningful or rarer than any other[18].

The vastness and variety of virtual *mediaphysics* were presented, in the postphenomenological and soft-deterministic understanding of the relationships between technologies and societies this study adopted, as ontological instruments: technically-afforded opportunities to fragment and extend on the traditional relationships that human beings established with reality. From that perspective, the introduction of digital simulations in society can indeed be interpreted as a significant cultural shift: for the first time in the history of thought, alternative human *mediaphysics* could be objectified and manipulated in worlds which are ontologically independent from the world labelled as 'actual'. It is important to notice that the recognition of the outlined anthropological shift and of epistemological potential inherent in virtual technologies does not necessarily entail an optimistic vision for the future of mankind. Digital media not only offer the possibility to structure artificial and supplementary phenomenologies as well as alternative ontological structures, but also encourage the development of social relationships and 'care' for worlds and beings which do not exist in a traditional sense of the term, but do exist in effect.

According to the belief that Nicholas Carr's upheld in his 2010 book *The Shallows*, the multiplication of media channels that request the attention of the users and prompt for their interaction in today's progressively more digitally mediated necessarily entails a 'spreading thin' of attention and concentration which is making us less focused and less capable of deep reasoning. By analogy, it is also imaginable that the specific distribution of one's 'self' in terms of time and care among various virtual worlds would lead to a diminished participation in one's socio-political spheres in the world labelled as 'actual'.

Figure 5F: The Murloc is a bipedal, amphibious humanoid race residing along coastlines, lakeshores, and riverbeds of Blizzard Entertainment's massive multiplayer online role-playing video-game *World of Warcraft*. As declared in their web-manifesto, "the *Save the Murlocs Foundation* aims to preserve and protect these majestic creatures. Through numerous awareness and outreach programs, we work to outlaw Murloc cruelty, help rebuild villages, protest part harvesting, and find homes for poor orphaned baby Murlocs." (www.savethemurlocs.org)

Following from these insights and interpretations, I argue that the partial dissociation from the world that humans biologically depend from (and structure their original ontologies with) must be recognized as having a particularly compelling anthropological appeal. This appeal is particularly evident, I argue, and especially momentous in the case of video games, which I believe is the reason why game-like digital simulative applications are currently used – and successfully so – in a wide range of rhetorical contexts, from advertisement to political propaganda.

According to the theoretical framework that I propose in this study, the particular appeal and the exceptional rhetorical potential of video games in particular is due to the fact that their logical and ontological structures are often explicitly designed to favour feelings of self-realization. This feeling of self-realization, as recent trends in casual game development demonstrated, can depend on a multitude of factors: from the development of the performing skills of the player, to the progress of the game narratives or it can even be forced on the players in the form of extrinsic motivators and psychological reinforcers (Mosca, 2012).

This focus in the design of virtual experiences outlined above resonates with the recognition of self-construction and self-realization as basic ontological needs for beings, like humans, defined by the eccentric positional structure in the work of Helmuth Plessner. This interpretation of the social role of (ludic) virtual

technology is also reminiscent of what Plessner identified as the 'focus on the *irrealis*' as a constitutive aspect of being human beings (Plessner, 2006). In other words, humans can be identified as being almost invariably attracted to games (a drive that can often turn into a compulsion) precisely because games offer rewarding answers to the unanswerable questions at the core of their inherently broken existence. They disclose opportunities to projectually re-construct themselves and aesthetically refashion themselves in ways that are more accessible and less inertial than in the actual world and with their actual bodies.

It is relevant to observe, here, how the thematic and marketing decisions behind commercial video games can easily be demystified as precisely promising the fulfilment of fantasies and drives which are hard to attain, illegal or physically impossible in the world that humans inhabit as biological organisms. In this way, Video games generally offer clear and openly quantifiable objectives that reinforce, as a sort of cyber-theological foundation, the sense of meaning and progress towards perfection, success, salvation.

5.7 – CONCLUSION

Granting access to the materialization of a multitude of interactive, digital worlds that are ontologically independent from the one labelled as 'actual', computers must be recognized as having an increasingly influential role as factors of cultural change. Pivoting on the need of completeness, balance and meaning which Helmuth Plessner recognized as fundamental ontological needs of the characteristically broken and meaningless human condition, interactive digitally mediated simulations can be understood as ontological instruments as well as mediators of philosophical thought. The ontological effects of the introduction of interactive, digital technology in social processes is primally recognized in its unique affordances for extending, fragmenting and distorting the interactive, perceptual and cognitive capabilities of humans beyond what is 'actually present' and towards what is 'virtually possible'. Relying on Plessner's theory of positionality, this dimension of interactive, digital simulations must always be understood as always necessarily depending and operating on a (biological) bodily substrate.

The aforementioned phenomenological and epistemological shift afforded by interactive, virtual technologies cannot take place without ontological consequences, consequences that, as Flusser observed, are ushering humanity from a state of subjectivity into one of a 'projectivity' (Flusser, 1992). The ontological effects and changes fostered by the diffusion of digitally mediated simulations in social practices entail, in turn, socio-political consequences. It is in this sense that virtual technologies can be recognized as possessing a fundamental democratic power, a power which is fundamentally ambiguous and, from a certain point of view, even contradictory. The interactive experiences of virtual worlds, in combination with their combinatorial and procedural processes, can in fact be recognized as both

- facilitating and encouraging the individual engagement in the socio-political sphere, and

- 'denying and confusing' the ontological superiority of the world indexed as 'actual' in opposition to a myriad of virtual ones. This levelling in value comes with a momentous belittlement of the historical process as well as existence itself.

Understood from the proposed perspective, all virtual worlds can be deemed as holding an implicit political relevance which, allow me to repeat it once again, is a derivation of their combinatorial constitution as well as the interactive ontological affordances inherent to the digital medium. Interactive digital recombination as a means of production is, thus, as implicitly political as the process of mechanical reproduction discussed by Benjamin.

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[1] Due to the inextricable relationship with the social adoption and capability to use technologies as well as economic and societal values and infrastructures recognized in the perspectives mentioned above, I believe it should be intuitively clear to see how they also align with the synthetic and workable definition of technology that this study adopted since its introductory chapter, where technology is defined as "a conglomerate of technological artifacts, specific forms of knowledge and capabilities on the part of the agents involved, the necessary geographical and social infrastructure, economic interests and societal norms and values." (De Mul 2002, English translation by Bibi Van Den Berg)

[2] In an oral culture, information necessary for the survival of a community or for the potentiation of a certain set of social values and behaviours is passed from one generation to the next in rhythmic formulas rich with alliteration, memorable figures of speech and mottos. The singing of oral epic, for example, cannot amount to the reproduction of a fixed text. There is no original version and no authorship. There is no correctness or incorrectness of recollection (Carr, 2010, 56; Derrida, 1981, 134 – 142).
"He who thinks by speaking, learns by hearing, his thoughts do not belong to him, they belong to everyone. Homeric Greek has no words to represent mental events […][t]here is no vocabulary to express abstract cognitive states or processes." (Nyíri, 1993)

[3] In extreme synthesis, the sceptics questioned the possibility to establish any kind of antitheses between phenomena and intellective perceptions, *de facto* introducing epistemological dualism between perception and reality.

[4] See notes 5 and 6 of chapter 2.

[5] I believe it is relevant in these respects to mention, among others, Paul Dourish's 2001 book *Where the Action is: The Foundations of Embodied Interaction*, the work of Don Ihde, the work of Peter Paul Verbeek, the work of Henrik Smed Nielsen, Mark Hansen's 2006 book *Bodies in Code: Interfaces with Digital Media* and Gordon C. Calleja's 2011 book *In-Game: From Immersion to Incorporation*.

[6] Philosophical anthropology is a philosophical position which understands humans as products of their biological, cultural, socio-political and technical environments as well as creators of their own value systems. In his 2012 paper 'Philosophical Anthropology – A third way between Darwinism and Foucaultism', Joachim Fischer explained that philosophical anthropology "[…] developed as a discipline through contributions from different contemporary paradigms, such as psychoanalysis, philosophical hermeneutics, existential philosophy, the phenomenology of the body, the phenomenology of human *Lebenswelt* […]" and so on (Fischer, 2013, 20).

[7] According to what Plessner wrote in his 1931 essay 'Power and Human Nature', the human being arises from a situation of uncertainty: "[i]n this relation of uncertainty with regard to himself, man comprehends himself as a power and discovers himself for his life, in theory and practice, as an open question." (Plessner, 1980 – 1984, Vol. IV, 321, English translation in Safranski, 2002, 206).

[8] The discrepancy between Plessner's and Heidegger's understandings, as well as metaphorical take on the duplicity inherent in being in the world as human beings, could be bridged by adopting an ancient Greek perspective on the relationship between the human condition and the passing of time. The Greeks, writes Robert M. Pirsig in the Afterword to his 1984 *Zen and the Art of Motorcycle Maintenance: An Inquiry into Values*, "saw the future as something that came upon them from behind their backs with the past receding away before their eyes. When you think about it, that's a more accurate metaphor than our present one. Who really can face the future? All you can do is project from the past, even when the past shows that such projections are often wrong. And who really can forget the past? What else is there to know?" (Pirsig, 1984, Afterword to the first edition) The inconsistency in the position of a human being that is both reflecting on himself from 'behind its back' and 'ahead of himself' as far as the linear progression of time can be overcome with the allegorical understanding reported by Pirsig. Interestingly, the later Plessner also adopted a perspective on human projectivity which is comparable to Heidegger's 'being-ahead-of-oneself'. According to Plessner, finding one's own equilibrium – a stable identity – cannot simply happen once and for all because the eccentric nature of man can never be overcome. For this reason, human beings have to perform recklessly and develop continuously towards new horizons and achievements (Boccignone, 2009, 6). In order to achieve a (temporary) balance they will always strive for something new, they will have to surpass their own deeds in an eternal process (Plessner, 1980 – 1984, Vol. IV, 395).

[9] "The cybernaut seated before us, strapped into sensory-input devices, appears to be, and is indeed, lost to this world. Suspended in computer space, the cybernaut leaves the prison of the body and emerges in a world of digital sensation." (Heim, 1993, 88) For the sake of clarity and academic rigour, it is important to note that the dualistic approach adopted in the outlined post-humanistic perspectives is evidently incompatible with the unitary understanding of the 'living thing' that permeates Plessner's philosophical anthropology. Plessner and the transhumanists were grouped together in the paragraph that this note refers to uniquely on the common basis of the understanding of technology as a dimension that is native and integral to human beings as well as the development of society and culture.

[10] The construction of the individual human existence is characteristically influenced by the technologies and artifacts that mediate one's relationship with reality. This vision is implicit in Plessner's 'first anthropological law', according to which from its appearance on the stage of the world, the *Homo sapiens sapiens* has literally been a 'cyborg': a creature consisting of both organic material and technological extensions. This foundational anthropological tendency is also apparent in the relationship that mankind establishes with the digital platform. Especially the web, as well as in video games, the sense and the structure of identity are malleable and fleeting: the apotheosis of the fundamentally open and permanently 'under construction' qualities of human existence. In interactive digital media, humans are in fact capable of experiencing what can be understood as an extension and a fragmentation of their agency and identity. It should not be surprising then, observed De Mul, that the growth in the number of dissociative mental illnesses has a direct correlation with the increased social diffusion of interactive digital media. The most noticeable syndrome among them is the so-called 'Multiple Personality Disorder' (De Mul, 2010, 188, 189). In a private conversation, De Mul further explained that the dissociation that characterizes the poly(ec)centric positionality outlined in this note is not favouring a reconciliation of the internal fragmentation inherent to human existence. On the contrary, he added, humans multiply their removal from themselves.

[11] The wholesale abandonment of the original, biological body is what the posthumanists and transhumanists prophesize as the future of the human species.

[12] From the historical perspective of this understanding, I believe it is worthy of mention that, at the beginning of last century, futurist writer Filippo Tommaso Marinetti predicted that the 'futurist

transhuman' will be "multiplied by the machine". This new being will be a hybrid creature "with replaceable parts" and "multiple and simultaneous awarenesses" (De Mul, 2010, 32).

[13] It is important to mention, in relation to the frequent appearance of the term 'presence' when discussing embodiment, incorporation or boundary-realizations in the field of digital media studies, that it was coined by American computer scientist Marvin Minsky in his 1980 paper titled *Telepresence*. In his text, Minsky was concerned with the design of hardware capable of granting the human operator a consistent and convincing enough sense of 'presence' in teletechnologically mediated environment. Such purpose was pursued with the objective to rendering teleoperation more smoothly affordable as part of the teleoperator's *body schema* and therefore more intuitive and efficient.

> "The biggest challenge to developing telepresence is achieving a sense of 'being there'. Can telepresence be a true substitute for the real thing? Will we be able to couple our artificial devices naturally and comfortably to work together with the sensory mechanisms of human organisms?" (Minsky, 1980)

As also explained by Gordon Calleja, 'presence' is not an irreducible quality of one's mediated experience, but rather it depends on a number of different factors, among which the quality of the in-game aesthetical stimuli, the intuitiveness and solidity of the game's mechanics, the player's individual tastes and playing styles, the internalized knowledge of an individual, *et cetera*. (Calleja, 2011, 17 – 22) It must be noted that with present day digital technologies, one's immersion can never be complete. To begin with, nowadays a cybernaut experiences virtual worlds in a way which is limited to visual, auditory and to some extent tactile phenomena, while other sensory impressions remain untouched by the digital medium (such as the smell or the temperature of a certain environment). Even more radically, it is fundamental to point out that every aspects of one's aesthetical involvement with telepresent or virtual environment is necessarily filtered through one's actual sensory equipment. In a very literal sense, humans still entirely depend on their actual bodies during telepresent experiences. Following from the 'brain in a vat' thought experiment, De Mul noted that by means of a neuro-interface a human brain (removed from the body and kept alive artificially) could be liked up to technologically-produced senses, then at least that part of the biological body would remain necessary in order to undergo the experience (De Mul, 2010, 202, 203).

[14] I find it efficient and convenient to point out once again that the term 'ontology' is understood by the present study in a way that was inspired by Heidegger's 1927 book *Being and Time*, where it indicated the way the world is for a being. Such being is inevitably involved with the world itself and is, consequentially, always characterized by biological and historical dimensions. In general, from the postphenomenological stance adopted by this study, I will use the unspecific term 'ontology' to refer to human kinds of ontologies, which is to say the rationalization of the mutually constitutive relationship between a human being and certain worlds. From this perspective, things and beings in the world make sense within an ontology precisely because, via the senses, they become part of an interactive and persistent system of relationships with an individual human being (see chapter 1.3, points 1 and 2).

[15] John Heartfield (1891– 1968) is the Anglicisation of Helmut Herzfeld. The German artist decided to legally change his name in Heartfield in 1916 as a mocking statement against the anti-British attitude that was common in Germany during World War I (Gualeni, 2007, 24).

[16] From this understanding of the social significance of digital media follows that every virtual experience is both a rhetorical and an ontological one. As a consequence, any digitally mediated simulation can be recognized as having some inherent political influence. This is a statement that is valid for any digitally mediated simulation, including those video games that do not have the overt didactical aims, do not have a social agenda or materialize a specific ideology, still implicitly express the persuasive power inherent to the medium through which they are simulated, rehearsing the world views that are implicitly presented in their technological structures as well as beliefs and values deriving from the cultural context they were generated in.

[17] The 'infinite monkey theorem' affirms that a primate hitting keys at random on a typewriter keyboard for an infinite amount of time will 'almost surely' recreate a particular chosen text (usually, exemplary works that hypothetical monkeys are supposed to type and belittle in derivative examples are William Shakespeare's tragedies). In the context of the previous definition, 'almost surely' is a mathematical indication with a precise meaning, denoting a non-zero possibility applied to an infinite sequence of events. In Borel's theorem, the monkey is a metaphor for an abstract device that produces a random sequence of letters *ad infinitum*. Borges adds to Borel's vision that "Strictly speaking, one immortal monkey would suffice." (Borges, 2001, 215)

[18] While exploring the design choices of my game which expose the ontological flattening inherent to database ontologies, it is relevant to note how its title, *Gua-Le-Ni*, is not a combination of syllables (or animal parts) which is factually possible within the combinatorial set of the game. The title was meant, instead, as a declaration of combinatorial meaninglessness which transcends the boundaries of the virtual world where the game takes place. Informationistic sciences, De Mul wrote, "transform the world into a field of virtual possibilities. Beings are regarded as combinatorial information." (De Mul, 2010, 153) According to this perspective I can also understand myself, with my name hyphened as if it were that of a mock animal, as an instance of a combinatorial field of possibilities and, as such, coincidental and ultimately meaningless.

CHAPTER 6: Being in THOSE WORLDS

6.1 – INTRODUCTION

One of the central arguments introduced in the fourth chapter presented interactive, digitally mediated simulations as viable ontological instruments as well as mediators of philosophical thought both

- in their projective, constructive dimensions (where human beings act as demiurges: creators of artificial worlds, designers of virtual *mediaphysics*), and

- in their experiential ones (where human beings act in virtual worlds through their virtually extended bodies).

I believe that adopting a postphenomenological understanding of the digital medium and embracing its anthropological potential and relevance will grant 21st century philosophy the possibility for overcoming the expressive limitations and the cognitive effects that its traditional association with books (and textual information more in general) had on mental processes.

From a point of view strictly focused on media studies, one of the objectives of this study is that of demonstrating the possibility and the desirability complementing qualities and uses of the textual mediums with the affordances and applications of the digital one. The uses of the two media forms coexisting in my work (both in textual form as well as materialized in my video games) reflect one of the cardinal beliefs of media philosophy: thought processes (storing, elaborating, connecting, communicating and deleting information) can never be abstracted from their media forms. Sociologist Neil Postman phrased the same persuasion explaining that media forms are

> "like metaphors, working by unobtrusive but powerful implication to enforce their special definition of reality. Whether we experience the world through the lens of speech or the printed word or the television camera, our media-metaphors classify the world for us, sequence it, frame it, enlarge it, reduce it, colour it, argue a case for what the world is like." (Postman, 2005, 10)

The explicit philosophical aim of 'overcoming' the consequences of an disclosing of philosophical notions and systems thought solely through linear, unidirectional textual information prompted me to explore digital mediation as one of the viable contexts where rhetorical ways of shaping culture and thought can be pursued and where the creation and emergence of meaning in mass media have a programmatically dialectical dimension. I believe it is important to clarify here that, at least in certain aspects of the cultural shift that I identified in the third chapter of this study, the raise of digitally mediated simulations can be associated to the emergence of what Walter J. Ong originally labelled as 'second orality' in the early seventies, where the term was reference to the rebirth of spoken language in the contemporary electronically mediated culture. Definite similarities between the media qualities that Ong connected to the digital raise of a 'second orality' in his 1982 book *Orality and Literacy: The Technologizing of the Word* and the expressive affordances that according to the theoretical framework of this study, characterize digital

simulations. Such similarities can be identified, at the very least, in the following three aspects:

- Digitally mediated contents are recognized be additive and aggregative in both theoretical frameworks, that is to say established and steered by users and community of users rather than being structured hierarchically and analytically.

- Thoughts and ideologies that are mediated by computers are presented in both perspectives as being situational rather than abstract. In particular, they are always conceptualized and presented in analogy or with close reference to the way humans structure their relationship with the world labelled as 'actual' (an expressive quality of mediated content which will be explained later in this chapter in relation to the Greek term *mimesis*).

- Both according to Ong and the perspective offered by the present inquiry in terms of media philosophy, 'secondary orality' does not exclude literacy or aspire to substitute text wholesale. The proposed understanding of a return to a dialectic emergence of meaning in culture is post-literal in the sense that it is at the same time different from traditional literacy and inextricably rooted in it.

The possibility for digital media to express content metaphorically was first introduced in the third chapter of this study, where digitally mediated simulations were presented as intelligible and persistent, designed, interactive systems that represent a source system (or systems) via a less complex, technically mediated system. The relationship between a simulation and its source system (or systems) functions by means of implicit analogy. Concordantly, simulations will be treated in this chapter as an extended, behaviour-based declination of a wider cultural process: metaphor (see chapter 3.1). In this chapter I will specifically elucidate in which sense I believe the cultural influence of interactive, digital mediation can more suitably understood as a poetic rather than a rhetorical use of metaphors.

The analysis of the qualities, the possibilities and the limitations of digitally mediated metaphors will be pursued from the philosophical standpoint elaborated in the previous chapters of this study. As specified in the introduction to chapter five, my approach takes a postphenomenological perspective which has a necessary ontological foundation in the anthropological structure of human beings and is impossible to be thought apart from contextual cultural determinants or from the level of development and the social integration of technologies.

This chapter aims at completing and complementing the proposed perspective by providing an anthropological account of what is it like to be humans – or rather extended humans – in a fragmented multitude of digital, ontologically independent worlds. Towards this objective, this chapter will focus on the creative possibilities of humans in their role of creators of meaning via interactive analogies in THOSE WORLDS. More specifically, it will explore an understanding of digitally mediated simulations from two complementary directions:

- On the one hand, I will take the perspective of a media-philosophy researcher and, as such, I play video games, analyse the ludological and ideological structure of their contents in relation to the affordances of their technological backgrounds,

and organize my claims about their meaning and their relevance as factors of socio-cultural change.

- On the other hand, I am video game designer and I direct the creation of digital worlds that, more often than not, take inspirations from the history of philosophy and overtly deal with modal aspects of the human understanding of ontologies. Some of the video game examples that I discussed and will discuss in this text were designed by or conceptualized and supervised by me. I employ them exemplarily and not as a form of self-promotion. All of them were, as a matter of fact, developed with the explicit objective of being the substrate for both philosophical reflection and to support the claims presented in several sections of the present study as well as the academic publications that derived from it.

6.2 – RHETORIC AND POETRY

The uneasiness and dissatisfaction with the level of abstraction and the limitations imposed on philosophy by the codification of ideas in written language has a long tradition in the history of thought. However, these philosophical concerns and positions, as Martin Heidegger observed, have been largely overseen by the mainstream currents of Western philosophy (Heidegger, 1962). In relation to Heidegger's criticism, and as already outlined in the previous chapter, both Walter J. Ong and Eric Havelock supported the thesis according to which Plato's doctrine of Ideas can be interpreted as a direct consequence of the adoption of the textual medium in Greek culture between the sixth and the fourth century BC.

The identification of thought with its written mediation led, from Heidegger's perspective, to a restriction of the horizon for philosophy and to a 'perversion' in the way metaphysical truth was pursued. As already elaborated upon in the previous chapter, the awareness of potentially detrimental and constraining cultural and cognitive effects that ensue from the adoption of a written canon for the expression of philosophical thought was expressed – for the first time in written philosophy – in the position towards the newly introduced practice of writing that Socrates held in Plato's dialogue *Phaedrus*. A similarly critical perspective was recognized by J. Kristóf Nyíri in Ludwig Wittgenstein's later thought. Nyíri's interpretation of the Wittgenstein's logician's attitude towards written philosophy resulted in the former labelling the latter a "philosopher of second orality" (Nyíri, 1996).

For the sake of completeness, it might be relevant to mention here that other scholars, among which David G. Stern, took a different perspective on the way in which Wittgenstein approached the production and the philosophical use of the textual medium. (Stern, 1994; Stern, 1996) According to this alternative interpretation, Wittgenstein was not attempting to employ text in a more interactive, dialogic form that would hybridize it with qualities traditionally ascribed to orality. Rather, he was trying to find a novel and more appropriate use for text: a use that would increase its flexibility and allow for a personal access to notions, anticipating on the qualities and possibilities of hypertext: "a new medium which is dissimilar from printed text as printed text is dissimilar from a manuscript or a conversation." (Stern, 1994, 267)

In the digital era, the criticism towards the univocality, the inflexibility and the subjective nature of the textual dissemination of thought led to embrace the digital medium as a viable alternative to text for what concerns the storing, the accessing, the spreading and the preservation of information. Hypertext, in this sense, is just one among many computer applications that, inevitably inheriting the qualities and restrictions that are structural to the digital medium, can overcome certain limitations inherent to the traditional and exclusive textual constitution of Western culture. Similar qualities can be discerned in several interactive, adaptive, ergodic and collaborative uses of computers.

In his 2007 book *Persuasive Games: The Expressive Power of Video games*, Ian Bogost proposed a rhetorical understanding of the digital medium, stating that interactive digital entertainment opened a new domain for persuasion. According to Bogost, this new rhetorical horizon is characterized by the particular expressive and persuasive affordances of its core representation mode: procedurality (Bogost, 2007, ix). What Bogost believed is that video games' procedurality is a language (or rather a form of literacy) which is made up of rules, rather than letters (Bogost, 2007, 9). According to Bogost, as well as other game developers and artists aligning to a current commonly indicated with the name 'proceduralists' for the reasons discussed above, the persuasive power of the language of video games stems from the way in which the logical, causal and aesthetical qualities of virtual worlds can discernibly be put in relation with the 'actual' one (cfr. Bogost's 2005 paper 'Frame and Metaphor in Political Games').

The rhetorical power of interactive digital media can be, and in fact already is, successfully introduced and employed in several social processes among which the promotion of commercial products ('adver-games'), the support of political agendas ('propaganda games'), the facilitation of education and training ('serious games'), *et cetera*[1]. Observed from the outlined perspective, video games can be recognized as having the potential for leading to significant long-term changes in society as well as the possibility to potentiate the political awareness and social engagement of individuals. Embraced as metaphors, video games have the power to disrupt and change fundamental attitudes and beliefs about the world and can thus be used persuasively in the pursuit of institutional as well as less institutional goals (among which the exemplary ones listed in the previous paragraph).

I believe it is important, for the sake of my argument, to specify here that, differently from the perspectives on digital media presented by both Walter J. Ong and Ian Bogost, I do not strictly propose an understanding of video games, or interactive digital worlds in general, as new form of language (neither in terms of their oral dimension nor their literary one). I agree with both Bogost and Ong on the fact that several traits of language have affinities and often direct correspondences with some structuring logics of content for digitally mediated simulations, like, for example a necessary degree of intelligibility structured by some kinds of semiosis, which sits by definition at the very basis of the formation of metaphorical and allegorical meaning. However, borrowing a notorious argument against an understanding of pictorial art as a language, one could problematize the understanding of video games as forms of textual or literary expression questioning the proposed identification on a stern, practical level. For example, if *Nintendo*'s 1985 video game *Super Mario bros.* contains a strictly linguistic message, then what does a level correspond to? Is it a sentence? A paragraph? A word? Do different genres express their alleged meaning through what can be understood as radically different languages or simply through a different syntax? Is the logical structure of a video game its grammar or

its (ergodic) plot? These questions, I believe, cannot find objective answers in the context of a direct conceptual identification between interactive digital worlds and languages.

As already discussed in the third and fourth chapters of this study, instead of an analogy between video game worlds and forms of textual or literary expression, I propose an understanding of digital simulations as media: technologies that can disclose and afford meaning through semiotic processes that are only in some occasions identifiable to those of text or spoken language. In the subsequent sections of this chapter I will explain how video games as media can vehicle allegorical meanings which do not necessarily entail a linguistic kind of semiosis.

In exploring the computer as an increasingly prominent and socially integrated medium and assessing the cultural roles and dimensions that characterize digital mediation, I believe it is useful to pick as a starting point – similarly to what Bogost did – the origins of the concept of 'rhetoric' in Greek culture. In the second half of the 5th century BC, especially in Athens, the sophists heralded a philosophical perspective according to which humans are imperfect creatures, finite, limited and thus incapable of pursuing any form of absoluteness. Humans, however could utilize language and logics rhetorically, that is to say in order to establish consensus in relation to the best perceived course of action for the benefit and/or the advancement of the *polis*, the community of citizens. In Aristotle's treatise *Rhetoric*, dating to the fourth century BC, the eponymous term is defined as "the faculty of observing in any given case the available means of persuasion. […] Rhetoric is a combination of the science of logic and of the ethical branch of politics." (*Rhetoric*, 1.2.1) Along this original understanding of the term, scholars often limited the application field of rhetoric to political discourse. Other academics embrace it, instead, as a general quality of human expression that can potentially encompass every aspect of culture.

Introducing of the concept of rhetoric specifically as a lens to observe digital mediation serves, at this stage in the development of my argument, the double purpose of:

1. Delineating what is currently the most popular theoretical framework to understand video games, their structures, and how such structures allow for the emergence of meaning, and

2. enabling a dialectical development of my arguments on the background of the currently dominant proceduralist perspective in game studies.

Unlike the rhetorical use of language, the poetical one was not originally involved with practical issues or the persuasive endorsement of one political course of action over another. According to philosopher Paul Ricoeur, the fundamental aim of poetry is to "compose an essential representation of human actions; its appropriate method is to speak the truth by means of fiction, fable and tragic *muthos*." (Ricoeur, 2008, 13) In informative, rhetorical or didactic discourse, units of meaning take the functions of signs that either refer to, stand for or point to something. In poetry, the signs represent nothing, instead they affirm, assert. Poetry ignores the world that is present to our senses and fictionally evokes its own ones. Quoting Sir Philip Sydney, Ricoeur observed in his 1975 book *The Rule of Metaphor: Multi-Disciplinary Studies in the Creation of Meaning in Language* that if it were necessary to compare poetry with something it would be mathematics: "[t]he poet, like the pure mathematician, depends not on descriptive truth but on conformity on his hypothetical postulates." (Ricoeur, 2008, 226)

Ricoeur's understanding of poetry closely reminisces of the one offered by Paul Valéry's 1939 essay 'Poésie et Pensée Abstraite', where poetic language is presented as a language of cognition. In its cognitive function, Valéry embraces the poetic activity as "the effort which makes live in us that which does not exist" (Valéry, 1939, 1333, translation by Herbert Marcuse in Marcuse, 1991, 68). According to Valéry, poetry breaks the spell of our acceptance of how things are to us as human beings, it is the introduction to a different order of things into the world we experience every day, it is "the establishment of a new world" (Valéry, 1939, 1327 - with reference to the poetic language of music, my translation). In a very literal sense, this acceptation of the goals and the methodologies of poetry adhere with the original Greek meaning of ποίησις (*poiesis*): 'to create', 'to give shape'.

6.3 – METAPHORS AND ALLEGORIES

Apart from an initial and succinct explanation of the methodological and cognitive dimensions of poetry, Ricoeur dedicated his *magnum opus* to one poetic linguistic tool in particular: the metaphor and its consequences on the structuring of meaning and knowledge. It is important, at this stage, to note that the first philosophical treatment of the concept of metaphor was initiated by Aristotle in his *Poetics*, where he defined it as the process of "giving a thing a name that belongs to something else; the transference being either form genus to species, or from species to genus, or from species to species, or on the ground of analogy." (*Poetics*, 1457, b 6-9) Even before going into these structural characteristics, Aristotle highlighted an essential feature of the use of metaphors in language which is that of "setting the scene before our eyes" (*Poetics*, 1410, b 33), "making your hearer see things" (*Poetics*, 1411, a 25, b 10) and "represent things in a state of activity." (*Poetics*, 1410, b 33)

Commenting on the Aristotelian interpretation of the evocative quality of metaphor, Ricoeur pointed out that – following the critical perspectives offered by Heidegger and Derrida[2] – one could be tempted to detect traces of Platonism in it ("does not the invisible appear to us through the visible in virtue of the supposed resemblance of one to the other?") (Ricoeur, 2008, 34) Ricoeur came, however, to later reject this criticism to the poetic understanding of the metaphor on the basis that, for Aristotle, it was not utilized as a way to reference something to an abstract or absolute concept, rather its use purely is ostensive: it presents things themselves *as if* in act. "To present men *'as acting'* and things *'as in act'* – such could well be the *ontological* function of metaphorical discourse, in which every dormant potentiality of existence appears *as* blossoming forth, every latent capacity for action *as* actualized." (Ricoeur, 2008, 43)

A very similar interpretation of the evocative, poetic power of metaphors was presented by Friedrich Nietzsche in his 1872 book on dramatic theory *The Birth of Tragedy from the Spirit of Music*. According to Nietzsche, for the poet, the

> "metaphor is not a rhetorical trope, but a representative image which really hovers in front of him in the place of an idea. The character is for him […] a living person, insistently there before his eyes, which differs from the

> similar vision of the painter only through its continued further living and acting." (Nietzsche, 2013, 26)

In Ricoeur's analysis, the role of the metaphor not as mere literal ornament, but a linguistic device with a cognitive, ontological value in its own right. In his work, he found it necessary to clearly define and distinguish the dual use of the metaphor that he identified in its use in culture: in its rhetorical employment and in its poetical one. Elaborating on Aristotle's texts *Rhetoric* and *Poetics*, Ricoeur identified a profound difference between the persuasive - cosmetic use of metaphor and its epistemological role in culture when utilized with creative, cathartic intentions. While the former is explicitly reference-based and defines rhetoric, the latter – which defines poetry – requires no direct connection or reference to the sensible world.

Just five years after *The Rule of Metaphor*, Lakoff and Johnson published a book that chiefly focused on what Ricoeur originally defined 'the ontological function' of metaphor, which is to say its foremost formative role in the shaping of individual thought as well as framing social interaction (Lakoff and Johnson, 2003). Lakoff and Johnson began their 1980 book *Metaphors We Live By* establishing their understanding of what a metaphor is. In a way which I find revelatory, their fundamental definition is closely reminiscent of the concept of 'simulation' presented in the third chapter of this dissertation: "the essence of metaphor is understanding and experiencing one kind of thing in terms of another" (Lakoff and Johnson, 2003, 5 in Möring, 2012, 3)[3].

I find it particularly poignant to mention here *Metaphors We Live By*, because of the experiential approach to the understanding of the metaphor as a powerful ontological, or even pre-ontological, instrument: "[…] no metaphor", the authors wrote, "can ever be comprehended or even adequately represented independently of its experiential basis." (Lakoff and Johnson, 2003, 19) In their text, Lakoff and Johnson also specified something that I find extremely interesting, that is to say that the ontological functionality of metaphors is always rooted in the bodily origins of any ontology, explaining that:

> "Just as the basic experiences of human spatial orientation give rise to orientational metaphors, so our experiences with physical objects (especially our own bodies) provide the basis for an extraordinarily wide variety of ontological metaphors, that is, ways of viewing events, activities, emotions, ideas, *et cetera* as entities and substances." (Lakoff and Johnson, 2003, 25)

In a way which, I believe, closely resonates with both the embraced postphenomenological perspective of media philosophy and with Lakoff and Johnson's recognition of the bodily origin of the ontological metaphors employed by humans, Alison McMahan proposed an understanding of embodiment and technology according to which the body is itself an ideological category: a cognitive instrument (a medium) which precedes any other socio-cultural influence and determinants (McMahan, 2003). On a similar note, but from a hermeneutical point of view, De Mul observed that the semantic value of any kind of information always depends on the experiential horizon of the recipient (De Mul, 1999, 81).

In the theoretical framework that I am proposing in this text and that I am disclosing with the video games I design, the poetic, persuasive and ontological effects of interactive digital media content emerge by means of experiential analogies. The latter, always originating from a certain experiential horizon, are recognized as inevitably having a biological (and thus positional) derivation. To be more precise, rather than thinking in terms of metaphors, when exploring the epistemological and ontological shifts entailed in the integration of digital mediation and a simulative mindset in social processes, I suggest starting to think in terms of allegories, that is to say extensive metaphors. The term 'allegory' indicates, in fact, that the 'scene put in front of our eyes' has either a more encompassing nature (as in an interconnected system of analogies within the representational 'space') and/or a certain duration and certain developments in time that set it apart from the simple metaphor that is, in its very definition, partial and discrete in its analogic function.

A metaphor is the immediately-mediated transferral of a unit of meaning that from a literal context to a figurative one. As such, a metaphor is not characterized by a development in time. Differently from metaphors, allegories can be characterized by a temporal dimension and changes that occur during their enactment (this is the case, for example, of religious rituals, carnival parades or theatrical representations), but also by a systemic interconnection of meaning among multiple metaphorical elements (for example in the various pictorial representation of Christ's last supper as well as the 'Dance of Death', see figure 6A).

Figure 6A: The portion of a larger set of XIV century frescoes in the church of S. Bernardino in Clusone (Bergamo, Italy) that is shown in this picture is Italy's oldest representation of the 'Dance of Death'. In this late-medieval allegory a wide number of metaphors and symbols are interwoven and organized on a scene with the scope of reinforcing and enriching the traditional themes of the fleeting and fragile nature of mortal life as well as the vanity of earthly glory and social status.

Human experiences within video game worlds or any digitally mediated simulation in general must first and foremost provide some duration in time. Their temporal persistency is the essential substrate that affords the possibility to experience and interact with virtual beings and is, moreover, a definitive quality of the interpretation of the term 'world' that was formative for the arguments presented in the present study[4]. An allegorical understanding essentially embraces video games as interactive systems characterized by logical, causal (temporal), spatial and aesthetical relationships among its elements and the qualities thereof. A very similar standpoint was presented by Alexander R. Galloway and McKenzie Wark in the 2007 book *Gamer Theory*, where they introduce the concept of 'allegorithm': "The gamer discovers a relationship between appearances and algorithm, […] that's the allegorithm." (Wark, 2007, 31) Wark further specified that:

> "The allegorithm by which the gamer relates to the algorithm produces a quite particular allegory by which gamer and algorithm together relate to gamespace. In a game, any character, any object, any relationship can be given a value, and that value can be discovered. […] [A] world in which any value is arbitrary, yet its value and its relation to other values can be discovered through trial and error." (Wark, 2007, 31)

Understood as allegories, virtual worlds can be recognized as 'materializing' their messages, ideologies and world views by making them (interactively) accessible to their visitors by means of aesthetical stimuli and feedback devices (their graphical looks, their sound effects, the vibration of their eventual controllers, and so on). More accurately, I believe that it is precisely from the interaction (exploration, manipulation, recombination) with time, space and the aesthetical dimensions afforded by such allegories that the meaning and the messages that are latent in video games can emerge for their players.

Similarly to what Ricoeur did, in proposing an understanding of virtual worlds as digital, poetic allegories, I consider it is not only interesting but necessary to investigate the cultural and cognitive effects that they can engender and the social objectives these philosophical instruments can aspire to achieve. A proceduralist perspective on the socio-cultural role of digitally mediated simulations would contend that they can be utilized for a number of cultural scopes in a broad variety of social contexts, but that their ultimate function is, as already outlined, rhetorical. In other words, their perspective embraces video games as persuasive media whose influence on human beings can affect individual preferences, behaviours and ideologies.

The broader philosophical perspective that I advance in this chapter, and that was already outlined in previous sections of this text, was motivated by the recognition that such dominant theoretical horizon might be incomplete or even inaccurate. In order to encompass the way in which meaning can emerge in virtual worlds and to better structure an experiential framework to understand the ontological consequences and experiential potential of video games, I propose to understand interactive, virtual worlds not exclusively as rhetorical metaphors, but also (and perhaps mainly) as poetic allegories.

As was the case for Ricoeur's understanding of the work of the poets as depending "not on descriptive truth but on conformity on his hypothetical postulates", also the game-designers conjure worlds which have no necessary connection with the world they

experiences in their everyday existence. Both the game designers and the poets create worlds *'as in act'*, the most striking difference among the two is that the medium through which the game designers express and give shape to their vision allows for the emergence or worlds that are possible to be experienced materially and interactively. In 'The Question Concerning Technology', Heidegger proposed a strikingly similar vision, claiming that "[t]*echné* belongs to the bringing-forth, to *poiesis*. It is something poetic." (Heidegger, 1982, 13).

To clarify this point with a practical example, the appearance of an imaginary beast like the LOB-MEL-STER (head of a lobster, body of a camel and hind legs and tail of a lobster, see figure 6B) in the *Apple iPad* and *iPhone* video game *Gua-Le-Ni; or, The Horrendous Parade* does not claim the actual existence of a LOB-MEL-STER. These beasts, however, effectively exists and can be experienced in the derivative world the game allegory structures and discloses. In this theoretical framework, 'to play' indicates precisely the act of willingly perform under the acceptance of an allegorical 'detour'[5].

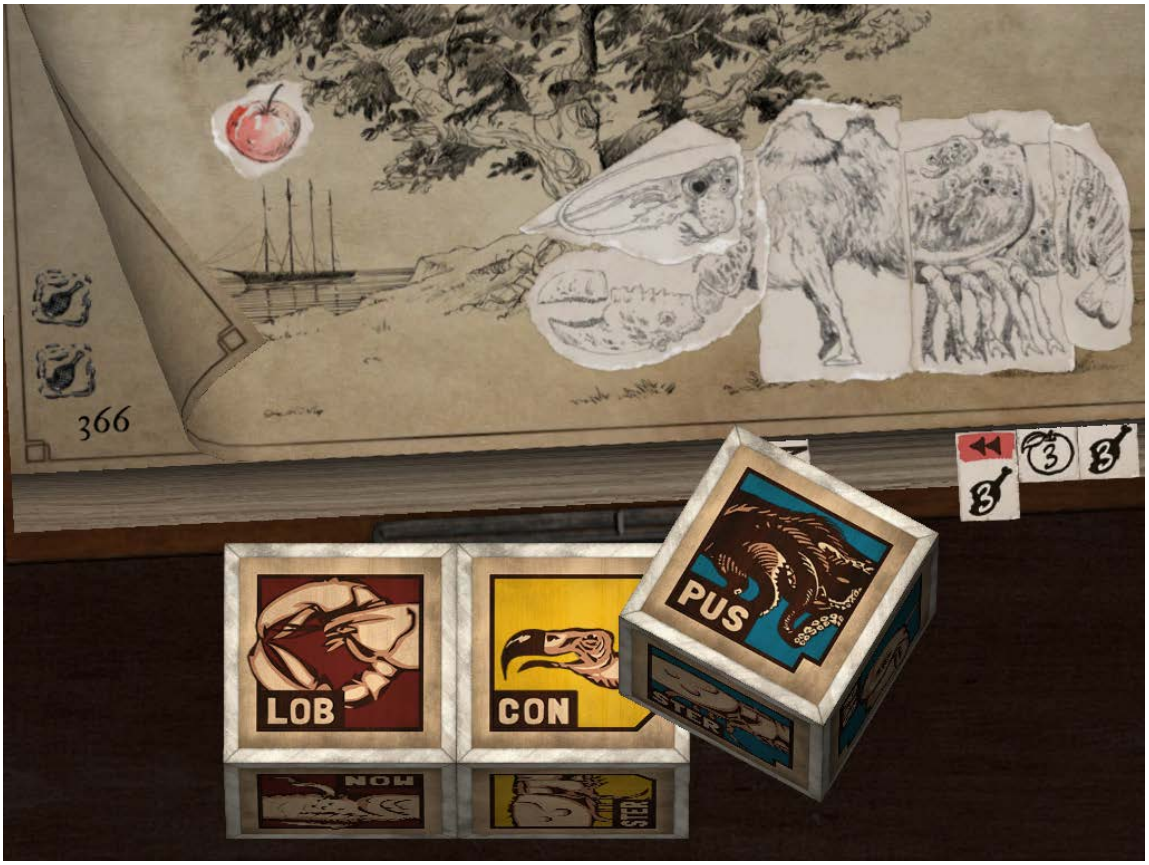

Figure 6B: A LOB-MEL-STER, a combinatorial paper beast composed by three animal parts, walks across the virtual book in which the gameplay of the action-puzzle video game *Gua-Le-Ni; or, The Horrendous Parade* takes place.

The 'detour' outlined above consists in setting up an artificial world that can be understood, explored and manipulated on the basis of its analogy with the world that human beings are bound to as biological creatures. This is accomplished by the game designers by following the same logics according to which literary allegories bind literal

meanings to figurative ones. The mutually constitutive relationship between 'play' and 'poetry' was brought forward by Huizinga in his *Homo Ludens* where, at the conclusion of his chapter titled 'Play and Poetry', he revisited aspects that are common to both. "The affinity between poetry and play", Huizinga wrote, "is also apparent in the structure of the creative imagination itself. In the turning of a poetic phrase, the development of a motif, the expression of a mood, there is always a play-element at work." (Huizinga, 1955, 132)

Many of the core arguments presented in the sections of this study that specifically tackled the ontological dimension of technology were either inspired by Heidegger or are direct re-thematizations of his work in the age of digital media. I believe it is interesting to observe, with the purpose of exploring the interpretation of computer simulations as having analogies with the poetic use of language, that in various occasions Heidegger presented an understanding of language as a fundamental tool to cognitively construct the world and operate on it or, as philosophers of technology and anthropologists would label it today, an alpha technology. Besides for being a recurring theme in his 1927 book *Being and Time* and his 1949 essay 'Letter on Humanism', this interpretation had a significant role in the lecture titled 'Language' (*Die Sprache*), first delivered in 1950. As already outlined in the second chapter of this study, Heidegger mostly structured his philosophical approach to technology in the later phase of his thought.

The philosophical perspectives and the logical arguments that led Heidegger to the recognition of the derivative essence of technology in relation to the deeper metaphysical context of Western thought in *Being and Time* are also the ground for his the attribution of the direct dependency of metaphorical language from metaphysical thought in the collected work *Der Satz vom Grund* (The Principle of Reason). In those writings, Heidegger explained, in fact, that "the metaphorical exists only within the bounds of the metaphysical." (Heidegger, *Der Satz vom Grund*, 89 in Ricoeur, 2008, 282)

Heidegger's work was strongly influential for that of Ricoeur's. It is not surprising, then, that according to Ricoeur it was an understanding of the role and limitations of the metaphorical order analogue to Heidegger's that motivated Aristotle to appoint clearly understandable language, as well as in commonly experienced feelings, as the only contexts in which the metaphors can be both expressed with clarity and understood (Ricoeur, 2008, 40, 41).

From the acceptance of this standpoint, it follows that poetry would mostly resort to common language in order to more efficiently evoke the desired emotional effects. Clearly, such expressive strategy can be also employed in non-textual and not strictly linguistic forms. For example, the various staged representations that pertain to theatre, myth and religion all embed their metaphors in worlds and circumstances which have a strong similarity or a direct connection with those frequently experienced by their intended audience. Another example that will be discussed more in detail later in this chapter can be identified in the aesthetical and gameplay design of the *Gua-Le-Ni* video game (see figure 6B), where the physical scale and functioning of the familiar objects materialized by the game system closely mimics their 'actual' counterparts.[6] This inherent and functional tendency to immediacy in metaphorical and allegorical expressions is commonly referred to as *mimesis* and it was first employed in the context of Western philosophy by Socrates[7].

Regardless of its negative undertones (for example in the ones associated with sophistry, in the case of Socrates or Plato) or its positive ones (for instance as a strategy to elicit empathy and pursue *catharsis* and truth as in the case of Aristotle's understanding of the social role of tragedy), the concept of *mimesis* traditionally entailed the tendency to imitate or represent some thing or situation as if it were originally encountered – or could likely be experienced – in the sensory world. This understanding implies that *mimesis* is always developed and expressed within the horizon of a certain way of being-in-the-world (ideally both that of the author and that of the recipients of the representation). As already mentioned, hermeneutically speaking the semantic value of any kind of information always depends on the experiential horizon of the recipient (De Mul, 1999, 81).

In the context of video game studies, the term *mimesis* is often employed to refer to the self-consistency of an interactive, digital world. This specific quality, according to Roger Giner-Sorolla's 1996 essay 'Crimes Against Mimesis' also entails the integration of logical puzzles as well as contextual qualities of elements of gameplay within the game-world (Giner-Sorolla, 1996).

When trying to communicate or elicit human experiences and feelings, poetical language – or more generally any forms of poetical expression – appears to be functionally characterized by three qualities:

1. the framing of the intended poetic effects within the cognitive horizon of its intended recipients (or poetry would be unintelligible and would not achieve the intended results),

2. the establishing of an accessible analogy between the intended poetic effects and the phenomenological *Lebenswelt* of the intended recipients (or poetry would be impossible to relate to and would also not achieve the intended results), and

3. the capability of evoking and disclosing new experiences – either fictionally or by means of simulation – that are unfamiliar or alternative to the phenomenological *Lebenswelt* of the intended recipients of the poetic effects (or poetry would simply reference that world and, thus, cease to be poetic).

Within the poetical use of language, in fact, the referential fields of metaphors and allegories liminally extend beyond those of the sensible world and construct relationships which can be non-referential. It is interesting to observe that the methods and logics of employment of poetical metaphors do not change when trying to afford feelings and experiences which are phenomenologically not comparable with the way human beings experience the world and interact with it in their everyday life. In his 2012 book *Alien Phenomenology, or, What it's Like to Be a Thing*, Bogost claims – as Nagel before him (cfr. chapter 4) – that the subjective, embodied qualities of phenomenologies which are not human can never be fully recuperated objectively. If that is the case, then that of mimetic approximation is not *only* the strategy to effectively mediate familiar feelings or experiences, but *also* the conceptual instrument which can reveal unworldly ones. "In a literal sense", Bogost wrote, "the only way to perform alien phenomenology is by analogy." (Bogost, 2012, 64)

Summing up the core differences between the interpretations of the terms 'ontology' and 'metaphysics' embraced by this study (explained in the introductory pages of chapter 2), I find it efficient and convenient remind the reader that 'ontology' is understood in this study as a rationalization of reality which presupposes a being's mutually shaping, inextricable involvement with the world that is defined by biological and historical dimensions. The term 'metaphysics' indicates, instead, a specific family of world-views that follow from the establishment of a theoretical standpoint, that is to say based on a tradition which separates the object of observation from a generic and abstract observing subject. In the sense explained above, disclosing an ontology other than metaphysics is the purpose of poetic metaphors.

Following this understanding of poetic expression, I do not believe digitally mediated simulations can be thoroughly or accurately understood exclusively as rhetorical instruments. The projectual qualities of computer simulations and their capabilities – observed for example in some of the philosophical uses discussed in the previous chapter – of interactively materializing thought experiments, unconventional worlds and alternative ways to experience space, time, causation, material properties *et cetera*, manifestly transcend the specific focus on *mimesis* that characterizes both the rhetorical and ideological forms of (mediated) expressions. It is in the lights of those reflections, as anticipated earlier in this chapter, I will articulate a poetic understanding of interactive, virtual worlds.

6.4 – MODELS AND METAPHORS

In its scientific connotation, a model is a heuristic instrument serves to test, to explain and to explore a certain interpretation of a phenomenon or set of phenomena (Black, 1962, 219 – 243) Disclosing new worlds and world views, the uses of poetical languages or poetical forms of expression more in general can also be understood as heuristic models. This perspective closely aligns with the formative role of poetry in culture presented in Heidegger's later work. As already observed in relation to Heidegger's understanding of the cultural role of art, the work of art was interpreted as a method to 'open up' new worlds, world-views and to mould culture, rather than the passive by-product of a certain historical context. Only in Heidegger's later thought, around the fifties, the task of disclosing and establishing new worlds as well as new possibilities of relating to them is extended from the work of art to embracing a wider spectrum of poetical forms of expression (Heidegger, 1982, 12, 13) (Heidegger, 2000, 174).

The idea of an analogy – or even a identification – between heuristic models and poetic metaphors (or, more aptly, poetic allegories) was originally proposed by philosopher Max Black in his 1962 book *Models and metaphors: Studies in language and philosophy*. In his text, Black identifies in isomorphism, a comprehensive structural correspondence between two systems, the logics underlying both:

- the functional relationship between a model and the world, and
- the poetic correspondence between allegory and world.

Based on this isomorphic association, the poetic employment of *mimesis* can take the role of the foundational ground for the heuristic potential of human expression, and can transcend the derogative Platonic terms of 'a copy of second order'. It is precisely in the projectual and heuristic employment that metaphors and allegories can effectively become cultural instruments, instead of mere linguistic devices.

Inspired by Heidegger's philosophy in relation to technology, metaphysics and poetry, I argue that virtual technologies are characterized by a meta-linguistic potential that transcends the limited possibility to influence human thought persuasively (which is to say the level of ideology), but has the heuristic potential to operate at a deeper, ontological level. As explained in the third chapter of this study digitally mediated simulations can only be recognized as having heuristic value and ontological effects if accessed as interactive, persistent worlds. In this sense, their advent and their diffusion in social practices have been poorly questioned and analysed in terms of their epistemological possibilities and resulting ontological consequences. Relying on a similar interpretation, Michael Nitsche attributed to digital media, in his 2009 book *Video Game Spaces: Image, Play, and Structure in 3D Worlds*, the capability to fundamentally impact the way humans structure their thought, identifying video games as "a way of comprehending space, time and causation." (Nitsche, 2009, 43)

In the second half of this study two claims were put forward about the possibility for the interactive experiences of virtual worlds to be understood as factors of socio-cultural change.

- The first claim, structured in the fourth chapter, argued that interactive digital simulations can be utilized as ontological instruments as well as mediators of philosophical thought, that is to say technologies capable of materializing alternative phenomenologies and new ways of interactively understand causation, of practically disclosing philosophical notions, hypotheses and experiments as well as giving raise to new questions that could only emerge and be experienced in those virtual contexts. In other words, I recognize computers as media capable of 'overcoming' the constraints and the effects of written text as the dominant form of mediation for the development and the dissemination of thought.

- The second one, presented in this very chapter, attributed to the interaction with virtual worlds a more encompassing cultural role than the didactic, entertaining and ideological ones which are, in my opinion, already solidly established in Western societies. More specifically, in my second claim I propose a vision according to which digital simulations are heuristic allegories, which is to say devices that can operate on human kinds of ontologies at a fundamental, cognitive level.

Developers and designers of digital simulations must, however, be wary. As also argued by Marshall McLuhan in his 1964 book *Understanding Media: The Extensions of Man*, various forms of mediation already proved their intrinsic potential for leading to profound psychophysiological changes in human beings, changes that are often only fully understood until a certain medium acquired 'technological momentum' and is already influentially integrated in social practices. Also, and similarly to the *caveat* which concluded my fourth chapter, I would like to clarify that neither of the claims presented above intend to qualify interactive virtual worlds as either neutral or as the

definitive philosophical medium or as the ultimate epistemological domain. The embedding of computer simulations in social practices, I insist, should be pursued with the awareness that, far from being a neutral technology, they also disclose reality in ways which are both revealing and concealing, advantageous and detrimental. The specific privative dimension of digital simulations, or of computer applications more in general, will be tackled as one of the main concerns of the next and conclusive chapter where I will explore the conceptual, experiential and technical limitations of digitally simulated worlds.

6.5 – MIMESIS AND THE IRREALIS

According to the anthropological perspective proposed by Plessner, the ambiguity and the 'lacking' which characterize the existential condition of mankind are the foundational motivations behind both the innate tendency of human beings to complement their bodies via the creation of technical artefacts and the constitution of the artificial world of human culture. It is the same irreparably broken condition experienced by positionally eccentric beings that was presented in Plessner's 1928 text *Die Stufen des Organischen und der Mensch* as the drive behind another fundamental human trait which the author labels 'the focus on the *irrealis*' (Plessner, 2006, 334).

The second human propensity outlined in the paragraph as 'the focus on the *irrealis*' refers to the propensity of human beings to try for 'overcoming' their contextual and situational limitations, fundamentally originating from being bound to exclusively experience the world labeled as 'actual' and only construct themselves in relation to it. In other words, and in a way that might remind the concept of the '*fantastik*' as explained by Novalis[8], Plessner's 'focus on the *irrealis*' reflects the innate eccentric need for constantly escaping, complementing and reconstructing one's self. The overt objective of this characteristic human propensity is to offer the individual temporary freedom from the seriousness and the constraints of one's own identity, one's own possibilities, one's own perceptual, emotional, intellectual and historical 'thrownness'.

The attraction towards something other than one's ordinary engagement with the world (a drive which motivates activities such as daydreaming, playing, being absorbed by fiction, designing video games, *et cetera*) was famously interpreted by historian Johan Huizinga as the fundamental premise to any form of culture in the seminal 1938 book *Homo Ludens* (*Man, the Player*). It is relevant to note that, in relation to the idea supported in this chapter according to which poetical expression has the potential to influence and extend human ontology, Huizinga asserted that

> "*poiesis*, in fact, is a play-function. It proceeds within the play-ground of the mind, in a world of its own which the mind creates for it. There, things have a different physiognomy from the one they wear in 'ordinary life', and are bound by ties other than those of logic and causality." (Huizinga, 1955, 199)

After what was observed, I argue that it would be particularly useful to start exploring the ontological consequences of the interactive experiences of digital simulations by

understanding virtual worlds as the convergence of three qualities that can be more generally attributed to mediated content. The reader might notice that the three points that follow also mirror exactly the three functional qualities of poetical forms of expression discussed earlier in this chapter. These aspects are:

- **Intelligibility:** as elaborated in the third chapter, if a simulation took place in a logical-aesthetical context that were sensorily non-perceivable or indecipherable in the way it behaves or responds to user action, the experience of its interactive world would be trivially received, ultimately rendering the simulation ineffective.

- ***Mimesis*:** in the more general context of media studies, mimesis indicates the tendency of mediated content to be worldly for those for whom the worlds were crafted for, which is to say to some degrees isomorphic with their experience of the world labelled as 'actual' (or with conventions experientially established in other simulations).

- **Poetic unworldliness:** this third dimension of simulated content reflects precisely what was introduced as the 'focus on the *irrealis*'. It refers to the capability of the digital medium to afford experiences which are independent and often logically and aesthetically incongruous with the ones that human beings can encounter in the context of their biological connection and dependence from the world commonly indexed as 'actual'[9].

In the proposed perspective, all three aspects above need to be considered together in order to understand the ontological impact of interactive digital media. A common example often utilized in academic contexts to illustrate the necessary involvement of all the mentioned qualities in digital media content is the analysis of mimetic and poetic functions of a common word processor (an interactive computer application used for the production, manipulation and printing of texts). Such dissections can be found, for example, in Don Ihde's book *Technology and the Lifeworld* (1990) and in the already cited 1993 paper 'Thinking with a Word Processor' by Kristóf J. Nyíri. A comparable analysis was also carried out by Jay D. Bolter in his books *Remediation – understanding new media* (2000, with Richard Grusin) and *Writing Space: Computers, Hypertext, and the Remediation of Print* (2001).

The essential belief regarding the role of the word processor as a 'mediator' of thought is that it digitally substituted the typewriter, integrating their functioning with unworldly affordances that are uniquely possible within the interactive and combinatorial 'database ontologies' of computers. In their early apparitions, it was not rare for digital text editors to feature animations and sound effects to make the operational experience of text production (hitting keystrokes or starting a new line after a full stop) that were aesthetically analogous to that of a mechanical typewriter. Besides for having to comply with printing and previewing needs, the central element of the interface of text editors, the digital representation of paper sheets as working areas, also customarily recalls earlier and physical forms of text production. All those analogies are clearly motivated by the intention of making the processes of typing easy to interpret and immediate in its basic functional behaviour for all users, including those who are unfamiliar with the logics and interface possibilities which characterize the digital medium. The whiteness of the digital writing spaces, their proportion, orientation and sizes in relation to the user are evident

examples of *mimesis* between traditional social practices and their computer remediations.

Despite its many mimetic aspects with the original functioning of a typewriter (including the top to bottom composition of text, the basic colour of the 'virtual ink' used to type on the screen, *et cetera*), word processors are not limited in their writing and editing possibilities by those of a traditional typing machine, but offer manipulative functions that rely on the affordances granted by the logics of the digital medium, which are frequently summarized in colloquial contexts as the 'ABCD of database ontology' (indicating the elemental – and combinable – computer operations of Adding, Browsing, Copying and Deleting).

Instead of focusing on all the functions that are characteristically possible within database ontologies in general, I find it more relevant to briefly explore, at this point in the text, the ontological implication in terms of *mimesis* and poetic unwordliness of three common affordances offered by text-editing software. In presenting the three-fold example below, I will not treat the general intelligibility of a word processor as I consider it to be – albeit fundamental – poorly relevant for my argument and I will embrace it, instead, as a pre-condition not only for the intended experience of a piece of software, but also to its mimetic and unworldly qualities. The three common affordances of a text-editing software I would like to explore in the subsequent sections of my text are:

- the 'undo' function (1),
- the affordances of cutting, copying and pasting data (2) and
- the possibility to import and embed several different kinds of digital information in their files (3).

1. The first item of this analysis, the 'undo' function of a word-editor, allows users that are in the process of editing and formatting text to move back and forth in the operational time of their interaction with the software. With the 'undo' affordance, text can be manipulated in a radically different way than they would on a physical sheet with an actual typewriter and a real ink ribbon. Unlike the principle of causation that defines several aspect of the way human beings are in the world they are biologically bound to, the causation that is simulated within the digital medium is neither unidirectional nor inexorable. This new and very practical relationship with time that the text-editing software enforces, requires its users to 'overcome' their original and worldly understanding of time and causation (shaped in a univocal relationship with the 'actual' world). The objective, pragmatic experience of causation as a multidirectional and less prescriptive way in which phenomena are connected in a (virtual) world was not accessible to humans before the diffusion of interactive digital media. Understood through this lens, also video games – in their infinite and non-prescriptive possibilities for iterative interaction – allow for particularly evident infringements of traditional causality. This specific virtual insubordination of theirs is particularly obvious in video games that integrate saving options, checkpoints or time reversals in their logical structures. Interactive digital entertainment releases which embrace active time-manipulation as part of their gameplay – such as the already mentioned

Legend of Zelda: Majora's Mask (Nintendo EAD, 2000), *Blinx: The Time Sweeper* (Artoon, 2002), *Prince of Persia: Sands of Time* (UbiSoft Montreal, 2003) and *Braid* (Number None, Inc., 2008) – can be embraced as the climactic point in the user manipulation and control over virtual causality. It is from this standpoint that Dario Compagno stated that the advent of digital media allowed for the experience of genuine freedom of choice for the first time in the history of mankind (Compagno, 2008).

2. Since the early days of human-computer interaction, the logical operations 'add' and 'subtract' took the form of interface affordances meant to move and replicate sections of plain text: the famed 'cut, copy and paste' commands. The operations corresponding to the affordances mentioned above has an intuitive mimetic association with physically moving objects in the actual world and reflects even more directly on the traditional practice of manuscript revision, whereby human editors would physically cut paragraphs from a one page of a manuscript and literally paste them onto another page. In a text-editing software, cutting, copying and pasting also allow for the transferral text from a certain location of a digital document to a different one within the same or a different document. Albeit maintaining clear and strong connections with their worldly origin, part of the affordances offered by a word-editor transcend the materiality of the pre-digitally established way in which text was manipulated. The possibility to infinitely cut, copy and paste data defies the traditional understanding of space in the same way the 'undo' function infringed that of time[10]. Understood in that way, word-editors implicitly ask their users to relate to the virtual sheet in front of them not as if it were physically concrete, but rather as a discrete aggregation of modular elements whose order and interconnection are never definitive. A similar understanding of the space of text as well as its non-linearity underlie to the concept of cybertext. In a wider sense – as De Mul noted – with digital media reconfiguring and organizing every aspect of our society, "We, too, are living in a permanent beta state." (De Mul, 2010, 41)
   Extending the understanding of the interface affordances of cut, copy and paste as infringements of the traditional understanding of space, it is relevant to also note that the potentially unlimited replication of text, as well as digital paper sheets is highly incongruous with the finite possibilities to operate with a physical support for text or in the physical world in general. Similarly to Borges' 1939 essay 'The Total Library' (see chapter 6.6.2 – The 'trivialization') and not unlike possible-worlds theory, word-editors suggest the idea that the world is nothing but an instance among all the possible (virtual) combinations of its constituent elements. This very world-view is procedurally and interactively represented by the 2009 *International Games Festival Awards* finalist *Snapshot* (Retro Affect, 2009). The game takes place in a two-dimensional animated world which features a basic physical engine. In the world of *Snapshot*, the player is able to access new areas and surmount logical obstacles by mastering the application of the logics of cutting, copying and pasting to the game's physical environment. Most of the elements in the world where the game takes place can be captured, moved, deleted and multiplied with the objective of solving spatial puzzles (see picture 6C).

Figure 6C: The possibility to cut, paste and multiply objects in the bi-dimensional world the game grants access to is the core mechanic of *Retro Affect*'s *Snapshot*. One of the more interesting gameplay features is that the elements of the physical world of the game that are cut or copied (the elephant in the picture above) will freeze in time but maintain their kinetic momentum. Used with the permission of Kyle Pulver of *Retro Affect*.

3. Last but not least, I would like to focus on the possibilities offered by text editors to import and embed several different kinds of digital information in their files. This characteristic affordance is not a unique trait of text editors but is manifestly ascribable to several applications of the digital platform. Every computer software application relies, in fact, on the understanding according to which everything within a virtual world – at its most basic level – consists of nothing other than digital information. This fundamental ontological notion sits at the very core of the media-convergence phenomenon hosted and promoted by the informationistic worldview that the use of digital medium and its capillary penetration in social processes fosters and enforces. With specific regard to the virtual remediation of traditional media, the ontological 'flattening' described above (the perspective according to which everything that exists is ultimately made of the same substance and ultimately has the same status and value) also manifests itself in the shape of information affordability: text ceases to be text, images and music as well as any other type of content adopt the form discreet, modular and configurational units in an indexable and transformable set of homologous data.
   In a well-known passage of Borges's 1942 essay 'The Analytical Language of John Wilkins' (already discussed in this text at the beginning of the fourth

chapter), the bizarre and unthinkable animal classification encountered in 'a certain Chinese encyclopedia' featured a category for beasts that are "drawn with a very fine camelhair brush" (Borges, 2001, 231). In an analogue way, working within the flattening perspective outlined above, computers disclose a virtual ontology in which the difference that humans customarily perceive between an object and its representation is less clear and less significant than in pre-digital ontologies. This aspect of the outlined ontological shift is also clearly discernable in Katherine Hayles' 1999 book *How We Became Posthumans*, where the author presents a definition of the quality of being 'virtual' as "the cultural perception that material objects are interpenetrated by information patterns" (Hayles, 1999, 13, 14). Hayles specified that her definition of 'virtual' is strategic in the sense that it works in the general direction of 'overcoming' a dualistic understanding of the relationship between human beings, and their newly disclosed digital extensions. Her vision closely resonates with a postphenomenological interpretation of digitally mediated simulations as ontological instruments as well as mediators of philosophical thought that grant access to new, digital bodies for their users together with the experiences of additional, virtual worlds and ontologies. Programmatically, Hayles's vision embraces the epistemological possibilities of computers without being seduced by the Platonic / Cartesian aspirations of disembodied immortality. Interestingly, she recognizes, instead, "finitude as a condition of human being, and understands human life as embedded in a material world." (Hayles, 1991, 5)

The three ways of relating to entities and systems presented above in relation with the exemplary case of a text editor overtly infringe ontological perspectives that developed and in the traditional, everyday relationship that human beings established with the 'actual' world and their pre-digital technological environment. The common qualities that brought them together in my text as alternative ways of relating to entities and systems can consequently be understood as specifically ensuing from the introduction of computers in the practice of producing editing and storing text. As a practical example of the wider ontological possibilities of computers, which evidently transcend those of a text editor, and in order to present and explain the work I have done in terms of the particular use of video games as philosophical instruments, I will introduce a commercially-released title of mine: *Gua-Le-Ni; or, The Horrendous Parade*, an action-puzzle casual video game (www.Gua-Le-Ni.com).

In the last two years of the development of my doctoral work, I have collaborated with the game development company *Double Jungle S.a.s.* towards the realization of the commercially released action-puzzle video game *Gua-Le-Ni; or, The Horrendous Parade* (already introduced in chapters 3 and 4). Its alternate title – *The Horrendous Parade* – crudely refers to the fact that the game allegory revolves around the incessant walking of monstrous creatures. The very idea of an alternate title is meant to convey the feeling that the book in which the parade of paper beasts take place was itself published roughly until half of the nineteenth century, when it was fashionable to publish literary works with a specifying subtitle (think of Mary Shelley's 1818 *Frankenstein; or, The Modern Prometheus*, or Herman Melville's 1851 *Moby-Dick; or, The Whale*).

The game was released in its first version (after all "we are, too, living in a permanent beta state") on November the 28th 2011 for the *Apple iPad* platforms, updated several times and also adapted for the various *iPhone* platforms in the spring of 2013. As author

of *Gua-Le-Ni*, I was responsible for the game-design, the game-balancing and the direction of the aesthetic and creative content of the game. In the last role, my tasks included the design of the game narratives, the supervision of the production of music and sound effects and the way in which visual design related to gameplay. The creative goals and the research objectives that I had in mind for this video-ludic project (both in terms of philosophy and biometrics as will be explained later in this chapter) were manifold and were constitutive for *Gua-Le-Ni* since its conceptualization phase. A recent update of the game design document is available as an appendix to this dissertation in order to allow a more thorough exploration of the design choices, their structure as well as the motivations and the inspirations that guided development of the game (cfr. chapter 8).

The *Gua-Le-Ni* video game will not be presented here in its gameplay and aesthetical dimensions as those aspects of my game design work have already been covered in sub-chapters 3.2 and 4.3. The text sections that follow are meant, instead, to elucidate how several of the topics discussed in the present study guided for the design process.

6.6 – GUA-LE-NI; OR, THE HORRENDOUS PARADE

> "For the most part, the English and American whale draughtsmen seem entirely content with presenting the mechanical outline of things, such as the vacant profile of the whale; which, so far as picturesqueness of effect is concerned, is about tantamount to sketching the profile of a pyramid." (Herman Melville, *Moby Dick; or, The Whale*, Chapter LVI – OF THE LESS ERRONEOUS PICTURES OF WHALES, AND THE EPICTURES OF WHALING SCENES)

Gua-Le-Ni; or, The Horrendous Parade was first and foremost designed to become a viable – and possibly successful – commercial title targeting a user-group that could be defined as 'casual'[11]. In order to determine as accurately as possible what it meant to design a gaming experience deliberately tailored to a 'casual audience', I relied on existing research on casual games and on the marketing analysis performed by *Double Jungle S.a.s.* Jasper Juul's 2009 book *A Causal Revolution*, for example, identified 'casual game players' as the vaster player basin of all the video game market: a population that was predominantly composed by females with an average age of forty-eight years (Juul, 2009). The first design objective of the game was, consequently, that of satisfying that target audience in terms of providing that particular group of casual gamers with cognitive challenges that were suitable for them both in terms of game content preferences and expected game-literacy. This awareness led to the design of an interactive allegory which featured no violence, did not contain foul language or profanity and that did not ask the player to be busy with more than two overlapping game mechanics (corresponding to two separate cognitive activities) at any given time during gameplay.

The decision to appeal to a 'casual' audience also had a definite influence on the focus on mimetic aspects of the game experience which will be discussed in detail further on. The two fundamental game mechanics of *Gua-Le-Ni; or, The Horrendous Parade* were crafted as modern interpretations of two cognitive challenges which are common in the

context of puzzle video games: matching and caring (or feeding). While developing the ludological structure for the game, I operated under the arguable intuition that a 'feeding' metaphor would be particularly suitable for the experience I had in mind for the predominantly female audience we were targeting. Analogous to Melville's pyramid in the quote from *Moby Dick* presented at the beginning of this sub-chapter, several perspectives can be utilized to analyse and interpret my philosophical video game or, as I recently called it in an industry-oriented article, "my whale". (Gualeni, 2012c) In its 'mechanical outline' *Gua-Le-Ni* is a feedback machine meant to engage the player with two different pattern-recognition mechanics.

Departing from its ludological practicalities, the game could be embraced as a collection of memories from the time in my childhood when my mother used to go through books of etchings of fantastic animals with me. From yet another point of view, namely the one relative to my doctoral work, *Gua-Le-Ni* is a creative artefact that complements this dissertation, exemplifying the possible use of video games for the explanation, testing, diffusion and development of philosophical concepts and alternatives. In the sub-chapters that will follow, I will articulate on some of the perspectives that consciously structured the design of my game. In particular, I will focus on points of view on 'my whale' that, as anticipated, will provide a practical and design-oriented complementation to the theoretical standpoints I have proposed and structured in the last three chapters of this study. In particular I will investigate:

- Video games as philosophical devices capable of materializing a number of philosophical questions and hypotheses as well as the actualization of thought experiments and philosophical notions that were simply not possible to objectively explore, find answers to or communicate through traditional media. (6.6.1 as a deepening of the central argument presented in chapter 4).

- Video games as poetical allegories: the mimetic and poetic qualities of virtual worlds (6.6.2 in relation to the understanding of digitally mediated simulations as heuristic models explained in chapter 6).

- Video games as ontological instruments that afford their players with experiential accesses to artificial, supplementary worlds as well as bodies (6.5.4 in relation to Plessner's theory of positionality and De Mul's understanding of human poly(ec)centricity discussed in chapter 5).

6.6.1 – Gua-Le-Ni; or, How to Play With David Hume

As the deliberate materialization of one of the core-topics of this inquiry, I would like to briefly analyse my game focusing on the aspects of its design that can exemplify the possibility for interactive simulations to be employed in the testing, the diffusion and even in the development of philosophical notions. The design objectives that I will explain in this sub-chapter were pursued embracing virtual worlds not only as inherent factors of cultural change, but also as media that can offer experiences and information in ways which are alternative to, and in some contexts more desirable than, the abstraction and inflexibility of text. When it came to designing the game, I thought it would have been amusingly ironic to propose of a critical angle and an alternative to the dominant and largely

unquestioned textual framing of the philosophical discourse, presenting my criticism in the form of a (digital) book.

From a game-design standpoint, the concept of *Gua-Le-Ni* was inspired by David Hume's philosophical understanding of what a 'complex idea' is, as well as by the very example he used to elucidate the concept in his 1748 book *An Enquiry Concerning Human Understanding*. In Hume's vision, most people possess the mental concept of a Pegasus (Hume, 1748). This is patently due, according to the Scottish philosopher, to the fact that it is common for human beings to be exposed to Greek mythology. This is ostensibly also the case in the present century, where the Pegasus can still be encountered in books as well as in modern (and often syncretistic) remediations of its folklore. In general, the Pegasus is presented as a divine horse that could fly using its legendary eagle wings and in David Hume's work, it is used as a paradigm of something that cannot be encountered by humans in the world they share as biological creatures and yet is thinkable. Nobody can truthfully claim to have seen a Pegasus, to have ridden, smelled or touched it, and yet the Pegasus is an idea that humans can fantasize of, discuss, write legends about, *et cetera*.

According to Hume, the idea of a Pegasus does not fall under the category of simple ideas, which is to say ideas that can be simply caused by immediate sensory 'impressions' of the objects. The Pegasus must, therefore, be recognized as a complex idea: a mental combination of elements and properties of which the human mind had previous experience and eventually creatively combined into a new idea. The example of the Pegasus also helps to reinforce one of the assumptions at the core of this study: the idea that traditional ontologies are theoretical elaborations of empirical data which are confined by the human capability for perceiving sensorily and for organizing concepts rationally (cfr. chapter 1.3, point 2).

By means of fantastic beasts of the same combinatorial nature as Hume's Pegasus, *Gua-Le-Ni; or, The Horrendous Parade* asks the players to twist the creative capabilities described in the *Enquiry Concerning Human Understanding* on their heads and use them as game mechanics: impossible paper beasts will parade across the screen (the page of the taxonomist's fantastic bestiary) only to be recognized as combinations of parts of existing animals. In other words, the main game mechanic of *Gua-Le-Ni; or, The Horrendous Parade* is a playful and interactive material interpretation of the Humean notion of 'complex ideas'.

What I am arguing both through my games as well as my more conventional academic work is that by materializing philosophical concepts, hypotheses and alternatives in interactive worlds, computers are decisively contributing to the raise of a new humanism. This new, digital humanism does not uniquely develop and spread by means of subjective representations, but also employs the experiences of objective and interactive virtual worlds. The role of computers in the outlined 'cultural shift' is specifically recognized as that of disclosing persistent, interactive experiences characteristically capable of extending and fragmenting the human capabilities for relating to reality. This philosophical perspective was openly discussed in several reviews, conferences and interviews about *Gua-Le-Ni*. The Italian independent developers' community website

www.indievault.it, for instance, quoted a passage of a discussion with them about this point. In that occasion I explained that

> "[i]f one learns how to play the game, one implicitly understood Hume's text, regardless one aspired to do so or not. The player does not need to use her imagination or her interpretative capabilities in accessing those concepts of Hume's precisely because the game offers that portion of his thought in the form of an objectively present, interactive allegory." (http://www.indievault.it/2011/11/23/gua-le-ni-una-perla-made-in-italy-per-ipad/ – translated from Italian)

I believe that the technical and epistemological qualities of digital media are now both academically understood and sophisticated enough to allow for the structuring of a new branch of philosophy to accompany the raise of a new, digital humanism. I propose to call this new, experimental philosophical field 'augmented ontology'. With this objective in mind, the parts of my text which propose the employment of computers as ontological instruments as well as mediators of philosophical thought should not be read as my definitive answer to the question of what the consequences of mediation of philosophical content are, but rather as my advocacy for a less constrained and less conventionally intransigent approach to the construction, the validation and the diffusion of philosophical content. This study not only upholds this vision, but puts it into practice programmatically offering its insights as the complementary combination of text and video game worlds. Reciprocally, and as elaborated in the next sub-chapter, the impossible, digital book in which the gameplay of *Gua-Le-Ni; or, The Horrendous Parade* takes place contains textual sections: pausing the game allows the player to access and read selected paragraphs directly taken from the last three chapters of this work.

6.6.2 – Gua-Le-Ni; or, Mimesis, Poetic Unworldliness and Paper Beasts

The original philosophical biology perspectives offered by Helmuth Plessner's 1928 book *Die Stufen des Organischen und der Mensch*, were foundational – in the fifth chapter – for the structuring of an anthropological approach to philosophy of (virtual) technology. Plessner's positionality theory and his three anthropological laws provided a useful anthropological framework to understand how interactive, digital worlds afford interactive experiences capable of extending and fragmenting human kinds of ontologies. According to De Mul's interpretation of Plessner's theory of positionality, the digital extensions to the one's body afforded by virtual technology effectively become part of what Merleau-Ponty defined as one's individual (actual) *body-schema* (Merleau-Ponty, 1962). This merging is evident in the frequent integration of computer simulations in social practices, for instance in the training of aviation pilots, and can be commonly experienced in the everyday interaction with computers and video game consoles. Experiencing digitally mediates simulations, in fact, both virtual interfaces (HUD, GUI, avatars, *et cetera*) and hardware controllers develop – with use – into

familiar extensions of the users' bodily boundaries as well as cognitive and interaction capabilities.

As already observed in chapter five, the very concept of 'presence' in the context of interactive digital media is utilized to indicate the perceived qualities of smoothness and consistency of the incorporation of one's virtual *body-schema* into one's actual (or rather biological) *body-schema* (cfr. chapter 5, note 13). This perspective of media philosophy in particular reinforces the understanding of *mimesis* discussed above, where the concept was introduced as the tendency of artificial worlds (either fictional or virtual) to be worldly for those for whom the worlds were crafted for, which is to say to some degrees isomorphic with their experience of the actual world (or with conventions experientially established in other simulations). Borrowing the often cited words of Samuel Taylor Coleridge, the quality of *mimesis* in a creative work depends on providing "a semblance of truth sufficient to procure for these shadows of imagination that willing suspension of disbelief for the moment, which constitutes poetic faith." (Samuel Taylor Coleridge, *Biographia Literaria*, chapter XIV)

Several game-design decisions in *Gua-Le-Ni* were taken, prototyped and tested in order to maximize the mimetic qualities of the interaction with the game world, first and foremost the absence of any information regarding the game-state which is not physically incorporated in the game-world itself. Apart from the close-captioning of the situational and patronizing sentences uttered by the narrator[12], no information is ever presented to the player in a way which is not physically and aesthetically consistent with the game world or abstractly overlaying the representation of the game world itself. The virtual book that contains all the logical structure of the game and the different game modes, tutorials, pause pages, game over pages *et cetera* are editorially structured in order to preserve the feeling that the bestiary had the physical consistency of an actual book, that is to say not transcending the material limitations of an actual binding. The experience of turning the pages was designed to resemble as closely as possible the physical act or dragging a sheet of old paper. Physically (actively) turning the book pages or jumping to the desired section by means of coloured bookmarks are the only options available to the player to reach the different sections of the book. The game menu is also isomorphically organised as the index of a book listing all the various informational and gameplay options available to the player-reader.

In line with the tradition of arcade games, player performance in the competitive game mode – the *NON-FICTION* mode – is measured and visualized by means of points (or simply 'P.', in the game). However, unlike early arcade games or contemporary casual games, the score is not presented to the player in an abstract, decontextualized fashion. *Gua-Le-Ni* relies, in fact, on the ambiguity highlighted by their qualifier 'P.' between points and pages: in the game, scoring points equals turning the pages of the bestiary (see picture 6B). In order not to disturb gameplay, the turning of the pages has been limited to the curled dog-ear at the bottom-left corner of the volume. Following from the same design vision, which is to say pursuing physical consistency in providing abstract information about the game-state, the buffer of the food items correctly fed to the beasts are shown to the player as marks that are progressively applied to the book by a copper stamp with a wooden handle which is historically consistent with the ones that were used in

Great Britain when Charles Darwin published his book *On the Origin of Species* (1859).

The functioning and the responses of the main gameplay interface for the cataloguing of *Gua-Le-Ni*'s fantastic beasts – the taxonomic cubes – were meant to adhere as closely as possible to the physical behaviour of toy cubes. Some allowances to the actual freedom of manipulating physical objects needed to be given in order for the cubes to functionally comply with their role as interface, for example their orderly sticking together as if they were magnetic or their snapping onto an ideal orthogonal grid when not actively manipulated by the player. The experiential and informative dimensions of the cubes as interfaces were designed starting from the assumption that if a player ever lifted or spun a toy cube in his or her youth, he or she would find the experience familiar and needless of further explanations. The functions of the interface that were not gameplay dependent, as already mentioned, were designed to be as intuitive as possible, with the intention to reduce the learning curve relative to controlling the game. This aspect of learning how to play was, consequently, given minimal space during the initial tutorial sessions of the video game.

So far, the mimetic qualities of *Gua-Le-Ni* were examined under several aspects of its design (the structure of its aesthetical and gameplay affordances and their relationships). I believe it would be interesting to also dedicate some paragraphs to explore the unworldly qualities of the game, which is to say the experiences it offers to its players that are different from the ones humans can encounter in the context of their biological connection and dependence from the world labelled as 'actual' or with conventions established in other simulated experiences.

Among the various poetic aspects that can be recognized in the design of *Gua-Le-Ni*, the one that I consider the most evident is the fundamental presence of paper beasts coming to life and stampeding across some of the virtual book's illustrations. The virtual beasts of *Gua-Le-Ni* will try to escape from the fabulous bestiary (their exiting the book-space is also the 'game-over' condition for two game modes). Neither the presence of interactive paper creatures, nor their hunger for paper food or their aspiration to bibliographical freedom are customarily part of the way human beings experience the world as biological creatures. More poetic impossibilities that the player is faced with when playing *Gua-Le-Ni* are the countably infinite number of pages that the book is composed of, the growing of apples on a finely drawn tree in a few seconds, the instantaneous appearance of a full grown pumpkin from the illustration's soil, the fact that feeding a beasts head a butt of an animal of its same species has an influence on the cubes the player is manoeuvring, *et cetera*. Stably, intelligibly and interactively relating to a world where those things are virtually present and allegorically intelligible, I argue, necessarily qualify digitally mediated simulation as heuristic models: instruments that, by means of fictional or procedural materialization, serve to explain or to explore a certain interpretation of a phenomenon or set of phenomena. As heuristic allegories, I claim, digitally mediated simulations disclose new worlds and world views for its users. I argue, here, that the outlined phenomenological shift necessarily entails an extension, a distortion and a fragmentation of their traditional (pre-digital) ontological horizon.

As observed earlier in this chapter, the recognition of the inherent cognitive liminality of any form of allegorical expression, that is to say its need to be in a way isomorphic with the way humans experience the world and, at the same time, must poetically evoke (or, in the case of video games, offer material experiences of) the disclosure of a new world and world views, was foundational to the understanding of artistic production and its cultural role since Aristotle's writings. More recently, an analogue dual understanding of art and games was proposed by Marshall McLuhan. In his 1964 book *Understanding Media: The Extensions of Man* he overtly stated that "[a]rt, like games is a translator of experience" (McLuhan, 1994, 242) and that

> "[g]ames are popular art, collective, social *reactions* to the main drive or action of any culture. Games, like institutions, are extensions of social man and of the body politic, as technologies are extensions of the animal organism. […] The incorporate both the action and the reaction of whole populations in a single, dynamic image." (McLuhan, 1994, 235)

This study embraces digitally mediated simulations in the artefact-oriented and liminal sense presented above: the materialization of alternative, virtual worlds characterized by mimetic aspects (practices, conventions, views and mannerisms that are customary in a social group) and a poetic one (the transcendence of established values and perspectives). From the proposed perspective virtual technology does not operate culturally as an alienating force precluding humankind from experiencing the "full richness" of existence. On the contrary, the employment of digitally mediated simulations, following the promising path opened by the early Heidegger and exemplified in my approach to game design, embraces the potential of virtual worlds as a form of mediation of the relationship between human beings and reality, a mediator that discloses a poetic context where a new humanism is already, projectually, developing.

6.6.3 – Gua-Le-Ni; or, Biometric Game Design for Casual Video Games

The anthropological perspectives on philosophy of technology structured in the fifth chapter also opened the way for the structuring of a phenomenological account of biometry in relation to virtual experiences. In this sub-chapter, I will explain how besides for qualities of its design that can be ascribed to the humanistic dimension of the creative process, the development of *Gua-Le-Ni* was also structurally designed to be used as a benchmark to run specific scientific experiments. *Gua-Le-Ni*'s development pioneered, in fact, the use of biometric analysis as a pioneering quality assurance methodology for the design of a commercial casual video game at NHTV Breda University of Applied Sciences (The Netherlands).

While organizing the first draft of the last three chapters of this text, I had the chance to collaborate to the writing of a grant proposal for a two-year applied research project focused on the possibilities and advantages offered by biometric experiments in the analysis and development of casual video games. As a

philosophy of technology researcher and game designer, for me it was the perfect occasion to put my perspectives, thoughts, insights and intuitions into the practicalities of design and tuning for a commercial project. When the grant was approved, me and the developers at *Double Jungle S.a.s.* modified the very first playable alpha version of the game so that it could be interfaced with our early data-gathering framework and used as the benchmark for testing and tuning an innovative quality assurance methodology which, integrated with more traditional practices, led to objective advantages in balancing and validating design choices. As already explained in chapter 5.5, this pioneering practice is called 'biometry' and relies on psychophysiological measurements.

In order to understand what biometry is, I believe it is useful to provide a practical example that a reader who is not informed in the fields of user experience analysis (UX) or human-computer interaction (HCI) is likely to have some familiarity with: that of a lie detector (or polygraph). A lie detector is a machine composed by a number of sensors capable of recording changes in a range of physiological processes such as her heartbeat, the electrical conductivity of her skin, the frequency of her respiration, and so forth. Observing and collating variations in these dimensions in time, the discipline of biometry is capable of approximating an objective report of the changes in the test subject's internal states. In other words, by measuring how a test subject's body reacts to a certain experience (which could be a set of questions, or the screening of an advertisement, a video game event, *et cetera*) we could quantitatively determine the relative levels of stress, concentration, anxiety, fear as well as other internal states of a test subject (Gualeni, Janssen, Calvi, 2012).

By monitoring changes – for example – in their heart frequency or the contraction of certain key facial muscles while playing a video game (that is to say relating the bodily variations to certain game events as well as changes in the game states), objective dimensions can be obtained and comparatively analysed to assess whether certain intended effects of the game on what should ideally be its target audience take place, and if they take place at the right time with the intensities envisaged by the designers. Clearly, besides for the validation of game-design choices, this correlated set of observations (and related methodologies) can be used to test and compare bodily reactions to alternative design choices and to support the process of balancing and tuning in-game variables.

Is the initial speed of our video game too high? Did we reach a climax in emotional involvement where we needed it to be (likely at the end of our free demo)? How does our target audience feel during their first game-over? Questions like the ones above are common in the design and quality assurance phases of casual game development. Similar interrogatives can obtain, with the use of biometry, objectively quantifiable answers. With the aim of structuring a methodology capable of answering similar questions with the added perspective of biometry, the research team at NHTV Breda University of Applied Sciences started to run tests on *Gua-Le-Ni*. The resulting psychophysiological analysis complemented a wider quality assurance campaign that also customarily included questionnaires, interviews, blind-testing procedures as well as competitive performance tests (Gualeni, 2012c).

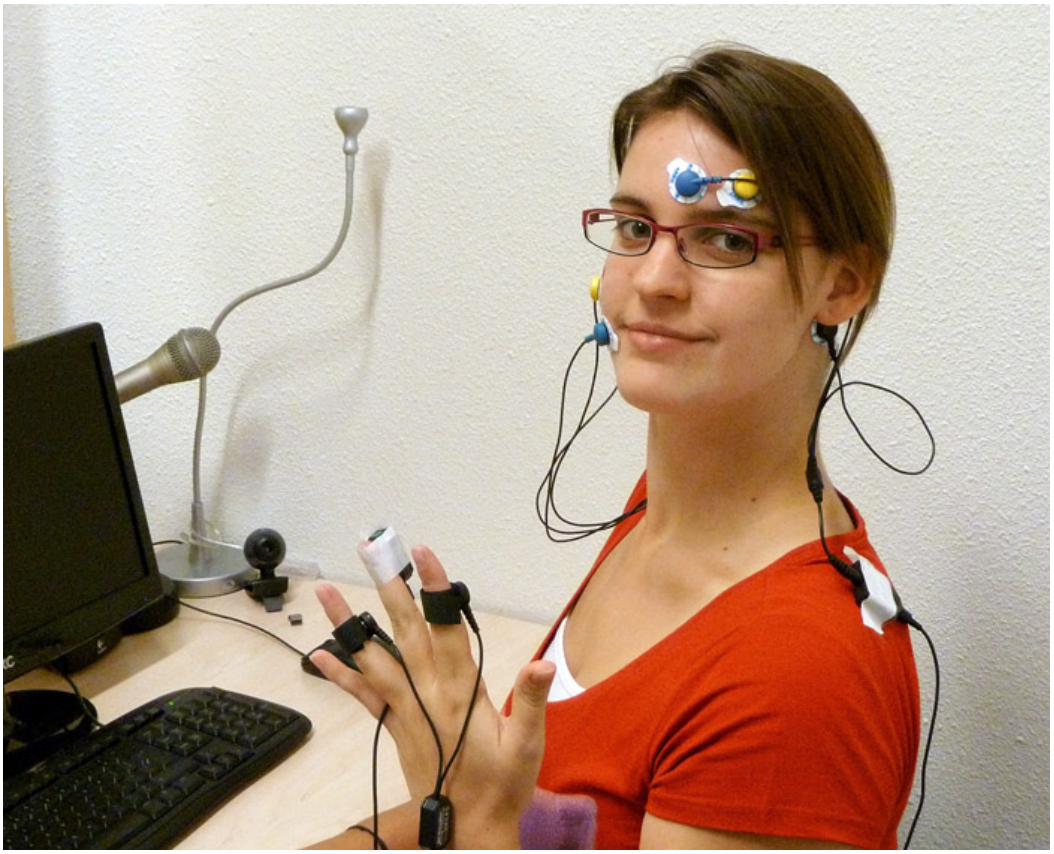

Figure 6D: One of the test subjects wearing the basic set of sensors that were used in the psychophysiological experiments ran on *Gua-Le-Ni*. On her left hand, the subject is wearing two electrodes for the Galvanic Skin Conductivity (GSC) sensors on the index and middle finger and a sensor capable of measuring both the variations in blood volume and heart frequency on her middle finger. On her face, two pairs of electromyography (EMG) sensors record the electrical activities of her 'frowning' muscles and of her 'smiling muscles'.

The application of biometric observations to video games is, however, not a new methodology per se: it relies, in fact, on a relatively well established field in UX and HCI. Moreover, in terms of application and valorisation of such insights in the game industry, similar tests and experiments have already been successfully employed in the development of 'triple A' titles like Valve's *Left for Dead* and EA Sport's *NBA Live 2010*. It is, however, important to note that both game-development applications as and publications on biometrics before the development of our research project completely ignored the casual sector of the games industry. This overlook was not only related to the financial possibilities of the higher strata of the industry (which largely focuses on markedly action-oriented shooting, racing and sport games), but was also due to practical reasons: action games give rise to easily detectable physiological patterns. The research performed at NHTV Breda University of applied Sciences demonstrated that similar insights can also benefit and ameliorate and guide development procedures also in the faster production cycles of the 'casual' sector of the games industry. Our work in the field of biometrics also showed that, when combined with

traditional quality assurance practices, an approach to game-design that relies on experiments on biology can lead to objective advantages even with game genres that transcend the boundaries of the emotionally 'high-intensity' ones that were mentioned above (first-person shooters, racing or sport simulations, action-adventure, *et cetera*). Our benchmark case-study, *Gua-Le-Ni; or, The Horrendous Parade* was received with excellent reviews and has a current '*Metacritic*' score 83% (http://www.metacritic.com/game/ios/gua-le-ni – retrieved on August the 10th, 2013).

In the context of this dissertation in the field of philosophy of technology, rather than tackling practicalities such as noise reduction, experiment design and gameplay iterations[13], I would like to focus on my personal interest and investment as a researcher in the biometric analysis of being in virtual worlds as direct consequence of the stance adopted in the previous chapter, where digital technology was presented as an 'extension of man' in the sense that it provides human beings with what are effectively new, supplementary, digital bodies. As a corollary of the Plessner-inspired perspective adopted by De Mul, in the fifth chapter of this study it was also noted that the relationship that human beings establish with their bodies hybridized with – and within – digitally mediated simulations can be understood as characterized by multiple experiential centres corresponding to multiple bodies, regardless of their organic, telepresent or virtually simulated constitution.

From the perspectives proposed in this study, all technologies can be understood as media: extensions of the capabilities of humans to think about a world and interact with it. Digitally mediated simulations, in particular, were embraced from a postphenomenological standpoint as technologies capable of providing interactive experiences that widen, distort and fragment the pre-digital horizon of human kinds of ontologies. This capability inherent in digitally mediated simulations was recognized as relying and depending, in its allegorical expression, on a biological, bodily substrate.

On the basis of the anthropological perspective on philosophy of technology and embodiment in virtual worlds that was introduced in the fifth chapter follows the understanding according to which worlds and events experienced through a virtual body have an effect on the actual, biological, body of the cybernaut.

In summary, this sixth chapter discussed the characteristics of digitally simulated worlds, in terms of

- their mimetic qualities (which were recognized responsible for the emergence and the efficiency of their allegorical meanings) and

- their poetic potential (which is identified as the ultimate purpose of computer simulations when embraced as ontological instruments).

Both in their mimetic and poetic dimensions, digitally mediated simulations are reliant on, and thus bound to, the fundamental anthropological structures of human beings: their cognitive capabilities and their biological 'thrownness'. On the one hand, the recognition of the limitations and qualities imposed to virtual worlds by this dependency opened the

way for an analysis of the effects of virtual experiences on the actual, biological bodies of the cybernauts (biometrics). On the other, it allows for a postphenomenological understanding of the limits of the expressive and epistemological potential of interactive, digital allegories. This last aspect of my dissertation concerning the conceptual and technical limitations that human beings encounter as creators of digital worlds will be presented and explained in the chapter that follows, which will also conclude this work (chapter 7).

I would like to conclude this chapter with a cautionary reminder that was first presented in the first chapter. I find it important to repeat here that the understanding of technology outlined above and the proposed, synthetic design dimensions of several of the theoretical insights presented in this text by no means intend to imply (as in a social constructivist stance) that mankind fully understands every aspect of the artefacts and systems it designs and employs and is capable of controlling them. As already discussed in the introductory chapter of this dissertation, Helmuth Plessner noted in his seminal 1928 book *Die Stufen des Organischen und der Mensch* that the effects of technology are under any circumstances largely outside the complete control and understanding of their creators. I believe that this insight of Plessner's is convincing, as argued by Marshall McLuhan and Neil Postman, on the basis of the observation that any forms of mediation inherently impose assumptions and values on individuals and societies alike. Society, as McLuhan elucidated in his 1964 *Understanding Media*, is in a narcissistic state of technological hypnosis and is unaware of the very effects and influences inherently enforced by media (McLuhan, 1994, 11). The technological assumptions and world-views imposed by a technology or a technological environment only become partially recognizable once a certain critical or temporal distance is established between a society and a technology (or a system of technologies).

Additionally, I can now argue that part of the thought-shaping and behavior-modeling influence that media and technology have on individuals as well as societies cannot be fully controlled by their human creators precisely because they are founded on – and driven by – aspects of what it is like to be human beings that are themselves outside of the range of either human control or their full comprehension, first and foremost their being thrown in the world with specific (and specifically binding) perceptual, cognitive and biological structures.

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[1] I believe it is worth mentioning, among other notable applications of the 'procedural rhetoric' of video games, the stimulation of a critical approach towards actual events – often coupled with reflections on the persuasive strategies of journalism – ('newsgames') and, as I hope I convincingly demonstrated in the previous chapters, the processes of objectifying, testing and divulging philosophical notions ('philosophical games' and 'critical games').

[2] In proposing this critical perspective to Aristotle's understanding of the role of metaphors, Ricoeur often cited Heidegger's 1956 – 1957 lectures collected in the volume *Der Satz vom Grund* as well as the collection of papers titled *On the Way to Language* and the book *Poetry, Language Thought* both originally published in 1971. In the case of Jacques Derrida, Ricoeur is referencing his 1971 essay 'White Mythology'.

[3] The German Scholar Sebastian Möring compares, in his 2011 paper 'Tackling the Metaphor-Simulation Dilemma', the understanding of what a metaphor does according to Lakoff and Johnson with the definition

provided by the rhetorician Kenneth Burke, according to whom the metaphor "is a device for seeing something in terms of something else. It brings out the thisness of a that, or the thatness of a this" (Burke, 1941, 421 – 422) From a semiotic perspective, Daniel Chandler considered every representation of reality synecdochic since they necessarily involve a critical reduction, a selective simplification of the trope of the metaphor (Chandler 2007, 133). Strictly speaking, representing a system with a part or a simplification of the whole set of details and interconnections, simulations must always be recognized as metonyms.

[4] The term 'world', as contextualized in the first chapter of this text, denotes an interrelated set of beings and relationships with (and among) the said beings which are stably perceivable and persistently intellligible within a certain phenomenological context.

[5] Play is a form of adaptation, but not simply to the world we inhabit biologically. In a way which resonates with philosopher and sociologist George Herbert Mead, the activity of play can be described as a willing adaptation to an environment which is not there (Mead, 2001).

[6] I believe it is relevant and necessary to note here that the purpose of poetic metaphorization can and probably should be pursued as a cultural operation, that is to say with consequences that affect and shape a message and its effect beyond the simple . By that I mean that any form of metaphorization is only consciously employed in combination with the understanding that metaphors and allegories not only embody a specific ontology, but the also bring along a 'deontology', a certain normative tenor (Lakoff and Johnson, 1980; Journet, 2005, 2010).

[7] The idea of immediate expression which underlies the concept of *mimesis* was contrasted, in the work of Aristotle, with *diegesis*. In its diegetic form, expression takes a clearly mediated, and thus less direct, form. This is, for example, the case of stories and events told through the eyes of an all-knowing narrator.

[8] For the Romantic author and Philosopher Novalis (Georg Philipp Friedrich Freiherr von Hardenberg, 1772 –1801), the concept of the '*fantastik*' refers to the mental faculty of free association of thought as well as the poetic exercise of that faculty.

[9] In Heidegger's 1936 essay 'The Origin of the work of Art', the artwork is presented as an artefact endowed with the potential to disclose a world, of opening up new ways in which reality can unconceal itself. (Heidegger, 1982, 35) Such heuristic qualities attributed to artworks by Heidegger are also patent in statements as: "[t]he art work opens up in its own way the Being of beings." (Heidegger, 1982, 39) Albeit the way in which art can engender such disclosure was not fully explicated, the poetic, revealing potential of art was openly recognized in several of his texts as the cultural role of artistic production. The 1951 essay 'Building, Dwelling, Thinking' marks the following step in Heidegger's development of the relationship between artefacts and thought, a step in which he attributed the capability to "let come into being" and disclose worlds – previously reserved exclusively to artworks – to all things (Verbeek, 2005, 89).

[10] As already noted in chapter 05, textual files possess no temporal existence of their own and, being always open to reorganization, addition, revision, deletion et cetera are constantly in a beta state with limited objectivity both in the formal sense and for what concerns its contents of the text (Bolter, 2001). "(Text files) are no longer objects of thought, but thoughts themselves, thoughts in flux." (Nyíri, 1993)

[11] In the last ten years, an increasingly larger group of people who never played computer games before have been attracted to various types of games in the 'casual' category, and a certain portion of gamers that were traditionally recognized as pertaining to the hard-core category have migrated to more 'casual' territory (Gualeni, Janssen, Calvi, 2012). The Casual Game Association opts for a broad description of casual games, defining them as "video games developed for the mass consumer, even those who would not normally regard themselves as a 'gamer.'" (Casual Games Association, 2007) More specifically and in very

practical terms, the subsequent gameplay characteristics tend to characterize the vast majority of games that are marketed as 'casual' video games:

- Control simplicity: the majority of casual games rely upon non-complex control systems, with many PC-based casual games utilizing a simple point and left-mouse-click control scheme.

- Casual games tend to require the player to have to invest less time in order to obtain a satisfactory gaming experience than is the case with games for 'gamers'.

- Short gameplay sessions: most casual games are played in increments of between five and twenty minutes, comfortably fitting commute times and short breaks from work or household duties.

- A flatter difficulty curve than games traditionally designed and released for 'gamers' and a less punishing approach to low-performance players.

- In general, casual games rely on a single, scalable, game mechanic or on the overlapping or two simple mechanics. From such relatively simple ludological structure emerge the relatively low complexity of the gameplay of casual video games that, once again, needs to cater to an audience with a marked preference for a short learning curve and a flat difficulty curve.

- A definite preference for positive fiction in the game allegories. The absence of controversial or disturbing themes and a very abstract and cartoony representation of eventual violence are also common characteristics of video games that are considered to pertain to the 'casual' sector.

[12] The design choice of having subtitles in the game can also be traced back to the research performed on the casual gaming population that preceded the development of *Gua-Le-Ni*. According to Juul, and the '2007 Casual Market Report' by the Casual Games Association, it is frequent for casual gamers to play in either noisy household environments, in public spaces such as cafeterias, coffees and fast food restaurants or in train or subway wagons during commuting (Casual Games Association, 2007; Juul, 2009). None of those gaming circumstances allow for the privacy and the possibility for gameplay to be driven and informed with auditory clues only. For this reason it is not uncommon in casual games to have gameplay-relevant information presented contemporaneously in visual, auditory and tactile form. Following research indications, the use of close-captioning was considered to be a desirable tool to maximize the accessibility of gameplay and the chance of success of casual games. To minimize the impact of abstract subtitles on the highly-mimetic experience the game intended to provide, we gave the player the possibility to disable them from the application settings.

[13] The technical aspects of our set up, the tracking and the graphs of biometric tests, the results of interviews and questionnaires can be found in the academic paper titled 'How psychophysiology can aid the design process of casual games: A tale of stress, facial muscles, and paper beasts', co-written with Dirk Janssen and Licia Calvi and presented to the ACM conference Foundation of Digital Games (FDG) 2012 (Gualeni, Janssen, Calvi, 2012). The paper also explains how the collation of biometric and traditional quality assurance practices elicited the game-design and interface-design changes that the game was released with and had a notable functional impact in the tuning of gameplay-related variables such as the initial walking speed of the beasts and the shape of their acceleration curve. The same topics and developments, treated at a more popular divulging level, are also explained and commented in the articles 'CASUAL BIOMETRIC DESIGN: a tale of lie detectors and paper beasts', which I wrote for the May 2012 issue of Casual Connect Magazine and 'The Case for Casual Biometrics', featured on Gamasutra.com on December the 21st 2012 (Gualeni, 2012c). In the past year, and from more specifically technical standpoints, three extra papers were published about the developments of our framework and further experiments and reflections on the viability of a biometric approach to casual game design, tuning and balancing. Such papers are:

a. Gómez Maureira, M., Janssen, D., Gualeni, S., Westerlaken, M. 2013. 'Comparing Game User Research Methodologies for the Improvement of Level Design in a 2-D Platformer'. ACE 2013 Conference (Springer Lecture Notes in Computer Science) in Twente, The Netherlands. November 13 – 15, 2013.

b. Janssen, D., Calvi, L., Gualeni, S., 2013. 'A framework for biometric playtesting of games'. Short paper on a technical framework aimed at optimizing the gathering of biometric data presented at the 8th Foundation of Digital Games conference (ACM) in Heraklion (Crete), Greece, May 14 – 17, 2013.

c. Gualeni, S., Janssen, D., Calvi, L. 2012. 'Psychophysiology and casual games: always a good match?' Full conference paper on biometry-aided casual game design presented at the '2012 ECREA Conference' in Istanbul, Turkey, October the 24 – 27, 2012.

CHAPTER 7: Concluding remarks

The fifth chapter of this study articulated a vision according to which digital simulations can be understood as ontological instruments capable of granting mankind access to artificial worlds disclosed through new, virtual bodies. This specific affordance recognized in computer mediation offered mankind, for the first time in history, the possibility for genuinely expressing what to will (cfr. sub-chapter 5.6.1) and for developing human kinds of ontologies in contexts which are other than the world mankind shares biologically. In the case of the mediation of virtual- and tele-technologies, in fact, the logical and aesthetical accordance with an actual physical or socio-historical context no longer presents itself as a necessity, disclosing interactive experiences and phenomenologies that are not simply 'actually present' but extend towards what is 'virtually possible'. From these premises, it appears that in this particular age of anthropological enhancement, humans can no longer simply design their existence existentially, but also biologically and experientially.

The cultural shift outlined above was recognized in the last chapters of the present text precisely as one towards projectuality and modality, that is to say as engendering a cultural transition from a relatively stable and univocal understanding of the world, phenomenology and personal identity towards embracing virtuality and a simulational mindset as the foundations of a novel, flexible and interactive epistemological paradigm. As I argued before, and through the proposed understanding of what an ontology is, I claim that such transition cannot happen without fundamental ontological consequences. On these premises, 'the question concerning digital technology and projectual humanism' – the fundamental inquiry that motivated this study – was undertaken as a postphenomenological exploration of the specific ontological effects brought about by the experience of virtual worlds and phenomenologies through the mediation of digital, extended bodies.

Chapter six, which led to this conclusive one, integrated the perspectives elaborated in chapter five with an understanding of digitally mediated simulations as a poetic declination of metaphorism. This chapter will complement that vision presenting an understanding of the capability for human beings to generate metaphors (and more in general for expressing themselves projectually through any kinds of social practices) as having a necessary and inescapable foundation in the bodily and historical dimensions of human kinds of ontologies.
In this sense, similarly to all forms of poetic expression, digital simulations was recognized as liminal form of mediation as far as human cognition is concerned: it needs to be in a way isomorphic with the way humans experience the world and at the same time must poetically evoke (or, in the case of video games, offer material experiences of) the disclosure of a new world and world views. It is thanks to this ambiguous, liminal quality of technology as a form of mediation that humans "are living in a permanent beta state." (De Mul, 2010, 41)

As already anticipated at the beginning of this study, however, such change was not recognized as a paradigm break, but rather as a deepening of the human project and as a resignation to the limited epistemological and philosophical scopes of the project itself. For example, as was outlined in chapter five, the supplementary digital *body schemas* that were recognized as emerging from the poly(ec)centric positionality that humans adopt in relation to digital technologies do not effectively constitute radically new cognitive tools,

but are rather identified as extensions and modification built upon existing human ontologies which, once again, are always characterized by a fundamental and inescapable bodily origin.

Accordingly, digital simulations were not recognized as granting the possibility to 'overcome' traditional Western ontologies in the sense of a surpassing and a forgetting of our metaphysical past, but rather – as often repeated in the course of this study – in the sense of *Verwindung* as brought forward by Heidegger, that is to say as distortions and repetitions of established human kinds of ontologies. The very title of this study, *Augmented Ontologies*, was also meant to herald that the offered interpretation of the unique phenomenological and epistemological affordances of interactive digital simulations was not aspiring to map a cultural revolution, but rather tried to embrace what was recognized as an epistemological shift.

As part of the outlined transition, the novel affordances of the digital medium described in the last three chapters cannot be (and were not) understood as the context where a novel set of ontologies can find a new, stable grounding, but rather as the phenomenological and experiential context where a new humanism is already arising. It is crucial to repeat here that by 'a new humanism' I do not mean to indicate a new metaphysical foundation for human thought, but I refer to the way Heidegger explained the term in his 1949 essay 'Letter on Humanism': an form of thinking can only be properly understood and restored in culture as a more original, explorative and unconstrained way of meditating and caring for humanity and understanding its relationship with Being (cfr. chapter 1.3, note 3).

In this conclusive 'act' of the present study, I will formulate an answer to the original question posed in the introductory chapter:

How can digitally mediated simulations supplement human beings in 'over-coming' the horizon of their traditional (pre-digital) ontologies?

My answer to such question will finally be expounded through a more explicit articulation on the expressive and epistemological limits that characterize digital simulations as poetic allegories in my theoretical framework.

7.1 – THE EXPRESSIVE AND EPISTEMOLOGICAL LIMITS OF DIGITAL SIMULATIONS AS POETIC ALLEGORIES

The postphenomenological approach to virtual technologies proposed in this text and the consequent understanding of digital simulations as ontological instruments as well as mediators of philosophical thought are academic endeavors that engage very fundamental assumptions of the philosophical discourse (or should I perhaps start to talk about 'philosophical play'?). Even without focusing specifically on topics like the origin of consciousness, the properties of the mind or their relationships with the physical bodies they are associated with, this study could not avoid implicating and being implicated in questions that have traditionally been ascribed to the realm of philosophy of mind, rather than those of media philosophy or philosophy of technology.

Expectably, the merging in areas of common interest of media philosophy, philosophy of technology and topics that were traditionally exclusive to the field of philosophy of mind are deeper and more frequent the more fundamental are the philosophical questions and assumptions tackled. In this concluding segment of my inquiry, attempting a framing of the ontological effects of virtual technologies, three basic positions were characterized by inextricable overlaps of the disciplines mentioned above. Such positions are the following:

1) The understanding of ontology as an elaboration of an experiential horizon that is unavoidably determined by a specific understanding of rationality. As rational constructs with an empirical foundation, ontologies are recognized as always depending from the scale of the beings that elaborate them and also determined by their perceptual and cognitive limitations and from a number of contextual and psycho-social determinants.

2) The recognition that, differently from animals that instinctively oscillate between coinciding with their bodies and operating with it, humans are identified as beings characterized by a structural 'eccentricity'. As such, they can understand the relationship with their bodies as a relationship and reflect on their bodies, their finitude and their incompleteness. Through the work of Plessner, this positional structure is recognized as the cognitive ground that motivates the human needs for complementing the uncertainty and incompleteness that define their condition and, as such, the fundamental stimulus for the development of the artificial worlds of technology and culture.

3) The belief according to which, through the mediation of virtual- and tele-technologies, human beings achieved the next evolutionary structure of their cognitive organization. This new structure ventures beyond the simply eccentric one and, precisely due to its type of fragmentation, was labeled by De Mul the 'poly(ec)centric positionality'. In this additional form of their experiential structuring, human beings can critically reflect on the relationships that they establish with their native bodies and the limiting influence of the latter on traditional kinds of human ontologies. The present study is precisely a reflection on the ontological consequences of having reached this stage of the human relationship with digital technology.

Derivations and thematic elaborations of the three core frameworks listed above were structural for the three subsequent interpretations that were proposed and elaborated upon in different chapters of the present study:

1) Technology as a sensory, cognitive and operational extension of human biology.

According to the understanding of technology embraced by this study, any form of human artefact can be interpreted as having an anthropological foundation as well as an anthropological objective. Any technology or technological system can be identified as having been designed and integrated in society with the objective of enhancing, extending, ameliorating or deepening the capabilities for human beings of observing and understanding reality as well as operating on it. Similarly, from a media study perspective, technology was understood as a tool to overcome the

difficulties and the disturbances arising from forms of separation among of human beings as well as from their limited extension in time and space (Weibel, 1992, 75). From the recognition of technology in general and virtual technology in particular as instruments capable of extending and fragmenting the perceptual, cognitive and operational capabilities of human beings as well as allowing the latter to disclose new worlds, new interpretations, new forms of interaction and thought, follows the need for understanding any forms of mediation or augmentation as always entailing and engendering ontological effects. It is in this sense that mankind can be (ambiguously) understood as both the creator of its technologies as well as their byproduct.

2) Digital simulations as poetic allegories.

Similarly to what observed in David Hume's analysis of the imaginative capabilities of the human mind in his 1748 book *An Enquiry Concerning Human Understanding*, the present study upholds that the fundamental human experiences "with physical objects (especially our own bodies) provide the basis for an extraordinarily wide variety of ontological metaphors." (Lakoff and Johnson, 2003, 25) By definition, metaphors as well as allegories (as extended metaphors) have the basic socio-cultural objective of explaining or eliciting human experiences and feelings. This objective of metaphorism is always pursued via analogy regardless of the way it is mediated (which can be literary, ritual, theatrical, video-ludic, *et cetera*). As explained in chapter six, both the expressive potential of digital allegories and the methods of employment of metaphorism do not change whether they are intended to present an interpretation of an 'actual' event or behaviour or to disclose a new world. In other words, the process of analogy, when interactively materialized by digital simulations, can both present visions of what the world is like and what it could be (or even what the world should be, in the case of normative and propagandistic uses). As explained in the sixth chapter, all processes of analogy rely first and foremost on certain background experiences of the 'actual' world both from the end of the beings that craft the analogy and from those at the receiving end of metaphorism. Consequently, and in accordance with Plessner's first and second anthropological laws, digital simulations were be understood as anthropological tools which disclose novel virtual worlds and, as a result, foster extensions, distortions and fragmentations of an established experiential horizon that, allow me to repeat once again, is always characterized by a bodily (biological) origin.

3) The experience of digitally mediated content as a bodily activity.

As discussed in detail in the fifth chapter, the stimuli that the virtual bodies of cybernauts receive in digitally simulated worlds as well as variations in their emotional state have direct, detectable consequences on their actual bodies. Such causal connection cannot only be experienced first hand in relation – for example – to the touching narrative developments of a movie, to intense sections of a video game or to especially engaging aspects of a simulation, but is also confirmed by the growing scientific interest and industrial employment of biometric methodologies to assess and understand the effects of virtual technologies on humans as well as animals[1]. The employment of biometric methodologies to track and assess virtual experiences also resonates with the De Mul's elaboration of Plessner's positionality theory in the age of virtual technologies where a being's virtual centres of experience (or virtual bodies) are always implicitly understood

as physically supported by that being's biological body and always cognitively and emotionally connected with it.

The answer to 'the question concerning digital technology and projectual humanism' is congealed, in my work, in the concept of 'augmented ontologies', which is the name I gave to a new field of the digital humanities. In order to describe what augmented ontologies are and in which sense, I believe, they answer the question that motivated and structured this inquiry, I will take the concept apart in the subsequent sub paragraphs. Each paragraph summarizes a core argument, presented in finer detail in the various chapters of the present text.

7.1.1 – The language of the digital medium

First and foremost, I believe that any exploration of the expressive and epistemological potential of digitally-augmented ontologies for 'overcoming' the pre-digital horizon of human kinds of ontologies should start with focusing on the qualities and limitations of the mediator itself: the 'linguistic' and simulative affordances of the digital medium. In a very similar fashion, Sebastian Möring commenced his analysis of metaphorism as the core process at the base of the practice of simulation with the following observation: according to Möring, the message that is expressed through a simulation "does not only depend on the characteristics of the available model but also on its implementability into a simulator. The materiality of the medium which is used to run the simulation does have an effect on the aspects which are implementable and might reduce these elements again." (Möring, 2012, 9)

The interpretation offered by Möring resonates with the understandings of the core affordances of the digital medium cited along the development of my arguments. In that respect, I believe it is revelatory to mention Lev Manovich who, in his 2001 book *The Language of New Media*, explained that the digital medium is – in its logical core – nothing else but a machine sustaining and representing autonomous or semi-autonomous logical systems capable of manipulating modular information. The endlessly configurable logics of interactive digital content is, according to Manovich, largely incongruent with the causal, univocal and essentially stable way that humans traditionally experienced and understood the world through the mediation of their senses (Manovich, 2001). Similarly, Ian Bogost stated in his preface to his 2007 book *Persuasive Games: the expressive power of video-game* that the specific type of persuasion which is inherent to the digital medium "is tied to the core affordances of the computer: computers run processes, they execute calculations and rule-based symbolic manipulations." (Bogost, 2007, ix)

In the development of my arguments in this study, as well as in the video game examples cited, the digital medium emerged as particularly suitable for materializing world-views which suggest – or even openly foster – the combinatorial triviality of any form of meaning or message. Anything that is experienced through a digital simulation will, in fact, inevitably be filtered through the ontological 'core' of digital computation. As for any other forms of mediation or technological augmentation, computers are recognized as framing

thought as well as *praxis* in a specific way, which is – as already discussed – both specifically advantageous and specifically limiting. Consequently, messages and world-views originally intended by media content designers and materialized in interactive worlds are constantly threatened to be distorted and rendered frivolous by the very procedural rhetoric, the very interactive and combinatorial way in which the computer discloses and represents information.

As an example of this awareness, in a recent interview for the *New Statesman*, independent game developers Jason Rohrer (author of celebrated experimental games such as *Passage* and *The Castle Doctrine*) and Merritt Kopas (designer and creator of *Lim*, a free, web-based game about the tension of trying to meet society's expectations) expressed an analogue understanding of the possibilities and the risks of expressing ideas and messages through digital simulations:

> "I think that systems have a tendency to get away from us," says Kopas. "We intend to portray or produce one thing, but the systems we're creating seem to resist or reshape our intents." Even Rohrer, with years of programming experience (this game is his seventeenth), has to take responsibility when things go wrong. "As a designer, I'm trying to build the tightest system that I can build. I don't want there to be those system leaks which allow bizarre readings, and involve the procedural rhetoric effectively falling off the rails and going who knows where." (http://www.newstatesman.com/voices/2013/02/political-video-game)

From this perspective, Marshall McLuhan's gnomic observation according to which 'the medium is the message' (the interpretation according to which the message of any medium or technology is "the change of scale or pace or pattern that it introduces in human affairs") appears to be particularly accurate (McLuhan, 1994, 8).

In this first aspect of my answer to 'the question concerning digital technology and projectual humanism', the way in which computers can supplement human beings in the way the latter perceive, understand and operate with reality must be recognized as dependent from the unworldly modular and combinatorial ways in which computers manipulate and represent information and promote ontological indifference.

7.1.2 – Humans who calculate

A complementary observation to the aspect summarized in the previous sub-chapter, was offered by Massimiliano Cappuccio from a perspective which, encompassed computer science and philosophy of mind. In his 2005 book *Alan Turing: l'uomo, la macchina, l'enigma – Per una genealogia dell'incomputabile* (*Alan Turing: the man, the machine, the riddle – For a genealogy of the incomputable*), Cappuccio traced the steps of the development of modern

computation back to their origin: the pioneering work of mathematician and computer scientist Alan Turing. In order to obtain a comprehensive understanding of the cognitive and computational qualities of the human of mind that led to the creation of the first computing machines, Cappuccio pursued a joint reading of Turing's 1936 text 'On Computable Numbers, with an Application to the *Entscheidungsproblem*' as well his 'Computing Machinery and Intelligence', published in 1950 (Cappuccio, 2005, chapter 5). According to the author's reconstruction, Turing first

> "[…] observed, analyzed and deconstructed the human element, and just then – on the basis of that analysis – he could engineer a machine that would imitate and simulate all its movements. […] Before even emerging in Turing's academic treatments, his machine was already an eidolon, the transfigured representation of a man working behind a desk." (Cappuccio, 2005, 99)

With evident analogies with what was observed by Cappuccio, mathematician Robin O. Gandy, a student of Turing's, noted that "Turing's analysis makes no reference whatsoever to calculating machines. Turing machines appear as a result, as a codification, of his analysis of calculations by humans." (Gandy, 1988, 83, 84) For this reason, computers – which can be understood as direct derivations, elaborations, variations and evolutions of the original computing machines developed by Turing – still manifest and retain the biological imprint of human kinds of ontology, regardless of their absolute precision and the indefatigably repetitive cycles of their computation.

On a similar note, computers were often identified in the present text, as the materialization (both in the sense of their hardware components and in the aesthetical worlds they disclose and grant interaction with) of specific declinations of rationality and of inescapably human ways to understand space, time and causation.

In a 1992 biographical volume titled *Alan Turing: The Enigma*, mathematician Andrew Hodges focused his attention on one characteristic in particular that, according to his interpretation, computers structurally borrowed from human cognition: the quality of possessing an intentional cognitive disposition towards the objects of intellectual understanding (symbols). On a similar note, Cappuccio went as far as asserting that each and every element that composes the machine from both a logical and mechanical perspective presents traits which are inescapably anthropomorphic. Also Wittgenstein, a colleague of Turing's in the Cambridge years, expressed this awareness with great clarity, stating that: "Turing's machines. These machines are *humans* who calculate." (Shanker, 1987, 615)

In the emerging field of the Digital Humanities, Willard McCarty similarly noted, in his 2005 essay '22.403: Writing and Pioneering', that the use of computing in the humanities is an instrument which is inherently limited in its modelling capability. Without explicitly mentioning the structural human origin and

analogies between the operational processes of the digital medium with those of human cognition, McCarty recognized "the fundamental dependence of any computing system on an explicit, delimited conception of the world or 'model' of it." (McCarthy, 2005, 21)

In this second component of my answer to 'the question concerning digital technology and projectual humanism', the logics of computers, their interactive, computational, aesthetical and representational affordances are identified as structurally deriving from the inevitably biological, bodily origin of human cognition and design. As such, the alien phenomenologies as well as the augmented ontologies disclosed by the digital medium can never be recognized as something genuinely other than human kinds of ontologies, but rather as their extensions, distortions and fragmentations.

7.1.3 – Metaphorism as 'overcoming'

The previous two sub-chapters outlined what the expressive and epistemological boundaries of digitally mediated simulation can be recognized as from two points of view, namely those of digital media studies and an anthropological approach to computer science. In the characteristically ambiguous way of this study, those framework offered perspectives that can be identified as both incompatible with each other and, at the same time, complementary. In the first one, computers are presented as machines capable of autonomously manipulate and represent information according to logics which are profoundly incoherent with the world that humans perceive and experience in their everyday. In the second one, they are understood as evolutionary extensions of human kinds of ontologies that can never amount as something radically different or fully independent from the way humans are in the world as biological creatures. At a first glance, there is an irremediable incongruence between these two frameworks.

The supposed incompatibility between the two interpretations outlined above closely remind of the very ambiguity inherent in Heidegger's concept of 'overcoming' (*Verwindung*) which was introduced in the first chapter and that is foundationally constitutive for the answer that the present study is pursuing. In other words, allow me to repeat it once again, the alteration to human phenomenologies and ontologies recognized as proceeding from the embedding of interactive digital simulations in social practices is understood as both a departure from- and an inescapable repetition of- both the biological and cultural heritage of mankind.

Yet another analogue, and analogously contradictory, standpoint was proposed in the previous chapter when exploring the expressive and epistemological qualities of the process of metaphorism. However, in that occasion, the analysis was conducted from a conceptual framework which did not include the specific qualities and affordances of a mediator (or simulator). In the sixth chapter, the very process of metaphorism was presented as ingrained in the embodied nature of human experiences and, consequently, of human kinds of ontologies. Similarly, in his 2006 book *Metaphor in Culture. Universality and Variation*, Hungarian professor Zoltán Kövecses defined metaphorism "an inevitable process of human

thought and reasoning" (Kövecses, 2010, x in Möring, 2012, 3) In a way which closely resonates with the scopes and the observation presented in this study, in the already cited 2012 book *Alien Phenomenology, or, What it's Like to Be a Thing*, Ian Bogost proposed a vision of metaphorism according to which it "is necessarily anthropomorphic, and thus it challenges the metaphysician both to embrace and to yield the limits of humanity." (Bogost, 2012, 74)

As creators of digital simulations and virtual experiences, our cultural role is compatible with the ones of those engaging in any other declinations of metaphorism, regardless of their interactive or fictional nature: tampering and negotiating with what we understand as the limits of what it is like to be humans. In particular, our 'weapon of choice' as twenty-first century philosophers, or rather philosophy practitioners, is the materialization of virtual phenomenologies and world views which interactively complement, subvert and enriches our experiential horizon and our possibility to structure ontologies and develop thought[2].

In this third component of my answer to 'the question concerning digital technology and projectual humanism', the ambiguity and the supposed incongruence between the capability of mediators for both disclosing worlds that are intelligible and analogue to the *Lebenswelt* of its intended recipients and for granting access to experiences which are uncommon and unworldly echoes at the level of media content. From that perspective, in fact, digital media content was identified as a specific, interactive kind of poetic metaphorism. As typical of poetic allegories, the contents of virtual worlds and virtual experience needs to be characterized by a degree of *mimesis* and a degree of *poiesis*, which amount to the two ambiguous and superficially incompatible dimensions discussed above.

7.1.4 – Where do alien ontologies come from?

From a standpoint inspired by Heidegger's existential phenomenology, this sub-paragraph will elaborate an answer to a constitutive epistemological question regarding the possibility to 'overcome' the horizon of pre-digital ontologies. Such interrogative can be presented as an epistemological paradox and, as such, I deem it necessary to explain it and answer it before the conclusion of this dissertation.

The topic of the alleged paradox I intend to tackle here is that of the unworldliness that can be experienced in virtual worlds, that is to say the fact that the worlds within digital simulations do not necessarily behave in analogy with the actual one nor have any causal dependency from it. The question I am asking here, that was already anticipated in the title of this sub-paragraph, can be formulated as follows: 'how can game designers, or more generally authors and creators of interactive digital simulations, ever conjure experiences and phenomenologies that are unworldly, given the fact that they do not have the possibility to experience unworldliness in their everyday relation with the actual world?

This question can indeed be treated as a paradox in relation to the definition of what an ontology is that was introduced in the first chapter of this study. In the opening chapter, in fact, an ontology was embraced as the rationalization of the

mutually constitutive relationship between a being and a certain world. From this standpoint, it follows logically that a human being who never experienced an unworldly behaviour or occurrence cannot be expected to possess the experiential and intellectual equipment to think and design in terms of that specific extraordinary quality. In other words, in this era of virtual worlds and digital simulation, the proposed 'paradox of inquiry' can perhaps better be rephrased as follows: "where do alternative ontologies come from, if human beings cannot experience them before human beings themselves disclose them?"

This enquiry has definite similarities the epistemological paradox that Socrates formulates discussing with Meno, a prominent Thessalian who is visiting Athens, in the Socratic dialogue with the same name. Socrates' 'paradox of inquiry' has its premises in the observation that "[a] man cannot search either for what he knows or for what he does not know. He cannot search for what he knows – since he knows it, there is no need to search – nor for what he does not know, for he does not know what to look for." (Plato, *Meno*, 80e, Grube translation)

In several cases, the qualities of video game worlds which do not align with the world that human beings experience in their daily engagement with the 'actual' world have an evidently derivative nature. By that I mean to say that some events and behaviours that can be experienced interactively in virtual worlds are nothing else than 'complex ideas' in the Humean sense: combinations or alterations of qualities, elements or behaviours humans already experienced in the world they inhabit as biological creatures that, in their new and unexpected configuration, no longer resemble the original experiences. Among such derivative, combinatorial aspects, I believe it would suffice to mention the already mentioned combinatorial nature of video game creatures, or the affordance for reverse time that is growingly common in contemporary video games or the possibility of obtaining the quality of immortality, being able to change the direction of gravity, *et cetera*.

All of the examples mentioned above can be recognized as simple alterations, reversals or the rendering interactive of elements, qualities or behaviours originally pertaining to the actual world, a world which human beings already aesthetically experience and have an intuitive, bodily understanding of (and that they normally do not have control over). Despite offering a novel set of experiences, the reversals, distortions and recombinations that are commonly experienced as fundamental traits of interactive, virtual experiences cannot be considered to be truly disclosing new ontological horizons. Heidegger himself, in his 1949 'Letter on Humanism', expressed the belief according to which "the reversal of a metaphysical statement remains a metaphysical statement" (Heidegger, 1982, 208).

The interrogative that emerges from the observations above could be phrased as follows: could virtual experiences ever aspire at transcending the pre-digital ontological horizons of human beings? In other words, are there interactive digital simulations and video games that, differently from the examples cited in the previous paragraph, effectively disclose experiences that transcend the perceptual, cognitive and operational limitations inherent in the way in which human beings engage the actual world in their everyday life *and yet* objectively materialize them in a way that they are possible to be perceived, understood and manipulated within

the horizon of human kinds of ontologies? My answer is 'yes'. I believe that virtual experiences can do (and already do) that in several ways and, on the basis of their type of ontological 'overcoming', they can be understood as belonging to one or more of the following three families:

1 – Video games inspired by computer malfunctions: experimental titles like *Glitchhiker* (De Gier, Ismail, Nijman, Barbosa Dijkstra, Muller, Veer, 2011 – available online at http://www.glitchhiker.com), offer interactive experiences which are punctuated by what appear as unexpected glitches in the programming or the functioning of the game's hardware[3]. Inspired by the graphical distortions and logical inconsistencies and omissions that can be experienced in relation with actual video game malfunctions, the game proposed and experience which was removed enough from the consistency of human logics and perceptual possibilities to provide an exhilaration with the otherness of its functioning without transcending into unintelligibility. Other exemplary games that follow similar estrangement strategies that rely on what were originally uncanny, malfunctioning behaviour of the medium can be recognized in the pioneering meta-game *ROM CHECK FAIL!* (Jarrad 'Farbs' Woods, 2008 – available online at http://www.farbs.org/romcheckfail.php) or in the sinister first-person exploration *Memory of a Broken Dimension* (Ezra 'XRA' Hanson-White, 2012 - available online at http://www.datatragedy.com/wipmoabd/).

2 – Digital simulations and games that interactively materialize world views or insights that were originally disclosed by another "form of revealing". I am referring here to the possibilities of interactive digital simulation for granting an active experience of notions and dimensions that were originally proposed in a purely theoretical or in a fictional/representational way by other disciplines, regardless of their artistic or scientific denomination. Experimental video game *A Slower Speed of Light* (MIT Lab, 2012 – available online at http://www.freeindiegam.es/2013/02/a-slower-speed-of-light-mit-game-lab) was clearly fascinated by the tenets of Einstein's relativity and allows the players to experience the distortions and the radically unfamiliar perceptual effects of having the speed of light in the game approach the maximum walking speed of the in-game character. Similarly, video games like Valve's *Portal* (2007) or Marc Ten Bosch's *Miegakure* (in development), take inspiration from the world of theoretical physics to offer their players the possibilities to experience travelling through wormholes and being able to interact with multiple dimensions. As already pointed out in the fourth chapter of the present text, one of the games I collaborated to as a teacher and a supervisor, *Haerfest* (Technically Finished, 2009), aimed at giving an interactive, practical answer to a speculative, philosophical question posed in the seventies by Thomas Nagel. In terms of more strictly artistic "scenes of disclosure", several games currently offer virtual worlds which are interactive interpretations or renditions of artistic visions originally developed for non interactive media. A recent example of such 'remediation' process can be recognized in the video game *Bientôt l'été* (Tale of Tales, 2012 – http://tale-of-

tales.com/bientotlete) overtly relies on the work of French filmmaker and writer Marguerite Duras.

3 – Video games that try to objectify and evoke the unworldliness of psychotropic experiences in terms of their abstraction, their synesthetic qualities and their non-sequitur logics. Games like the tunnel shooters *Dyad* (][Games Inc., 2012), *REZ* (Q Entertainment & HexaDrive, 2001) or the experimental, independent first person puzzle video game *This is Infinity* (Jonathan 'Cactus' Söderström, 2009) are obvious heralds of the design strategy presented in this third category. I believe it is particularly revelatory to observe, in this respect, that several of the most illogical and disturbing video-ludic experiments by Söderström openly referenced their psychotropic origin in their very titles. It is, for example, the case of *Psychosomnium* (2008) and *Mondo Medicals* (2007).

This fourth component of my answer to 'the question concerning digital technology and projectual humanism', resonates with of some of the thought fallacies discerned by Socrates in *Meno*. Crafting unworldly, interactive experiences must in fact be recognized to be possible, in line of principle, also without having had prior worldly experience of the very extraordinary behaviour, event or process one might want to experience or craft. This was the case, I argue, of the first two video ludic estrangement strategies outlined above, where the boundary between knowing something and not knowing it was never clear-cut and absolute, but was presented a gradient that can be bridged with intuition, with processes of analogy or through insights and 'forms of revealing' that can be attained in fields of knowledge or disciplines which have some degrees of similarity with those that one is trying to explore. This reflection ultimately outlines a phenomenological account of inventiveness and lateral thinking.

7.2 – MY ANSWER

By focusing the outlined approach on the specific qualities and effects of virtual technology, the question that motivated this inquiry can finally be tackled from a structured theoretical footing. As explained in the introductory chapter and rehashed in this conclusive one, the process of 'overcoming' (a fundamental component of the question that this study is elaborating an answer to) is interpreted in accordance with Heidegger's interpretation of the concept. Accordingly, the term 'Overcoming' is not understood in the dialectical meaning inherent in the German term *Überwindung* (surpassing) but must be embraced in the nuanced conjunction of two other terms: *Andenken* (rememoration) and *Verwindung* (distortion, twisting, incorporation). Combining the two characteristic aspects of *Verwindung* in the dyadic expression 'acceptance-distortion', Vattimo interpreted Heidegger's project of 'overcoming' metaphysics as "a going-beyond that is both an acceptance (or 'resignation') and a 'deepening'." (Vattimo, 1991, xxvi)

Generally, when approaching technology from an anthropological perspective, the successive stages of development and integration of a technological system in society are conceived as external materializations of successive phases of the self-understanding of

man (Coolen, 1992, 250 – 271). In the more specific context of an anthropological approach to digital media, the interactive experiences of virtual worlds are recognized as one of the possible contexts where the extension and the deepening of the foundational and binding context of being 'thrown' into this world as humans can take place and a new, projectual humanism is already developing.

The epistemological and expressive potential in the relationship that humans can establish with virtual worlds (and consequently with new, virtual bodies through interactive digital simulations) provides the cognitive, perceptual and experiential background that define us, human beings in relationship to such worlds in our roles of creators, explorers, actors and care-takers of such worlds. Consequently, the question concerning the use and the possibilities of any kind of technology can only be asked as a declination of a more fundamental question concerning the human condition. Attempting to delineate the absolute boundaries of the possibilities inherent in technologies is tantamount to trying to conclusively define what it is like to be human.

Offering an affine understanding from the standpoint of Helmuth Plessner's philosophical anthropology, man can be understood a being which is impossible to characterize in a definitive way. The problems involved in his definition are imputable, according to Plessner, to the fact that any frame of reference for a possible definition (scientific, religious or philosophical, *et cetera*) is always itself an historical product of mankind. In this sense, human beings are bound to be involved in the historical process, which has the necessary consequence of making it impossible to provide a stable and certain answer to the questions concerning their identities, their role in the world and the meanings of their existences.

I find that the last observation also appropriately fits the question concerning of the expressive and ontological potential of digital simulation as poetic allegories and also applies, in a more general sense, to the whole philosophical project structured in this text. The opacity and the ambiguity that were often encountered in exploring and discussing human kinds of ontologies and their virtual augmentation as well as poetry and the experience of alternative phenomenologies can in fact also be recognized as deriving from the dynamic and self-reflexive qualities of culture. What makes them fleeting and difficult to capture definitively lies in the fact that they are all involved in the historical processes of mankind. They are factors contributing in the shaping of the psychological, socio-political, technological, intellectual and experiential contexts that human beings shape and are, at the same time, shaped by. As a consequence of what was just discussed, any delineation of the limits and possibilities of the enhancement of human perceptual, cognitive and operational possibilities cannot be asked in any other way other than as 'open' questions.

In this regard, I believe it is interesting to mention that in *Die Stufen des Organischen und der Mensch*, Plessner tersely noted that the inevitable incompletable, self-referential and ephemeral nature of culture emerges in any forms of social product or intellectual endeavour:

> "What becomes concrete in the sphere of culture clearly shows its being inescapably bound by human authorship and (in the same amount) by human independence. Man can only invent what he already discovered." (Plessner, 2006, 344)

In analogy with Plessner's observation, I would like to conclude with a quote from Martin Heidegger extracted from the basic text for *What is Metaphysics*, Heidegger's inaugural lecture at the University of Freiburg in 1929. In the introductory statements, Heidegger reminded his addressees that "every metaphysical question can be asked only in such a way that the questioner as such is present together with the question." (Heidegger, 2008, 93) In this sense, and as already observed in several occasions along the course of the present text, the 'Question Concerning Digital Technology' was asked and explored in ways which are characteristically and unavoidably human. Even in its more explicit projectual aspects, such as those materialized and experienced in the interactive virtual worlds of simulations and video games, the integration of digital mediation in social practices and processes are not understood as a radical break (or a liberation) from a fundamental anthropological context, but rather as a 'distortion of' and a 'resignation to' the latter.

From the perspective presented in this dissertation, and even when armed with digital hammers, our efforts cannot ever aspire to transcend the (flexible) walls of our inescapable humanity. Resigned and unrequited like characters in an existential play by Sartre, we can only keep hammering away. Well, well, let's get on with it…[4]

[1] The possibility to analyze and assess virtual experiences by means of psychophysiological experiments in creatures other than human beings is demonstrated by a growing number of studies relying on biometric observations in the recently founded field of academic research labeled Animal Computer Interaction (ACI). As a byproduct of the main body of work developed at NHTV University of Applied Sciences in the field of biometrics and user experience research, me and Michelle Westerlaken collaborated on a paper titled 'Digitally Complemented Zoomorphism: a Theoretical Foundation for Human-Animal Interaction Design', in which we propose a novel theoretical foundation for ACI that relies on Plessner's theory of positionality. Our paper, published in the proceedings of the ACM-sponsored conference DPPI 2013 (September 3 – 5, 2013, Newcastle upon Tyne, UK) advocates for the use of biometrics in combination with traditional observation of the animal's indexical signs during play as the phenomenological foundation to the development of a more objective and zoo-centric understanding of the animal's needs and preferences.

[2] In recent years, philosopher Luciano Floridi identified a significant alteration in the human conceptualization of reality which followed the proliferation of digital technologies. To clarify his point, Floridi stated that initially, in the history of philosophy, the concept of 'reality' was defined as "that which does not change". This was the case, for example, of Platonic thought. The paradigm that followed such absolute interpretation of reality were exemplified, in Floridi's interpretation, by the perspective offered by the British empiricists, according to whom something could be embraced as 'real' when that something could be experienced via the senses. According to Floridi, only recently the concept of 'reality' became dependant on that of 'interaction'. Contemporary thought no longer appears to need for something to be eternal and immutable to be understood as 'real', nor for it to be necessarily empirically perceivable as long as that something can be interacted with. This philosophical stance, within the larger framework of scientific realism, takes the name of entity realism. According to such perspective, 'manipulative success' (the possibility to create effects in domains that can be investigated independently) is the criterion by which scientific entities (typically non-directly observable ones) can be considered real.

[3] When engaging virtual worlds from a postphenomenological perspective, I believe it is crucial to notice that the cases of software bugs, glitches, any forms of computer malfunctioning or unexpected generation of procedural content are particularly interesting. The user experience resulting by such errors (when their experience is possible at all) cannot be understood as anything other than deformed, faulty instances of human kinds of world-views: logical monstrosities that are specific to computable environments that materialize certain human understandings of rationality and logics. Following the same observations down the rabbit-hole, even if – as the transhumanists prophesized – the emergence of greater-than-human-intelligence by means of artificial intelligences capable of designing their evolutionary successors (the 'singularity) will occur, the ontological horizons of artificially intelligent agents will still be inescapably anthropomorphic, albeit twice or several times removed.

[4] "Well, well, let's get on with it…" are the closing words in Sartre's 1944 play *Huis Clos* (*Eyes Closed*) in the 1989 English translation by Stuart Gilbert (the title of play was translated by Gilbert as *No Exit*). The final line of the play, uttered by the main character Garcin, expresses the kind of courageous resignation that, in my understanding, characterizes any efforts directed at understanding or altering the human condition.

APPENDIX

Gua-Le-Ni; Or, The Horrendous Parade *[V. 6.3]*

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0. INTRODUCTION

Gua-Le-Ni is an arcade action-puzzle game originally designed for the *Apple iPad* with touch controls but whose logic can be ported to a number of different platforms. Its controls can easily (but perhaps not as efficiently) be adjusted to fit handheld consoles as well as a mouse or a combination of mouse and keyboard inputs.

> An extremely interesting idea could be that of imagining a real cube-based interface. The game will provide either the physical cubes or paper silhouettes of the beasts to be placed on wooden cubes of a certain dimension, allowing the player to interact with the game by means of its web-cam. For more information about the use of cubes as cataloguing devices, please refer to chapter 2.

Gua-Le-Ni is a fixed screen game without scrolling, playable by one player only.

As for most arcade video-games with cyclical behaviour, the logics of *Gua-Le-Ni* will gradually become harder to keep up with. Let's take *Tetris* (*Nintendo*, 1984) as an example. In *Tetris*, the increase in difficulty is obtained via the progressive speeding up of geometrical figures (*tetrominoes* formed by the different configuration of four square modules) that drop from the upper end of the screen. Similarly, one of the game mechanics through which *Gua-Le-Ni* offers a growing level of challenge is precisely the classic increase of speed with which

the player is asked to solve and keep up with spatial / visual puzzles (this mechanic will be referred from now on as ‘hunger’, explained in chapter 1.2.1).

In the specific case of *Gua-Le-Ni*, the problem to solve is the correct cataloguing of fantastic animals that will walk from the right-hand side of the screen towards the left end.
The image below (fig. 0A) is meant to provide an initial idea of how the screen area will be organized during a game of *Gua-Le-Ni*, please note that the intended use of the *iPad* for this game is always a ‘landscape’ one.

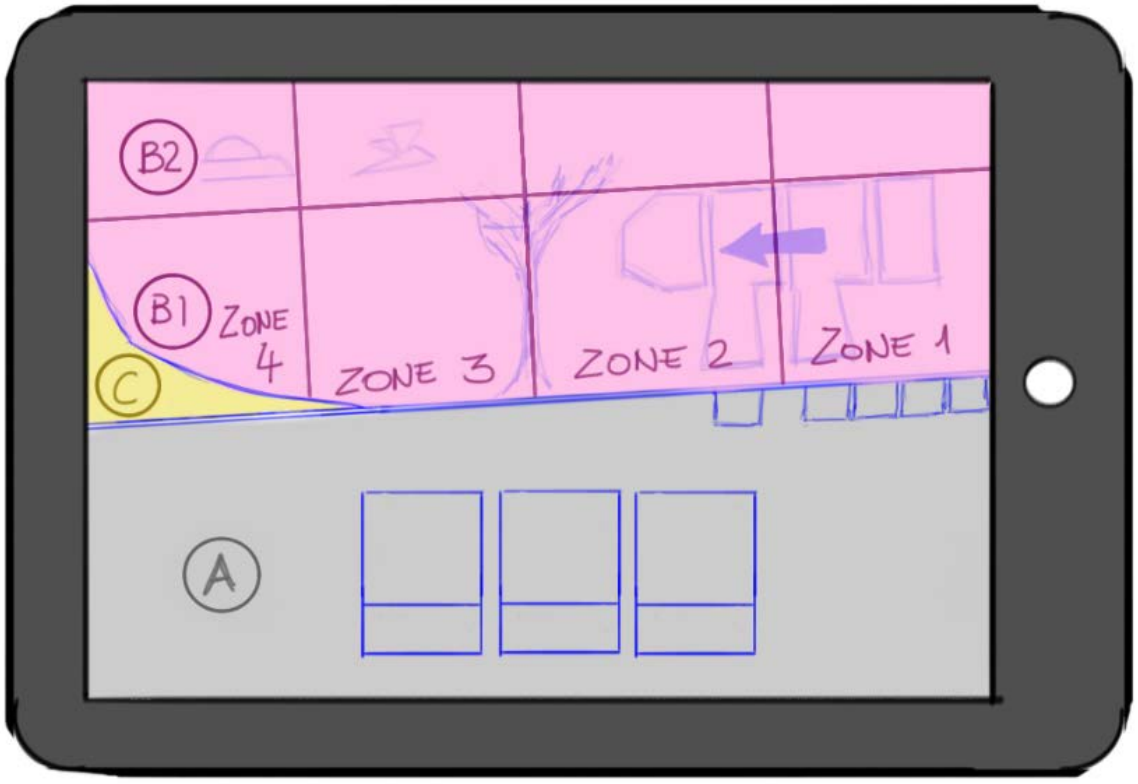

Figure 0A: The organization of the different areas of the screen during a game. Please note how the area B (painted in pink) is divided in four zones of equal dimension. Zones will not be perceivable for the player.

Area A - Area where the cubes for the cataloguing are
Area B1 - Area where the beasts will walk
Area B2 - Area in which flying objects will pass
Area C - Area dedicated to the showing of abstract information

As typical of arcade games like *Asteroid* (*Atari*, 1979), *Gua-Le-Ni* will feature a cyclical behaviour which will never have a real conclusion apart from the inevitable reaching of the GAME OVER state. A game of *Gua-Le-Ni* will reach its conclusion when a beast reaches the left end of the screen before being correctly catalogued. According to the classic arcade paradigm, the player’s success will be measured by the number of points (score) gathered before the GAME OVER (the score, as for other abstract information, will be shown in the area labelled with the letter ‘C’).

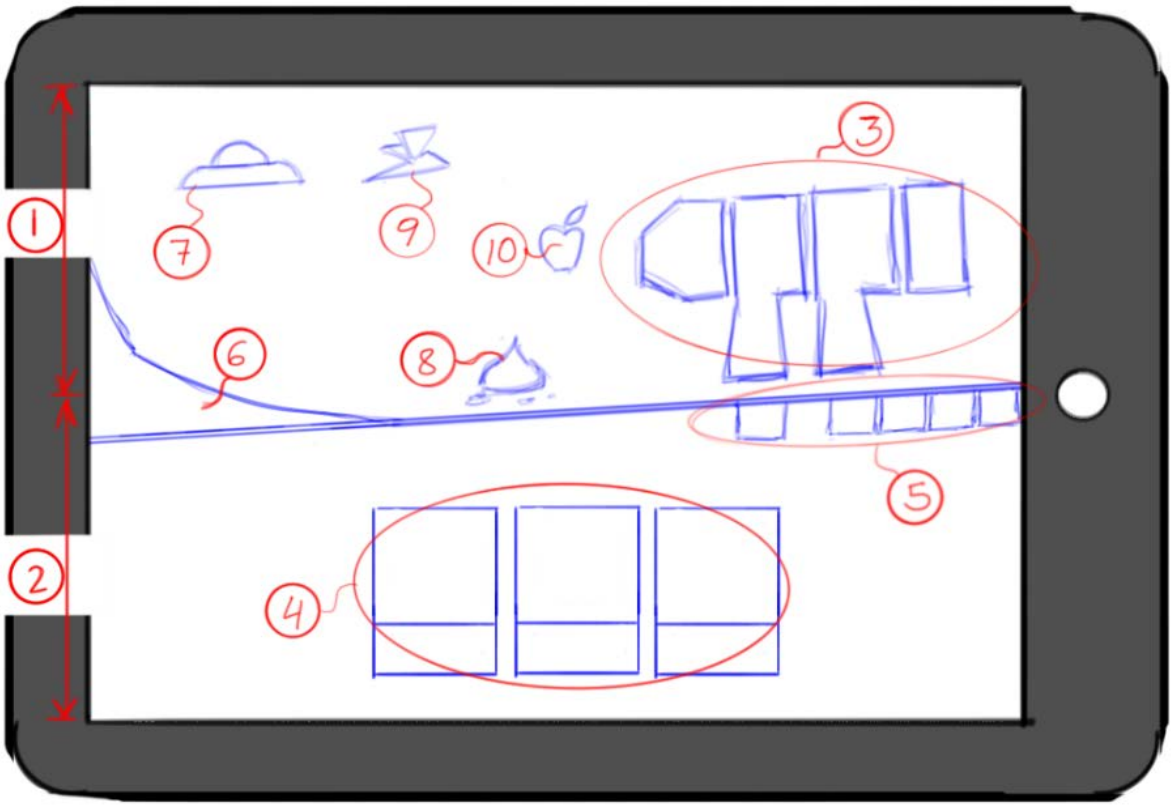

Figure 0B: Illustration of interactive elements within the game.
Pos.1 - Action Area (consisting of areas B1 and B2) / Pos.2 - Cube Area (mentioned before as area A) / Pos.3 - Beast Composition / Pos.4 - Beast Cubes / Pos.5 - Beast Information / Pos.6 - Edge Curl (includes score and last three eaten meals - mentioned before as area C) / Pos.7 - UFO / Pos.8 - Alien Slime / Pos.9 - Bird / Pos.10 - Apple

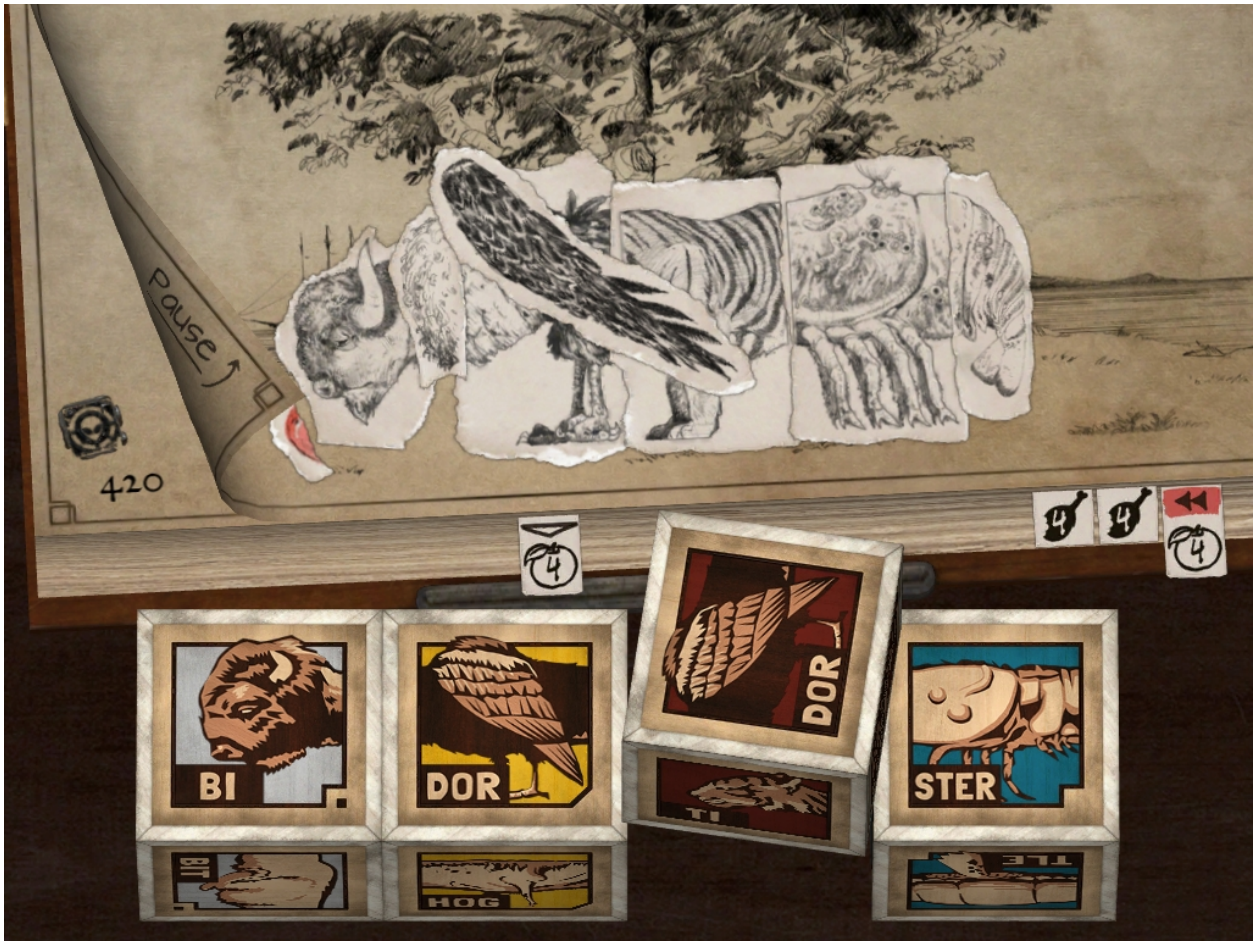

Figure 0C: The expected in-Game representation of the elements shown in figure 0B.

1. THE BEASTS (behavior, hunger and composition)

The beasts to be catalogued in *Gua-Le-Ni* will not be the digital transposition of common animals, but modular combinations of parts of animals, as depicted by Javier Sáez Castán in the 2003 book *Animalario Universal del Professor Revillod – Almanaque Ilustrado de la Fauna Mundial* by Miguel Murugarren.

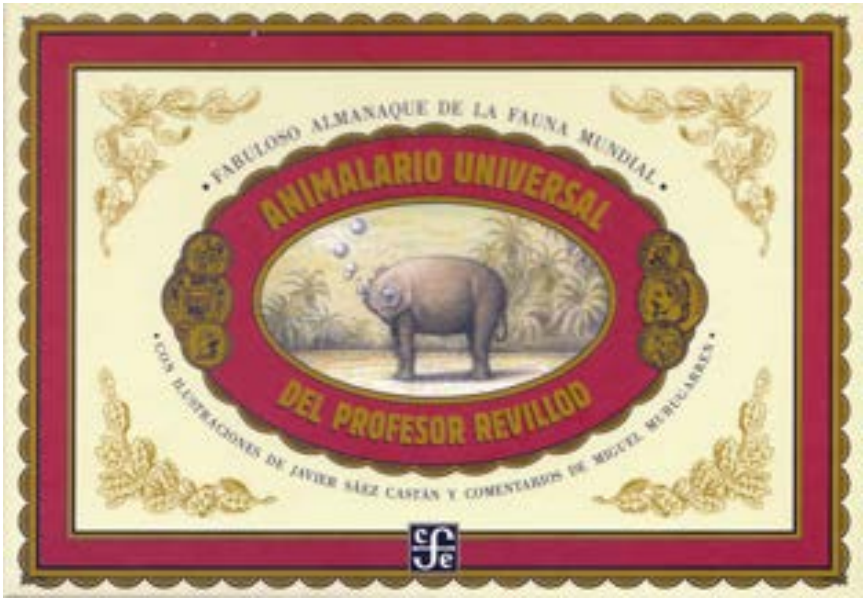

Figure 1A: The original cover of the '*Animalario Universal del Professor Revillod* (2003)

The two pictures below are taken from the *Animalario Universal* and should clarify in which way the beasts that will appear in *Gua-Le-Ni* are modular combinations of existing animal sections. In particular, the reference book offers the possibility to create beasts of two modules (head + body, like in the first 'RA-NE' example) or of three modules (head + body + end, for instance for the 'COR-CHI-GRE'). The book is in fact designed to allow the possible independent turning of its three vertical sub-pages, allowing the reader to pick different parts of different beasts and produce thousands of fictional permutations.

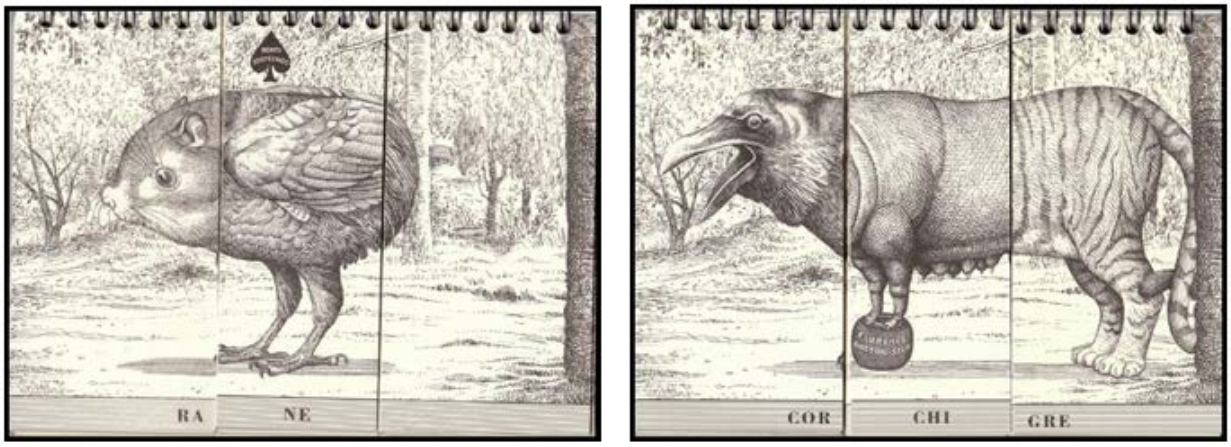

Figure 1B: Two beasts among the ones that can be composed in the *Animalario Universal*. The first beast is composed of two modules, the second one of three.

In the specific case of *Gua-Le-Ni*, each central module (body) of a beast will have two legs and can also always work as an animal's conclusive part. The end of a beast will consequently not be a specific element. To clarify this design choice with reference with the pictures above, one could say that the game cannot have a 'GRE' part, a specific conclusion, but only central parts like 'NE'. A 'NE' part, if positioned at the end of an animal (as in the example of Figure 04), will automatically receive an appropriate and brief ending by the game itself. Such ending will ALWAYS be the ending which would naturally correspond to the last body part that composes a beast.
In other words, *Gua-Le-Ni* will only allow the player to interact with animal heads and bodies. The types of beasts that will be possible to be formed in game will thus be composed of two modules (head + body, so with only two legs), three modules (head + body + body, with four legs) or of a maximum of four modules (head + body + body + body, with a stunning six legs). As mentioned above, the game will automatically add the specific tail to the last body module of an animal, completing it. This tail needs to be a minimal addition, exactly as in the case of the 'RA-NE' of figure 1B.

The in-game beasts will be created from a limited set of modules (for the exact definitions of the modules, please reference chapter 2.1). It's quite obvious that from a graphical point of view, the artists will need to keep their work on the beasts as modular as possible. It would be desirable to generate any beasts with the certainty that all the animations and interconnections among the different parts work in a way which is analogue and repeatable. The needed animations are the following:

- **Head module:** Wallow while walking. Wait. Eat from the ground (or simply eat). Coughing with disgust for having eaten a food-item that is incompatible with its type of head (carnivore [C] or herbivore [H]). Among the head animations we need to have one which is specific to each head while walking (for example a tiger head growling, a salmon head 'blurbing', *et cetera*). I would like the game to check the possibility to run the head-specific animation with a chance of 20% for every time the head of the beast ENTERS each of the four zones of the 'B1' area of the game. The head will also growl or perform its head specific animation upon the player touching any parts of the beast currently in play. (A beast will need to have finished its head animation-loop

before the beast can respond to touch again, to avoid the spamming of this command as well as weirdness in the animation of the beasts).

- **Body module:** Walking, waiting.

1.1 THE BEHAVIOUR OF THE BEASTS

As anticipated, the number of modules that will compose a beast will grow from a minimum of two and a maximum of four. The increase in the size and complexity of the beasts to be catalogued is a second design strategy that is supposed to enable the player to vary and adjust the level of difficulty during game-play. The first, I repeat, is the speeding up of the walking speed of the beasts which will, obviously, reduce the amount of time in which they will reach the left side of the screen, thus reducing the available time to catalogue them. The integration between all these mechanics and the bonus and point system will be treated in chapter 4. This paragraph will, instead, explain the general behavior of the beasts and the way their speed and composition will vary during game-play.

The general behavior of the beasts is quite simply that of walking. While walking, a beast will appear starting with its head from the right side of the screen. It will be considered lost (or fled) when the last pixel of its tail will disappear over the left side of the screen. As already mentioned, letting a beast cross the screen without correctly cataloguing it will lead to the GAME OVER state.

Only one beast at a time can exist on screen during game-play. This affordance means that it will be necessary to catalogue a beast correctly to allow the next one to participate to the 'horrendous parade'. The correct cataloguing of a beast will make it disappear from the 'B1' area of the playing screen with a visual effect together with a sound effect jolly and happy enough to give an immediate positive feedback to the player (ideally that of a cash register or the return button of an old typewriter). I would like to propose a specific head-related sound that the beast will also perform following the correct cataloguing.

The eating animations listed in the general part of the behaviour of the beasts (head module) on page four related to the possibility that the beasts will encounter food-items while crossing the screen. On their path they could be able to come across three different kinds of food:

- The Alien Slime
- A Dead Bird (originally a bluebird)
- An apple

The mechanics connected to how to obtain food and what their relevance to game-play will be are a constituent part of the bonus system for *Gua-Le-Ni* and will be explained in detail in chapter 4. For now it is sufficient to know that if beasts will

encounter food on their path, animals with a carnivore head will be able to eat the dead bird, the ones with a herbivore head will be able to consume the apple and all of them will be capable of devouring the alien slime. Whether a beast belongs to the group of carnivores or to the group of herbivores is determined solely by the type of its head.

From what was observed above, it is logical to expect that a beast will encounter on its path a type of food it cannot eat, which is to say incompatible with the food preference of its head. For example a beast with a tiger head could walk by an apple. What will happen in that case is that the beast will eat the food and then its head will play an animation which I customarily refer to in this text as 'coughing with disgust', clearly communicating to the player that the food that the particular beast encountered on its path was inappropriate. It is now important to notice that:

NO MATTER WHAT HAPPENS WITH REGARDS TO FOOD OR ANY OTHER GAME ELEMENT, A BEAST ON SCREEN WILL ALWAYS KEEP WALKING WITH THE ASSIGNED SPEED.

1.1.1 The beasts' speed (HUNGER)

At the beginning of the game, a beast will take the indicative quantity of 24 seconds from the moment of its on-screen appearance till the last pixels of its tail disappear. The walking speed ('hunger') will increase with logic that will be explained in this same chapter. There will not be a set limit to the walking speed of the beasts but it is imaginable that a 4-second period to cross the screen will be an impassable limit for the player (not for the game).

Hunger: In normal circumstances, the time that the beasts will take to walk from the right end of the screen space to the left end will diminish by ⅛ of the current speed per every six beasts successfully catalogued. The speed increase will be both predicted and registered with the 'beast labels' at the bottom of the book in its game-play mode and will be communicated explicitly to the player with a specific in-game message appearing on the screen. See chapter 3.2 for the behaviour of in-game messages and 3.3 for the exact functioning of the 'beast labels'.

There are two ways to delay the occurrence of hunger: one is the occurrence of special events, the other is via the use of food-items.

1 - The game will feature 5 special events which will allow hunger to be delayed. Such special events are the following:

- **The correct cataloguing of the two-module beast CA-MON** (which will be underscored by the narrator chuckling "COME ON!") > hunger delayed by one position
- **The correct cataloguing of the two-module beast TI-TLE** (which will be underscored by the narrator shouting "TITLE!") > hunger delayed by one position
- **The correct cataloguing of the four-module beast LOB-STER-STER-STER** (which will be underscored by the narrator proclaiming "LOB-STER-STER-STER!") > hunger delayed by one position
- **The beating of the high-score** (starting from a set limit, ideally 2400 points) > hunger is delayed by one position
- **The correct cataloguing of a 4-modules beast containing three or more redundancies** > hunger delayed by one position

All of these events will be emphasized by the entrance of a specific achievement in-game message (see chapter 3.2) and a contextual comment by the narrator.

2 - As will be specified in chapter 4, bonuses will allow (among other effects) a player to mitigate the speed increases, obtaining in this way more time for the cataloguing that will follow. The idea behind the possibility to slow the pace down is that beasts get progressively hungrier and, thus, more nervous and faster. The slowing down of the beasts will be obtained administering them a complete meal (to know what a complete meal is, refer – again – to chapter 04). If a player will manage to feed the beasts and temporarily slow them down, that player will be shown an appropriate in-game message. Such message will be accompanied by the voice of the narrator explaining what happened. For more information regarding the logic and the appearance of these in-game messages, please refer to chapter 3.2.

1.1.2 The beasts' complexity

The complexity of the beasts can vary from a minimum of two modules (head + body) up to a maximum four modules (head + body + body + body) during the course of a game. The complexity of a beast will play a crucial role for what regards the obtaining of points, in the sense that long beasts will provide a number of points higher than a beast of a shorter kind.

Every time a player completes a meal that contains two alien slimes, the following beasts will undergo a mutation and will be added an extra module (an extra body part). This behavior of course is not valid if the beasts in question are already composed of four modules (the maximum allowed). A meal containing three alien slimes, would boost the composition of the beasts of two modules (provided that the maximum is not already reached).

As imaginable, it will also be possible to reduce the number of the modules that compose a beast. To reduce the number of modules composing a beast, it

will be sufficient to NOT eat one alien slime between two hunger levels. This is designed in order to allow the player to regulate the difficulty of the cataloguing of the game making the beasts less complex although less rewarding in terms of points acquired.

The details and functioning of the bonus system are elaborated upon in chapter 4.

2. THE PUZZLE CATALOGUING SYSTEM

The cataloguing of the bizarre combinatorial taxonomy, the main game mechanic of *Gua-Le-Ni*, is a fully original puzzle system. The interactive aspect of this puzzle system takes place entirely in the 'A' area of the game, which is to say in the lower part of an *Apple iPad* screen when holding it horizontally (see figure 0A).

In this area, a number of cubes can be found. The number of cubes in the 'A' area corresponds to the number of the modules composing the beasts currently in play.

Allow me to remind the reader that at the beginning of the game, the number of the cubes available in the 'A' area is going to be two, as two will be the number of modules which will initially compose the beasts. If, via the bonus system, the complexity of the beast should decrease by a module, one cube will need to be removed from the 'A' area as well. The cube that will need to be removed is the leftmost cube in the area. This cube will need to disappear over the leftmost limit of the screen. It is obvious that this behavior will not take place if the player is currently cataloguing two-module beasts (the minimum allowed, see paragraph 1.2.2). The ideas of new cubes entering from the right side of the screen and exiting from the left side of the screen is meant to associate with the beasts behavior.

It is worthy to point out that between the correct cataloguing of a beast and the appearance / disappearance of a cube there will be a moment in which the beasts will not walk (as will be explained later, the beast will scream, its body will be blown away by wind, points will be shown, etc.). The player could use that time to position at the leftmost side of the playing field the cube he would like to get rid of, or the one he feels the least comfortable with, adding further depth to game-play decisions.

If, instead, bonuses should increase the numbers of beastly modules which compose the fantastic bestiary of *Gua-Le-Ni*, a new cube will need to be added in the 'A' area. The new cube will enter the area from the right side of the screen, similarly to how the beasts do. This behaviour will not take place if the player already has four cubes in play (the maximum allowed, see paragraph 1.2.2).

How to use touch-control points to manipulate the cubes will be explained in detail in the interaction appendix (chapter 10).

In the game, cubes will have distinctive colors to help recognition and facilitate the memorization of what is on the faces of all the different cubes. Every single face of every cube will feature a representation of heads and bodies of different beasts (ideally as in the example below).

Figure 2A: Three examples of animal modules on the faces of coloured cubes. The game will need to offer the syllables underneath each cube for a handy double-coding of information.

The mechanic of re-ordering cubes is not the only one involved in the correct cataloguing of the fantasy beasts of *Gua-Le-Ni*.

2.1 THE CUBES AND THEIR FACES

As explained before, *Gua-Le-Ni* is a puzzle games pivoting on the movement and manipulation of a maximum of four colored cubes. The colors are the following:

- Dark Red (hosting mostly red or dangerous animal parts)
- Yellow (hosting mostly sand or desert animals parts)

(these are the two initial ones, the third and the fourth can come in randomly among the following two)

- Cyan (hosting mostly water animals parts)
- Light Green (generic quadrupeds)

(an extra cube will also possibly participate to the game as a punishment for cannibalism as explained in the chapter about the food)

- Black (all redundancies)

The types of beasts that the game can generate with three modules will, then, depend on which cube is put into play as third.

To increase accessibility, I would recommend considering that the game could be played by color-blind people. This initially means that the intensity of the four tints of the cubes should also be easily distinguishable one from the other purely based on brightness and darkness.

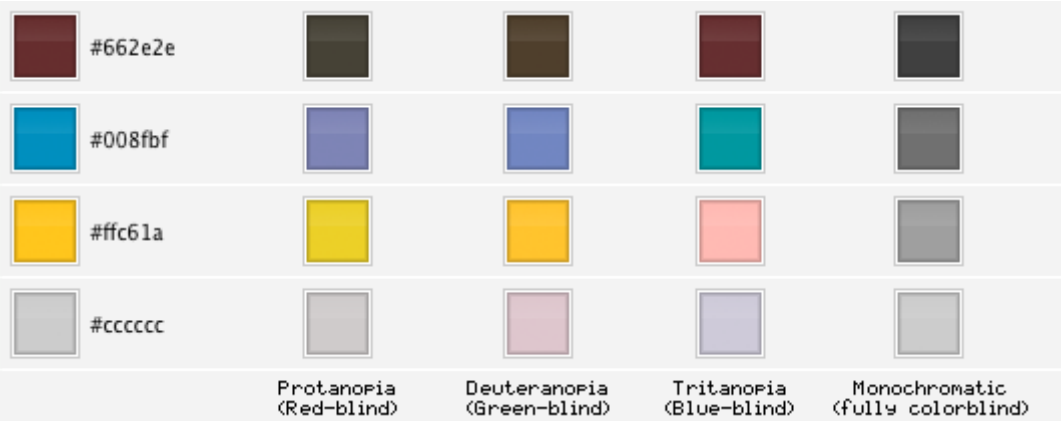

Figure 2B: Representation of the cube colors as perceived by people with color vision deficiency.

Another technique that will be used in the game to differentiate the cubes will be a slight change of style of the graphics of each cube (see image below, paying a close attention to the border.

Figure 2C: A face from each of the four different cubes. These face corners are shown to clarify what the differences in terms of color brightness and graphical style is among the cubes.

The following list organizes in detail the type of items represented on the cubes' faces. It will also include the identification syllable for each item on each face among square parenthesis. Please note that their spatial distribution on the actual cubes faces is not relevant for the design of *Gua-Le-Ni*. They should, however, stay the same and not be subject to rearrangement between game sessions, so that the Player can figure out and master the part distribution on a cube.

In order to permit the largest possible combination possibility, the faces of the two beginning cubes will need to be:

1. Dark Red = 3 heads & 3 bodies
2. Yellow = 3 heads & 3 bodies

1st CUBE) DARK RED:

Head of a rhino (H) [RHI] {4}
Head of a tiger (C) [TI] {2} (redundant with light green)
Head of a lobster (C) [LOB] {5}
* * *
Body of a condor (redundant with yellow) [DOR] {1}
Body of a salmon [MON] {6}
Body of a tiger [GER] {3}

2nd CUBE) YELLOW:
Head of a warthog (H) [WART] {2}
Head of an camel (H) [CA] {5}
Head of a condor (C) [CON] {4}
* * *
Body of a condor (redundant with dark red) [DOR] {1}
Body of a warthog [HOG] {3}
Body of a lobster (redundant with cyan) [STER] {6}

3rd CUBE) CYAN:
Head of a salmon (C) [SAL] {2}
Head of a turtle (H) [TUR] {4}
* * *
Body of a camel (redundant with light green) [MEL] {1}
Body of an octopus [PUS] {3}
Body of a lobster (redundant with yellow) [STER] {6}
Body of a turtle [TLE] {5}

4th CUBE) LIGHT GRAY:
Head of a bison (H) [BI] {2}
Head of a tiger (C) [TI] (redundant with dark red) {4}
* * *
Body of a bison [SON] {3}
Body of a camel (redundant with cyan) [MEL] {1}
Body of a rabbit [BIT] {6}
Body of a rhino [NO] {5}

5) BLACK:
Head of a turtle (H) [TUR] (redundant with cyan) {4}
Head of a tiger (C) [TI] (redundant with dark red and light green) {2}
* * *
Body of a warthog (redundant with yellow) [HOG] {5}
Body of a salmon (redundant with red) [MON] {1}
Body of a lobster [STER] (redundant with cyan and yellow) {6}
Body of a bison [SON] (redundant with light green) {3}

In particular, the type of heads will need to be distributed as follows: half of them will need to be carnivorous heads, half of them will need to be herbivorous heads. I believe it is important to remind here that the type of head of a beast will determine the kind of food that the beast will be able to eat. A carnivore head (C) will be able to eat the Dead Bird and a herbivore head (H) will eat the apple. Both of them will be able to consume the alien slime. This information about the beasts as well as the number of modules that compose a beast will be indicated on 'beast labels' at the bottom of the page as already explained. It will be fully elaborated upon in chapter 4.

The three additional cubes will present the following distribution on their faces:

- Cyan = 2 heads & 4 bodies
- Light Green = 2 heads & 4 bodies
- Black = 2 heads & 4 bodies

As with the growing of the number of modules that will compose an animal, also the demand for bodies will increase over that for heads.

If possible, I would like the cubes to be organized according to this grid as follows:

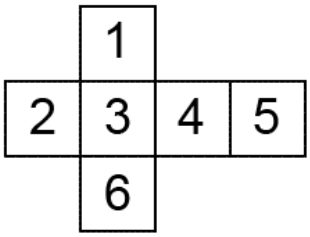

Figure 2D: The ideal distribution of the faces on an unfolded cube.

1, 3 and 6 should contain heads or special parts (the ones that might cause double redundancies). 2, 4 and 5 should contain the bodies. This distribution allows for players to navigate the cube better and allow a more consistent memorization. NOTE: every new cube entering the field will come in with the face that is underlined in the list above on top.

<u>The redundancies among the cubes will be a design tool to force the most experienced players to learn the content and the distribution of the face of every single cube. Certain beasts will - in fact - consist of one or more elements that could be found on different cubes and that, if used inappropriately, would impede the completion of the cataloguing of a beast.</u>

For example, let us imagine having three cubes in play and, consequently, beasts that are walking from one side of the screen to the other composed of three modules. In this

example we imagine to have the following three cubes: DARK RED, CYAN and YELLOW. Let's imagine the current task is to catalogue the beast 'TI-DOR-PUS' (tiger head, condor body, octopus body and end). TI, the tiger head, on the DARK RED, DOR (condor body) is present on both the YELLOW and the DARK RED cube, PUS only present on the CYAN one. What follows from this observation is that if the player wants to complete the beast, she needs to be aware of this redundancy and what is displayed on the different faces of the cubes in play. If the player utilized the DOR on DARK RED, the beast would be impossible to complete. The correct solution is obviously TI on DARK RED, DOR on YELLOW and PUS on CYAN.

The programmers need to understand exactly the meaning of this mechanic and to make sure that the beasts produced by the code are all effectively possible. Here is another example to explain what I mean with the last statement:

Let us suppose all the cubes are in play and the player has the task to complete the beast TI-DOR-STER-TLE in time. In this case we witness a double redundancy on the YELLOW cube. What this means is that the player would need YELLOW to solve both the redundancy TI-DOR and STER-TLE. This beast is, hence, impossible to complete with the current organization of the cubes.

THE GAME WILL HAVE TO AUTOMATICALLY DISCARD BEASTS WITH DOUBLE REDUNDANCIES.

A second criterion to discard a procedurally generated beast before it participates to the parade is that a beast must not be identical to the one filed in the previous cataloguing. The game will need to have a control system that will avoid this from happening.

2.1.1 Very redundant beasts

In *Gua-Le-Ni*, a beast can be generated containing certain ambiguities about its correct cataloguing. For example, it should be clear that a beast even just made of two modules (let's suppose that the yellow and the red cubes are in play) already poses some difficulties if it contains a DOR (condor body), as both cubes have it. Which cubes am I supposed to use? That's a possible ambiguity.

The more the internal redundancies a beast will have, which is to say the number of possible internal ambiguities in the way a beast must be solved, the more valuable that beast will be. A beast with 3 or 4 internal redundancies is considered a VERY REDUNDANT beast…For example TI-STER-DOR on the cubes red, cyan and yellow is a beast with three internal redundancies and is therefore a VERY REDUNDANT BEAST. Clearly, very redundant beasts are only possible with beasts composed of 3 and 4 modules.

Why is a very redundant beast more valuable than a normal beast of the same size?
The answer is simple, as the correct cataloguing of a very redundant beast will grant the player:

- +50% of the beast's natural value (that can be summed to all other bonuses and multipliers that will be explained later, including the correct cataloguing before the passing of the tree in the middle of the B area)
- The delay of hunger of one position (similarly to eating one apple without the other food-combination related effects).

The in-game presence of the black cube (see chapter 2.1.2), given its redundant nature, will indeed increase the possibilities for such bonuses to be accessed by the player.

2.1.2 The black cube

As already mentioned, and as can be observed in the cubes' faces distribution above, the black cube is a cube entirely composed of redundancies that, due to its unique design, has two redundancies with each possible cube in play. The cube only enters the playing field (area A) after a beast's head (regardless of its herbivore or carnivore nature) was fed a butt that was previously belonging to the same beast. For more information about food in general, please consult chapter 4. For specific guidance about how to implement the food-behavior of animal butts, please refer to chapter 4.3.3.

Every beast catalogued with the black cube in play will be worth the double (x2) of its base value (which is its original value plus the modifiers applied by the food combinations based on birds). The modification introduced by the black cube will appear next to the 'current value' item in the score note as explained in chapter 5.

It's important to state that the black cube will enter the playing area after the beast that was fed a butt of its own kind is correctly catalogued (e.g. feeding a salmon butt to a salmon head). A dreary set of sound effects will accompany both the act of cannibalism (underscored by an in-game note too) and the entrance of the black cube itself. As already mentioned, the entrance of the cube does not depend if the beast in question is carnivore or herbivore AND ALSO it does not depend on the number of cubes currently in play: the black cube will substitute a random cube in play before the entrance of the new beast. The procedure of substitution of a cube with the black cube will essentially delay all the other game procedures.

Having a black cube in play will mean a higher chance of having very redundant beasts and accessing the bonuses listed in chapter 2.1.1. For that reason it is important to remember that APPLES WILL NEED TO STOP BLOOMING WHEN THE BLACK CUBE IS IN PLAY (the pumpkin will however keep growing to keep the game better balanced). Of course an apple flower that was present during the act of cannibalism (a beast eats a butt of its kind) will turn to an apple in the following turn… But after that one, no more apples will grow until the black cube will not have abandoned the playing field.

Getting rid of the black cube does not have a specific procedure, but will follow the same logics inherent to the general behavior of food bonuses explained in chapter 4.

2.2 CORRECT CATALOGUING

A beast will need to be considered correctly catalogued when the following condition is verified:

The combination of animal parts on the top of the cubes represents exactly (in type and order) the modules that compose the beast currently walking in the area B1.

Initially, we desired that the player would be given positive feedback by the clapping all together twice fast (a sort of *"clap clap"*) of the cubes that formed. This behaviour was discarded during development as it was perceived as a temporary loss of control over the cubes which, instead, should strive for immersion via physical realism. As part of the player feedback, the beast should scream when correctly catalogued (a sound that, as anticipated, will be different than the normal noise that a beast would emit during their normal walking routine). After these sound effects, softer sounds will accompany the appearance of the points obtained with the correct cataloguing (not too invasive and is somewhat connected with the initial song), the completion of meals or other achievements.

The amount of points granted per cataloguing (see chapter 5 - the score) will appear over the screaming beast. In the last version of the mock-up (see figure 0C) the beasts are formed by various bits of paper. After that, both the beast and the amount of points will disappear with a visual effect that will make it look as if they were blown away by a gust of wind coming from the left side of the screen, making the paper shreds disappear beyond the right side of the screen. An extra piece of paper (referred to as an 'informational' piece of paper will remain a bit longer than the other pieces to show the player the amount of points obtained. The behavior of this extra piece will be explained in chapter 5 in the 'on-screen behavior of points' section).

2.3 BEASTS GENERATION

As a game-design tool to facilitate the balancing of the game difficulty - and given the fact that the code already involves the same logical structure to determine the sequence of the beasts - I would like to introduce a 'beast index'.

Giving a value of 1 to a single rotation of a cube or to a translation of any of the cubes (rotations on the Z axis will not count as movements), the beastly index I have in mind is the sum of the minimum amount of single spins or any translation that it takes to go from one beast to the following.
Allow me to make an example, let us suppose that - with two cubes - the beast with the highest beastly index that we can categorize requires FIVE moves (two rotations per cube to reach the opposite faces for both, plus one translation). With the same logic, given that the following beast is not identical (in which case the beastly index is 0) we can say that the minimum beastly index needed to catalogue a beast with any amount of cubes in play would always be ONE.

The general, natural beastly index would be the following:
TWO CUBES: 1 to 5 (two rotations per cube plus one translation)
THREE CUBES: 1 to 8 (two rotations per cube plus two translations)
FOUR CUBES: 1 to 11 (two rotations per cube plus three translations)

I propose to artificially modify the beastly index in-game as follows:

- **TWO CUBES: 1 to 5 moves**
- **THREE CUBES: 2 to 6 moves**
- **FOUR CUBES: 3 to 7 moves**

We might want to consider the reduction of the upper end of this limitation of one point once the time to cross the screen (without modifications) is equal or inferior to 21 seconds, and of two points once the time is equal or inferior to 10 seconds.

This artificial limitation is meant to make the game faster and more rewarding for hard-core players.

2.4 GAME OVER

In all the game modes, the GAME OVER state will be reached when a beast will cross the left side of the picture-space. In other words, the game will finish when a beast will manage to wobble its way all across the playing screen without being correctly catalogued. IMPORTANT: a beast will leave the behind the dog ear at the leftmost side of the screen in order not to show the player where the beasts will go when they leave the book (escape the possibility of being known).

The ‘beast label’ which follows the front legs of a beast (in other words in the centre of the second module) will keep the player informed about the game state. The labels will stick out of the limits of a page, which makes this information particularly relevant when the game is paused, and the beast labels will be the only visible traces of the game state (please refer to chapter 3.1).

As you can imagine, a beast label will reach the end of the page before the rest of the animal actually completely leaves it. I would recommend having the label retract slowly from the book in order for its disappearance to match the disappearance of the last part of a beast. The two need to leave the book together. At that point, the main game page will turn, revealing a specific game-over page.

As will be explained again and in more detail in chapter 6, dedicated to the game modes, in the case of a GAME-OVER from the ‘Non fiction’ and ‘poetry’ modes, the game will automatically turn the pages to reach a version of the pause page without text but with a representation of the last beast, the beast who managed to trigger the game over state. The only option from there will be to turn the page to the ‘My notes’ section (and give the player the opportunity to input her name in case a high-score is reached). In case a GAME-OVER is reached in the ‘Fiction’ section, the game will automatically turn the pages to reach the initial page (the one with the credits and the game title).

The game over page will need to be organized as follows:

Notwithstanding the best of scientific efforts, one

[INSERT THE NAME OF THE ANIMAL THAT CAUSED IT]

fled this bestiary without being correctly categorized.

[FINAL SCORE] book pages

were turned in 00' 00"

(add possible achievements unlocked)

From the game-over page, the individual scores could be published on twitter, Facebook or both. This is the text that will be generated for them

Twitter: I have turned [FINAL SCORE] pages of the fantastic bestiary "Gua-Le-Ni; or, The Horrendous Parade". How delightful!

Facebook: Notwithstanding the best of my taxonomic efforts, one [INSERT NAME OF THE ANIMAL THAT CAUSED THE GAME OVER] fled the fantastic bestiary "Gua-Le-Ni, or The Horrendous Parade" without being correctly categorized. I have been turning [FINAL SCORE] pages in 00'00". Superb!

> In one convenient corner of the game-over page of the NON-FICTION mode, I would love to have six different handwritten notes (Martin will take care of it and create them as pencilled, handwritten memos) which will help the players find their way around the tricky and otherwise unexplained food mechanics.

In one convenient corner of the gameover page of the NON-FICTION mode, I would love to have six different handwritten notes (Martin will take care of it and create them as pencilled, handwritten memos) which will help the players find their way around the tricky and otherwise unexplained food mechanics.

(Note that the first one in the list always needs to be the first that the game will show)

REMEMBER:
[ICONS OF THREE DIFFERENT FOOD ITEMS]
Three food items correctly fed to
the parade constitute a MEAL!

REMEMBER:
[ICONS OF THREE DRUMSTICK]
Feed them a MEAL with two birds or more
and raise the value of ALL upcoming beasts!

REMEMBER:
[ICONS OF THREE APPLES]
MEALS containing at least two apples
will further delay the beasts' hunger!

REMEMBER:
[ICONS OF THREE SLIMES]
Two slimes in a MEAL or more will
substantially increase the score!

REMEMBER:
[ANY ICON]
Cataloguing complex beasts with a lot
of redundancies delays the beasts' hunger!

REMEMBER:
[ANY ICON]
Carnivore beasts can digest meat,
the herbivores ones cannot!

REMEMBER:

The taxonomist's motto is
"a butt is worth two birds!"

3. THE CONVEYANCE OF ABSTRACT INFORMATION

The edge curl (introduced in figure 0A as area C) as well as the beast labels (introduced in figure 0B at position 5) will contain abstract and quantifiable information with regards to the state of the game. Such information is divided in three thematic groups (see fig. 3A): the bonus indicators (pos.1) as well as the score (pos.2) within the edge curl, and the order of the parade at the right side of the screen, represented by the five beast labels (pos.4).

Figure 3A: The edge curl contains abstract information and the score.
Pos.1 - Bonus Indicators / Pos.2 - Score / Pos.3 - Pause Page Curl / Pos. 4 - Beast Labels

The order of the beast labels indicate how many parts the upcoming beasts will consist of (shown by the number on the labels) and the type of head of each respective beast (roasted chicken symbol = carnivore, apple symbol = herbivore). A beast label that shows a "3" next to a roasted chicken symbol, for example, will be a beast composed of three modules with a carnivore head.

A small downwards arrow at the top of the label indicates which beast is currently crossing the screen. The label moves with the beast as soon as the front legs of the beast have reached the label. The label will then follow the beast, until the last legs are not visible anymore (which is as soon as they cannot be seen due to the curvature of the edge curl). The label then retracts into the book. Once it will be completely 'absorbed' by the page the game will be over.

The red area that can be seen at the top of a beast label indicates hunger. Its relationship with speed, beast composition and food bonuses is explained in chapter 4.

3.1 PAUSING THE GAME

In order to pause the game, the player can perform a two-finger or single-finger swipe on the edge curl (see fig.3A pos.3). This causes the camera to pan up while the page turns to the right side of the screen, revealing the underlying pause screen (see fig.3B below).

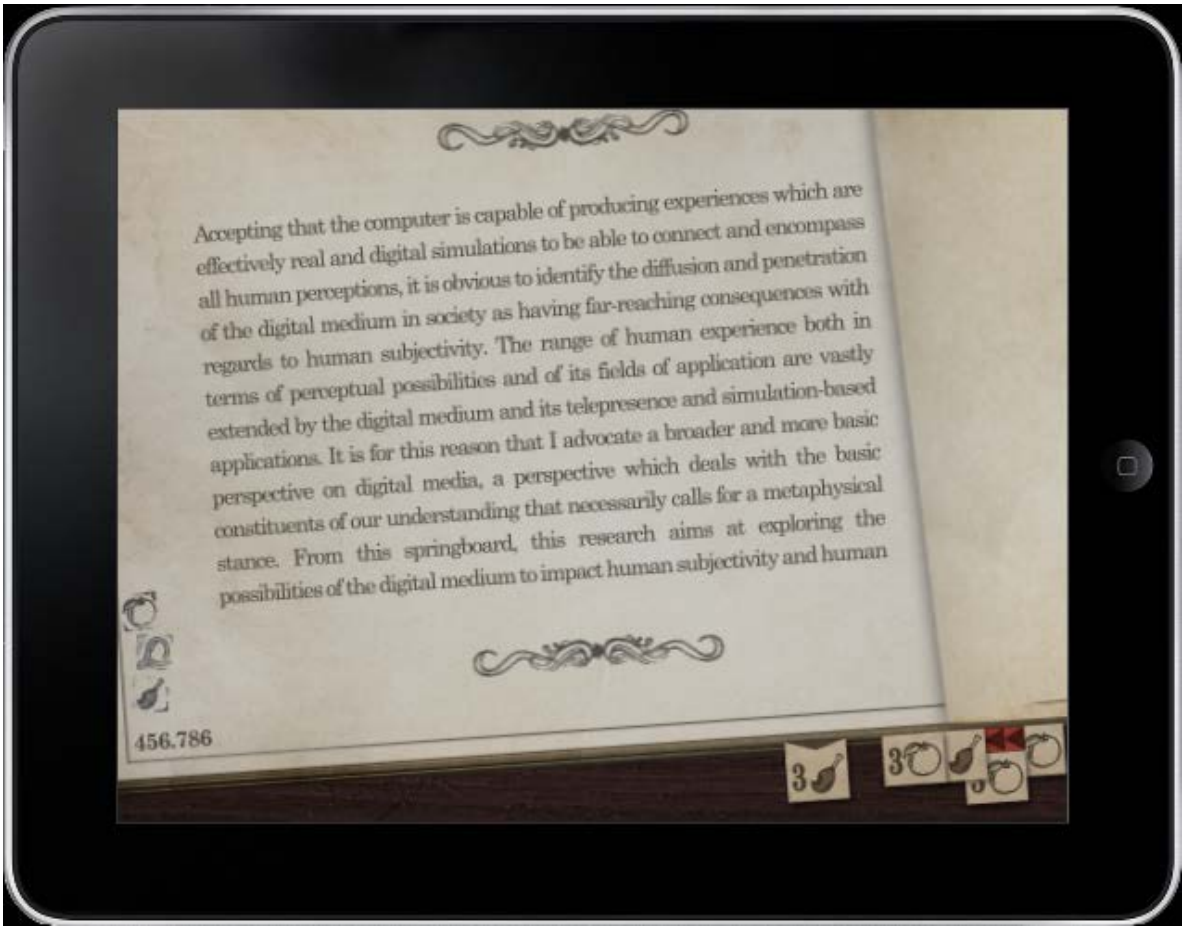

Figure 3B: Page folded to the side to reveal the pause screen (stand-in image - the pause screen will be updated and text will be divided in meaningful paragraphs).

While on the pause screen, the player can still see all the beast labels, the score and the bonus indicators (elements 1, 2, 3 and 4 in picture 3A). As shown the picture above, while in pause-mode the cubes will neither be visible or interactive. The game should however remember the position the cubes were at, which will be in front of the player again as soon as the game will exit the pause mode.

In order to return directly to the game, the player will have to interact with the curled page which now takes up the rightmost space of the screen. In order to ensure that players can easily return to the game, all gestures should be accepted as long as they are performed on the curled page. Returning to the game, causes the camera to pan down - back to the default position, while the page folds back. The player will only be able to manipulate the cubes as soon as the camera movement is over. Likewise, the beast will not continue its movement as long as the camera has not returned to its original position.

Chapter 09 will provide the text to be rendered on the pause page. The pause text will need to be divided into a number of pages (indicated as CHUNKS in the organization of chapter 09) that can fit and that can be nicely read on a single pause page. Every time the game will be paused, one of the pages mentioned above will randomly be chosen by the code to be shown during the pause, giving the impression of really having opened a page of a book about animals, recombination and philosophy.

Two book labels will be also visible from the pause menu. One will state ‘restart’ and will instantly reset the current game mode (as it will be possible to pause in all game modes), the second will bear the words ‘close the book’. Tapping that label will lead back to the initial menu after having closed the book and reopened it (essentially resetting the game to its pristine state).

Upon returning to the game, to avoid exploits, the cubes will come back to the game, but with a different configuration than the one they had before. The game will make sure it will keep the same ‘distance’ that the configuration of the cubes in play had in relation to the solution of the matching puzzle at the base of *Gua-Le-Ni*, but in a scrambled fashion. Once the camera would have panned back in its original position, the beast will wait still for three seconds before starting to march again, allowing the player to re-familiarize with the cubes position presented to her.

3.2 IN-GAME MESSAGES

In-game messages are the way *Gua-Le-Ni* provides the player with special or crucial information about the game. Aesthetically, they will be represented with a paper note which will slide in the playing field (to be more precise on the book-space) from the top left corner of the screen (see picture below). In-game messages overlay any other object on screen.

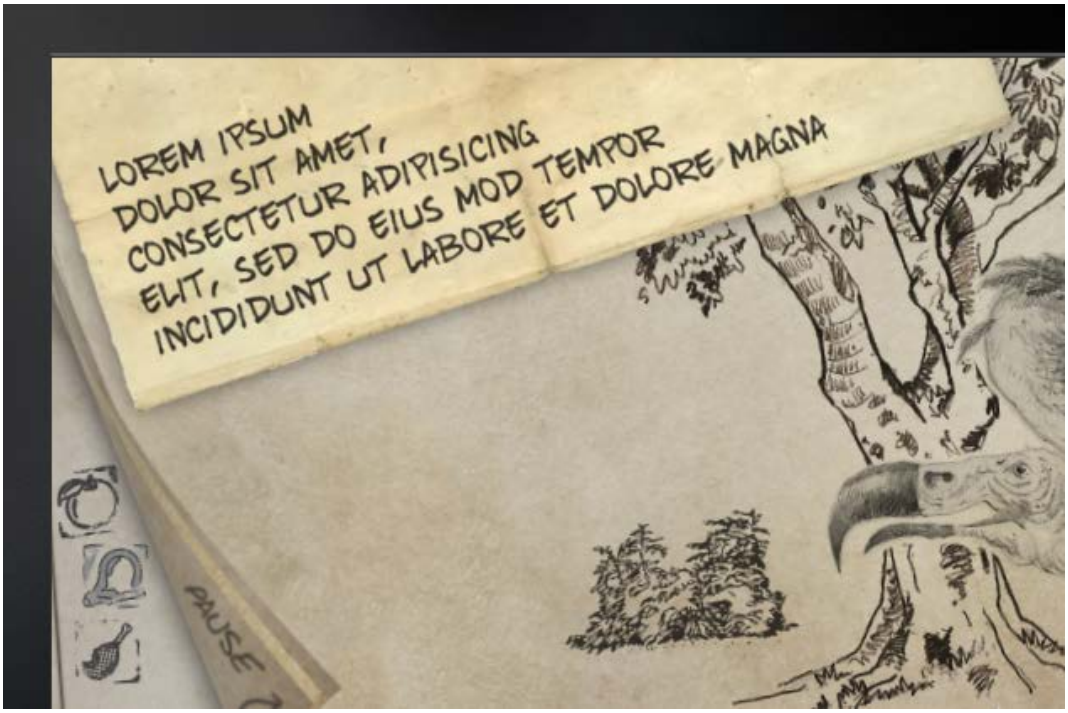

Figure 3D: An in-game message of the generic type. Text is a placeholder.

The advent of an in-game message will always be paired with an appropriate message from the narrator of the game. The paper note that contains the message will automatically retract 4 or 5 seconds after its appearance.

Most in-game messages are expected (or even bound) to happen right in the middle of a beast's walk. For that reason, we should try to make it very non-invasive. One way to make it non-invasive is by relegating it to the upper corner of the screen in order for it not to cover an eventual beast, while another way is the automatic retracting mentioned in the previous paragraph. To further lighten the presence of the note, I would like it if the player could make a swipe gesture on the note, the note will instantaneously retract.

Only one note can be on screen at a time. If two or more notes will need to be presented to the player at the same time, they will need to queue up one after another. The queuing up of notes WILL NOT BE DISPLAYED GRAPHICALLY, one note will simply follow another. If the showing of a note or a queue of notes will eventually happen at the starting of the walk of a new beast, this new beast will not appear or start walking until the in-game message disappears or is pushed away by the player as explained above.

The appearance of a note will have the same delaying behaviour for what concerns the flight of a U.F.O. or that of a bluebird. In other words, if they're not already on screen, they will no start flying as long as an in-game message or more in-game messages are shown.

This decision, as opposed to showing a full-screen in-game message that would completely stop the action is meant to keep the players in a state of flow.

The following are the evens which would trigger an in-game message:

- The beginning of the game (two ‘in-game’ messages, see chapter 06)
- The cataloguing of a very complex beast (3 redundancies or more)
- The completion of a meal (see chapter 4)
- The cataloguing of the first two 4-modules beast of a game (please refer to chapter 6.3 ‘four-of-two’)
- The unlocking of the ‘poetry’ mode (please refer to chapter 6.4 and following)
- The reaching of the GAME OVER state (please refer to chapter 2.3)

The ‘in-game’ messages are categorized in three families, which are distinguished by size, shape, colour and text style. The ones regarding the **completion of a meal** are the most common and have a simple receipt feel to it (see Figure 3E).

Figure 3E: An in-game message related to food.

The messages regarding a **player’s achievement** (hi-score, the various unlockable contents and the ‘two-of-four’ note) are presented as a telegram (see Figure 3F).

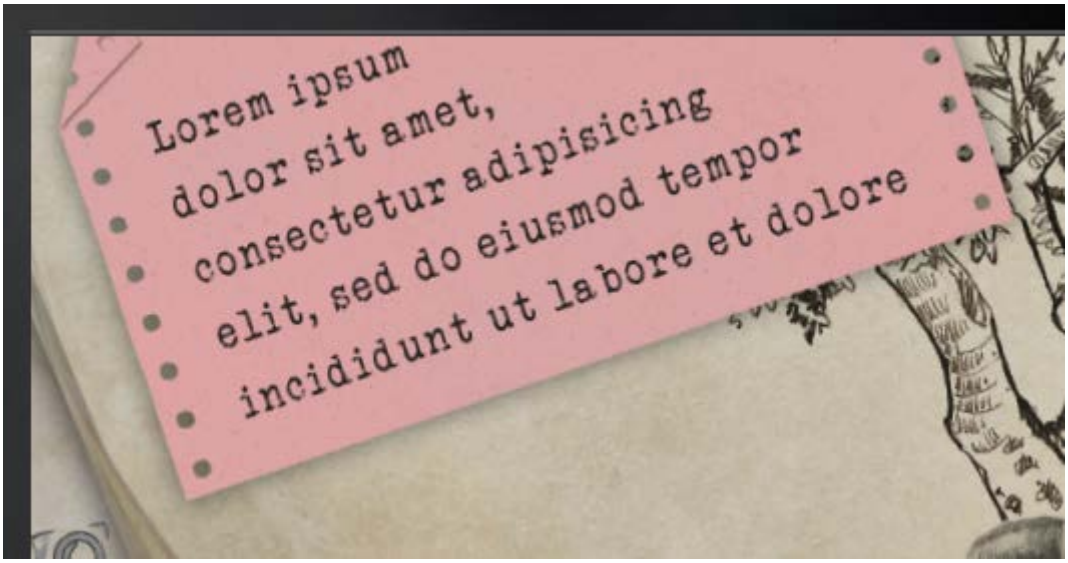

Figure 3F: An in-game message related to player achievements.

The third family of notes is ‘generic’ notes. Generic notes are used for the countdown at the beginning of the game, general statements about the game states and information about the cataloguing of beasts in the ‘NON-FICTION’ mode (see Figure 3G). Such common information will be presented on regular scrap paper.

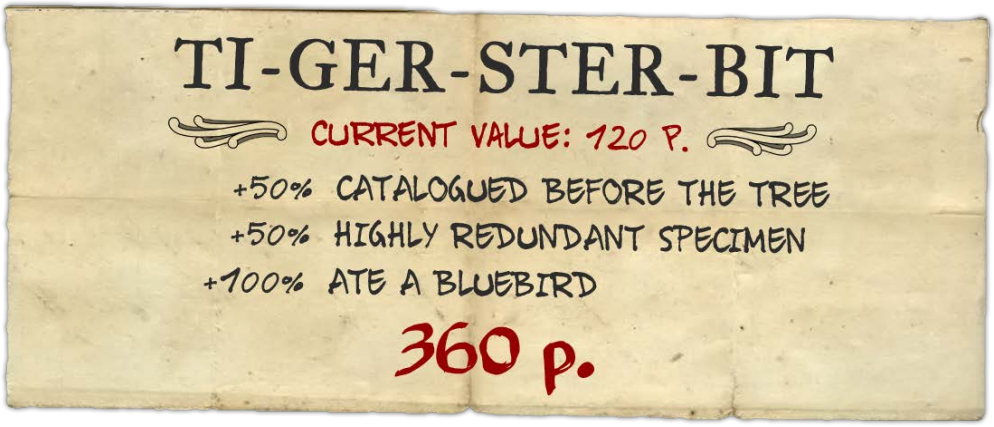

Figure 3G: An example of what is expected from a note concerning the correct cataloguing of a specimen both in terms of style and content.

3.2.1. In-game messages text

This sub-paragraph will provide all the necessary text to create the in-game messages outlined in the previous paragraph, dividing them into families.

3.2.1.1 - FOOD-RELATED PAPER-SLIP (see figure 3D):

==========

> MEAL COMPLETED
> Served at… (real time 00:00)
>
> **Medium Meat Menu**
> Beasts Value…… +30%
>
> TOTAL: ……48 points

==========

Served at (real time of the game) might be useful to keep track of how long a player has been into the game. Possibly this line needs to be gray.

Medium Meat Menu indicates a menu composed of two birds and a third non-bird element. The alternatives for this line could be the following:

- Kids Menu (1+1+1)
- Large Meat Menu (3 birds)
- Medium Veggie Menu (2 apples)
- Large Veggie Menu (3 apples)
- Dessert (2 alien slimes)
- Royal Dessert (3 alien slimes)

TOTAL: 48 points could also be any of the 9 scoring possibilities according to the various meals explained in chapter 5 of the game design document.

3.2.1.2 - TELEGRAM (achievements and generally positive feedback, see figure 3F):

CONGRATULATIONS
A new record!
Hunger delayed by 1

CONGRATULATIONS
'Fiction' mode unlocked!

CONGRATULATIONS

‘Non-fiction’ mode unlocked!

CONGRATULATIONS
‘Poetry’ mode unlocked!

TWO-OF-FOUR!
00’-00’’-00’’’ (with the correct timing visualized)

CA-MON
Hunger delayed

TI-TLE
Hunger delayed

HIGLY COMPLEX BEAST
Hunger delayed

3.2.1.3 - GENERIC (scrap paper and game state feedback, see figure 3D):

Hunger strikes and the parade speeds up.

Ready…

(the next two options to launch the game will be picked at random by the code at the beginning of the parade)

Let the parade commence!

Gua-Le-Ni!

(eating the wrong food item, in case the beast is only of two modules)

WRONG FOOD!
The food combination is reset.

(in relation to eating the wrong food item, in case the beast is longer than two modules)

WRONG FOOD!
Food was reset and the beasts shrunk.

(in relation to eating a slime in case the beast is shorter than four modules)

ALIEN SLIME!

The green gunk mutates the beasts.

CANNIBALISM!
Enter the black cube!

NOT AGAIN!
Obstinate cannibalism: the score is reset.

3.2.1.4 - FIRST TUTORIAL IN-GAME MESSAGES (all to be delivered with GENERIC NOTES, please refer to chapter 6.2 for instructions on how to build them in the tutorial)

Step 2: Welcome to Gua-Le-Ni. Swipe this note away to access more information.

Step 3: Beasts will parade across the page. The game will be over when one will wobble its way to the other side.

Step 4 (note number one): Use taxonomic cubes to catalogue the beasts before they walk away. Lift a cube holding its upper face with two-fingers. It will allow you to drag it around and spin it. (This note will be substituted by step 4 note two following the speech of the narrator).

Step 4 (note number two): [DRAWING BY MARTIN: index and thumb holding a cube]

Step 5: Swipe the upper face of a cube with one finger. This will permit you to rotate the cubes and browse through their faces. Rotate, spin and change the order of the cubes to categorize the beasts before they stampede!

Step 6: The beasts can have varying composition in both quality and quantity. They can be formed of two, three or even four modular parts.

Step 7: …And this concludes the first part of the preface. (FOLLOW BY THE IN-GAME MESSAGE STATING THE UNLOCKING OF THE ‘FICTION’ MODE AS WELL AS THE ‘POETRY’ MODE)

5. SECOND TUTORIAL IN-GAME MESSAGES (following the unlocking of the ‘non-fiction’ mode, to be run the first time one enters the new mode after having run the intro (or re-run the intro). Messages are all to be delivered with GENERIC NOTES, please refer to chapter 6.2 for instructions on how to build them in the tutorial)

Step 8: Welcome to the ‘non-fiction’ training.

Step 9: The beast-labels also indicate the size and food preferences of the upcoming specimens.

Step 10: A label with a red marker indicates that the beasts are getting hungrier. Hunger makes the beast move faster.

Step 11: Tap on food items! Feeding the beasts will delay their acceleration.

3.3 BEAST LABELS (types and positions)

When in game-play mode, the play area is divided in two areas: one is the book space where animals walk and food is produced, the other is the desk space where the cubes are and the cataloguing of the beasts take place. Between the two spaces, there is a small area (position 5 in picture 0B) that is composed by the bottom side of the book pages. We will use this small area for a very important indicator of the game-state: the beast labels.

Figure 3D: Beast Information Labels (first label from left is marked active, fourth label is marked with a hunger indicator)

As passive, abstract indicators of the game state, the ‘beast labels’ will not be interactive parts of the game and will not respond to the player’s touch. As anticipated in the main part about the conveyance of abstract information in *Gua-Le-Ni*, the player will be able to have five information pieces about the beasts that will participate in the parade: one of these five pieces of information will be about the current beast which is currently crossing the screen (the leftmost in the image above), the remaining five will concern the beasts that will be coming up next. If we consider the first one the ‘current one’ (elsewhere indicated as the ‘active one’), then the second one from left to right indicates the composition of the next beast... Which in this specific case is a herbivore of three modules (3H).

These pieces of information, in the form of labels, will be sticking out from the bottom side of the book mentioned above. The one piece of information that is relevant to the

beast currently in play will be following the beast starting from the first pair of legs (the second module of the beast), all the others will be on the rightmost side of the book (see picture below). The second label from the left will indicate the next upcoming beast, the one at its right will indicate the second upcoming beast, and so on.

The beast labels communicate to the player the following information:

1. The composition of the current beast and the upcoming ones in terms of number of modules and food preference of the beast (for example, '4H' would be a beast composed of four modules with an herbivore head, '2C' a two-modules carnivore).
2. The position of the current beast within the page. This is useful when the game is paused as it will be a clear reminder for the player about the last state of the game.
3. The number of beasts that separate the player from the next acceleration (defined in chapter 1.2.1 as 'hunger'), this parameter is visible in the picture above as the fourth label from the right, which differs in length, graphical look and colour from all the others. The arrows indicating forward and the red colour serve the purpose of conveying immediately the acceleration and the danger connected to that particular label. Please note that the acceleration of the 'parade' will take place only upon the correct cataloguing of the beast whose label is marked with the hunger indicator.

Note to the artists: to facilitate the immediate understanding of the beast sequences, I recommend to have the carnivore icon without colour filling and the apple (herbivore) icon with colour filling. That would allow an instantaneous grasping of the order without necessarily looking at the labels.

An important behaviour of the beast labels that I would like to be clear is that ALL BEAST LABELS retract in the book when an IN-GAME MESSAGE appears. As described in the previous chapter, in-game messages will mark drastic changes in factors of the game like the modules of the beasts and the position of hunger (changes which are otherwise registered by the beast labels in real-time). This retracting mechanic will allow the game to update the labels without doing it in front of the players.

In other words, observed linearly, the general behaviour of the game in relation to the beast labels is as follows:

A beast starts to walk and the corresponding label (the left-most of position 5 of picture 0B) starts following the beast when the frontal legs (second module) of the beast pass above the label itself > through game-play, the player changes core parameters of the game > an in-game message appears, the narrator comments the change and, at the same time, all the beast labels retract > the in-game message disappears and, at the same time the beast labels (including the one corresponding to the current beast) come out of the book again, updated.

4. BONUSES AND MODIFIERS (food)

The main game mechanic of *Gua-Le-Ni*, the cataloguing of fantastic beasts through a cube-based interface, is not the only series of game operations that a player will need to pursue with efficiency and precision. The game features, in fact, a bonus system (an additional layer of mechanics) which was already mentioned several times in this text and that focuses on the obtaining and use of food-items. This chapter will serve the purpose for explaining the functioning of such bonuses and their effect on points, beasts speed and beasts composition.

After having recognized the first six beasts with success, the beasts will begin to feel hungry and nervous. Once the hunger moment is reached, the beasts will increase their movement speed. Every time 'hunger' will occur, the time that the beasts will need to cross the screen will diminish by half a second. Upon the occurrence of 'hunger', the appropriate in-game message will appear on screen together with a comment by the narrator.

To delay the acceleration mentioned above and the consequent increase in the difficulty of the game, the player will need to feed the beasts. To provide the combinatorial animals of *Gua-Le-Ni* with food, the player will need to make sure that food-items are on the beasts' paths and that those food-items are compatible with the head of the beast currently on screen.

Food-items are:

- The Alien Slime [a treat for all kinds of head]
- The Dead Bird [will only be eaten by carnivore heads]
- The Apple [only edible for herbivore heads]

IMPORTANT: Food-items are drawn on pieces of paper. These pieces of paper will always need to be rendered on a higher level (closer to the camera) than the paper-beast pieces. The reason for this is that it is possible to move food around holding the food-item with just one finger and drop it, upon finger release, on a beast piece. Note that food items will also be blown away by the wind that removes a beast from the playing field and that can be delivered (dropped) directly on an animal's head part for its consumption.

More than one food-item can be on a beast's path. The beasts would eat any food-item on its path before either its correct cataloguing or its disappearance beyond the left hand side of the book-space.

IMPORTANT: the eating animations of the beast should be made with frames which keep the same speed as the walking animation. One piece of food will be eaten with a complete animation (4 frames), meaning that the beast will stand still for 4 frames for every food-item. This means that fast beast will also eat faster. One thing that will not change will be the speed of the disappearing of the food-item that just gets eaten (it will disappear fast at a constant speed, unrelated to the speed of an animal). The food frames are the following: normal, lightly eaten, half-eaten, reduced to one tiny piece of paper only, gone.

As already mentioned when explaining the HUNGER mechanic, in case a beast would encounter on its path a food-item not compatible with its head type, the beast would eat it anyway, possibly emitting a shriek of disgust (mentioned elsewhere as a “disgusted cough”).

IMPORTANT: The wrong food-item for the animal head will not enter the food slots (above the points in the edge curl - position 6, picture 0B) and would provide 0 points. On top on not providing points or foot ‘stamps’ or points, feeding a beast with the wrong food type will reset all the food already stacked up for a combination AND INSTANTLY diminish the beast size by one module (of course provided that the beast is not already at its minimum size of the beast currently in play is not already of two modules).

Food items provide instant bonuses, feeding the parade a whole meal (three food items correctly eaten and stored in the food slots, see position 3 in the picture 3A) will lead to further, more permanent bonuses. As just mentioned, a meal consists of three comestible food-items eaten by beasts and stored in the food slots. As already explained, every food-item correctly eaten by a beast will be catalogued progressively in the area of the screen described as position 3 (refer to figure 3A). The completion of a meal resets the counter, although the counter can also be reset before the completion of a meal by feeding a beast a food item which is not compatible with its head. After the completion of a meal, an in-game message will appear declaring the effect of the meal and the amount of points gained. After that, the three slots will reset while the score updates.

Figure 4A: The three stamp-like icons corresponding to the three types of food.

The apple will always be present and there is going to be a 50% chance between the U.F.0. and the bird at every new beast entering the play field. This means that two foods will be available to the player every time a beast enters the page.

HUNGER PROGRESSION: 4-3-3-3-3-3-3-...
HUNGER DELTA: 0,72 (the hunger’s delta will grow of 0,011 at every hunger reached, smoothening down the acceleration of the beasts)

The eating of a beast will take 2 of the current eating animation cycles, so as soon as the beast engages the food, one piece of the paper item will disappear. The second one will disappear after the first chewing animation, the third one after the third chewing animation.

4.1 INSTANTANEOUS EFFECTS OF THE FOOD ITEMS

- A herbivore eats 1 APPLE: hunger is delayed 1 [and 6 points] > one apple goes in the food slots (in figure 0B, pos. 6).

- A carnivore eats 1 BIRD: current beast has a further +100% to its points upon cataloguing [and 8 points] > one meat stamp goes in the food slots (in figure 0B, pos. 6).

- Any beast eats 1 SLIME: adds one module to the current beast while eating (an extra beast last module and ending flies in from right) [and 24 points] > an alien slime goes in the food slots (in Figure 0B, pos. 6). The eating of a slime will also bring an extra effect to the game: the 'butt' of the beast which is being extended falls off in order to permit the attachment with the new parts coming in, generating a new food item: see paragraph 4.3.3.

- A beast eats 1 FOOD-ITEM NON COMPATIBLE WITH ITS HEAD: shrinks the current beast down of one module (the body which is supposed to leave the beast will normally fly out the right side of the page. [0 points and resets meal bonus] > all stored food items disappear from the food slots (in figure 0B, pos. 6).

- A carnivore eats 1 ANIMAL BUTT: [16 points] > two meat stamps are stamped in the food slot (in figure 0B, pos. 6).

- A herbivore eats 1 PUMPKIN: [12 points] > two apple stamps are stamped in the food slot.

4.2 FOOD COMBINATIONS

A GENERIC MEAL (1 APPLE +1 BIRD +1 SLIME): 12 points.

A MEAL WITH 2 APPLES: adds a further delay of the hunger of 1, 60 points.
A MEAL WITH 3 APPLES: adds two further delays of the hunger of 2, 120 points.

A MEAL WITH 2 BIRDS: all the beasts rise in value of 30%, 36 points
A MEAL WITH 3 BIRDS: all the beasts rise in valued of 60%, 72 points

A MEAL WITH 2 SLIMES: 384 points
A MEAL WITH 3 SLIMES: 768 points

4.3 HOW TO OBTAIN FOOD

The mechanics to obtain food are connected to the apparition in the game screen of three basic game elements:

- a U.F.O.
- a bluebird
- an apple

The U.F.O. and the birds will fly through the B2 area (the U.F.O. in discreet bursts, the Bird flying smoothly). The apple will, instead, grow on the tree that can be observed in figure 1. The following sub-paragraph will illustrate the behavior and the specific features of the three elements that were just mentioned.

A less basic food item can be obtained by the 'detachment' of a butt part from a beast whose hind parts get extended with more body modules. Extending a beast, implies the arrival (walking) of a new body part with its own appropriate butt and the detachment of what used to be the butt before the extension in order to facilitate the connection with the new body parts. A butt can only be obtained if a butt itself is visible in the page, otherwise it will be treated as it never existed. More information about the value and the functioning of the butt part can be found in chapter 4.3.3.

4.3.1 The UFO and the bluebird

For every beast that will walk in the game (apart from the very first one), the game will let either a bluebird or a U.F.O. cross the sky of the book-space. Both the U.F.O. and the bird will perform a steady, straight flight in the upper part of the screen.

The logical system to decide which of the two is the following: a 50% chance for each possibility per beast, with the rule that there cannot be a series of 3 of the same flying objects in a row. The selected element will randomly appear during the countdown before the beginning of the game (in the case the game just started) or during the moment in which the wind is blowing away the previous beast, giving the player extra buffer time to decide what to do in terms of food combination. The direction of the straight flight of either the U.F.O. or the bird will always be opposite to the beasts (thus entering from the left side of the screen and exiting out of the right side). Both the U.F.O and the bluebird will move back and forth on the page according to their unique flying style (the bird will fly in a continuous motion, the U.F.O. in sudden flying thrusts) until it will be actively destroyed by the player with a tap or the player will have categorized the current beast correctly, after which they will be blown away by the same wind gust that blows the beast away).

The destroyed remains of the U.F.O. will be removed from the playing page by an instant gust of wind, similar to the behaviour we can observe in relation to the remaining body of a beast which remains outstanding from a beast-shrinking (by having fed it a food item non compatible with its head).

It is important to notice that if an animal is catalogued before the destruction or the complete passage of a U.F.O. or a bluebird, then the next beast will wait until either

the passage or the destruction of the current flying object before making its appearance on screen.

From the description above follows that it will be impossible to have both the U.F.O. and the bluebird on screen at the same time.

During its passage, the U.F.O. will emit a cheap b-movie U.F.O. sound in order to attract the attention of the player. The U.F.O., as well as the beasts, will need to have the graphical appearance of an eighteenth century china etching.

The birds will dart through the sky accompanied by a couple of tweets.

Tapping in the area B2 (where the U.F.O. or the bluebird are passing), a gun shot will be heard and a little explosion visualized. Only one gunshot is allowed per beast crossing the screen. If that gunshot will be shot in correspondence to the passing of an U.F.O. or a bluebird, the game will need to take one of the following two behaviors.

- If the shot will hit the U.F.O., the flying saucer will need to explode and release, as unique residue, a disquieting and gross green slime that will quickly fall on the ground. Once landed, the Alien Slime will become an interactive object for the beasts: a food-item. Blowing a U.F.O. up will award a player 0 points. Having a beast eat the Alien Slime, 6 points (see chapter 5).

- If the shot will hit the bluebird, it will fall dead from the sky. Hitting a bluebird will not provide the player with any points. The Dead Bird, once landed, will become a food-item for the beasts in the same way as the Alien Slime. As a food-item, it will be worth 3 points (see chapter 5).

4.3.2 The Apple

The tree that can be observed to be at the centre of the screen will need to have the general looks of an apple tree. An apple will need to be on the tree upon the entrance of any beasts.

4.3.3 The Butts

Once visible AND detached from its original body as a consequence of having extended a beast (by means of a slime), the butt will behave as a generic piece of food. Its special qualities will be that - as a piece of food for carnivores - it provides 2 pieces of meat. If two food stamps are already present in the food slots (figure 0B, pos. 6) and a player manages to have a carnivore eat a butt, then one extra meat stamp will carry to the following page with an extra stamping. Conversely, if a herbivore eats a butt, its body will shrink down by two modules (of course this is not valid if the beast already reached its minimum size of two modules).

Feeding a butt to the same ‘real’ beast (for example feeding a rabbit’s butt to a rabbit head), regardless of the food preference of the head or of the number of cubes in play, will result in the appearance of a generic in-game note stating “CANNIBALISM! Enter the black cube!” (see chapter 3.2.1.3) After the correct cataloguing of the beast that ate the butt of its own kind, the black cube will enter the playing field (area A) and come into play with effects on the gameplay and behaviors described in chapter 2.1.2.

Clearly, a player can insist in her cannibalistic tendencies even when already punished by the presence of a black cube. If a player will persevere in feeding a carnivore beast a butt of its own kind, then the consequences are going to be very severe. The game will reset the player’s score and give feedback to the player with an appropriate note (see chapter 3.2.1.3) and the somber tolling of a bell. I ask the programmers to still use the sound effects that will underscore the entrance of the black cube for this occurrence.

4.3.4 The Pumpkin

The game feature of the food item named ‘pumpkin’ substitutes the initial idea for a score-related bonus which was positioned in chapter 5.1 (high-score). Given that the original food colours were RED, BLUE and GREEN, this next food option needed to be YELLOW.

This is how the pumpkin will work: at 3000 points, a pumpkin will grow on the ground – which is to say at the height where the beasts are walking – between the left root of the tree and the position of the ship (that is to say 75% through the path of the beasts). It will grow after the beast which passed 3000, 7000, 12000 or 18000 points etc. (incrementally, adding 1000 points at each interval) was catalogued.
The pumpkin will grow in 3 stages with the same logics of the apple, but concentrated in one single turn.
Graphically, we will need the pumpkin to be made of two paper pieces: the plant (in front) and the pumpkin on the ground (on the back). Upon tapping on any of the two pieces of paper, the PLANT part will fly away rightwards similarly to the destroyed remains of the U.F.O., leaving the pumpkin – as it was – on the ground and ready to be eaten (give it the same sound as the apple).

Game-play-wise, the pumpkin will function like two apples. It essentially is the herbivore version of a butt, which grants the player a good opportunity for conjuring a great slowing-down combination.

4.3.5 Addendum

I would like to point out that I believe great attention should be given to the way food-items need to be emphasized without necessarily breaking the feeling that the game takes place on an old page of a book. I suggest that the food-items are the only coloured things to ever occupy the B area. Again, the Alien Slime will need to have a bright green colour, the apple will be a lively yellow and the bird a bright white which will contrast with the old-paper appearance of the background.

From the above explanations of the mechanics involving food-items, it will only be possible to have a maximum of two food-items on the ground at the same time, either Alien Slime + apple or Dead Bird + apple. This possibility will change nothing in the behaviour of the beasts, that will just keep walking over the food-items they can't eat (destroying them) or scoffing down the food-items that are compatible with their head. The possibility to have two food-items on the screen at the same time opens the possibility for two exceptions:

1. The Alien Slime or the Dead Bird, falling from the sky, could pass on the point of the apple tree where an apple is ready to be tapped. In this case, the Alien Slime or the Dead Bird will also make the apple fall. The two objects will quickly realign as soon as they will touch the ground with the same speed and logic according to which the cubes realign and regain the mutual distances in the A area once manipulated. This is desirable in order to avoid super-impositions and collisions of sprites and to provide more clarity to the player.

2. An apple is already on the ground, ready to be eaten, and another food-item falls on top of it. In this case a simple realignment will take place, again to avoid confusion and maximize the perception of what is happening.

5. THE SCORE

The score in *Gua-Le-Ni* is calculated as follows:

- A two-modules beast correctly catalogued (at the beginning of the game): 12 points
- A three-modules beast correctly catalogued (at the beginning of the game): 36 points
- A four-modules beast correctly catalogued (at the beginning of the game): 84 points

Cataloguing a beast before it passes the tree (when the centre of its body is still in zone 1 or zone 2, see figure 1), will grant a 50% extra bonus on the score for the cataloguing. This bonus will have an aesthetic behaviour different from the normal apparition of a score for a correctly catalogued beast. It will need a different way to disappear and possibly a congratulating comment by the narrator.

A beast with three or more redundancies (besides providing with 1 extra unit of hunger delay) will need to be worth 50% extra its current value.

On-screen behaviour of points:

Once achieved, the points obtained with the correct cataloguing of a beast will appear with a numerical (handwritten) font on a generic paper note (see figure 5A).

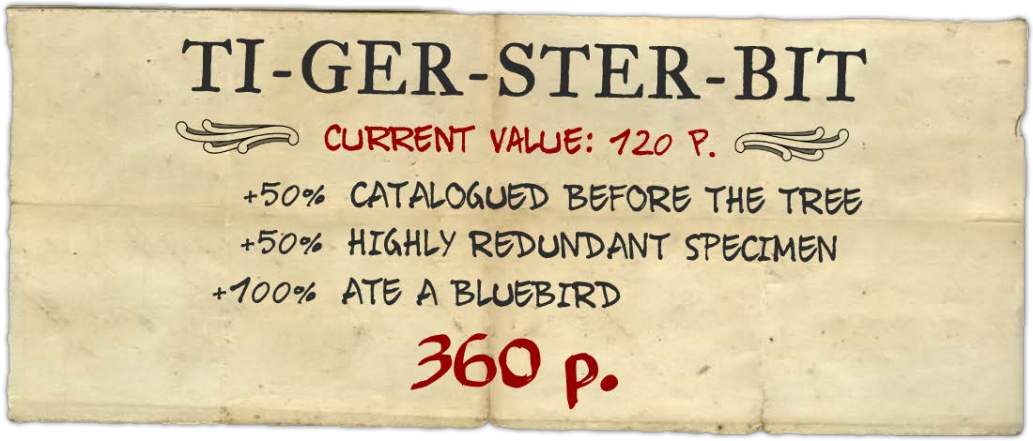

Figure 5A: The expected visual appearance of a score note.

The informational piece will need to be able to contain:

- The name of the beast, for example “TI-GER-STER-BIT”
- [in red] its current – unmodified – value (indicated as XXXX ‘p.’, where p. stands for both pages and points) [possible x2 bonus in case the black cube is in play]
- Possible +50% bonus on a beast’s natural value for having correctly catalogued it beast before it passed the tree in the B area. **“+ 50% Catalogued before the tree”**

- Possible +50% bonus on a beast's natural value for having correctly catalogued a very redundant beast (see chapter 2.1.1.) **"+50% Highly redundant specimen"**
- Possible multiplier of "x 2" on the total value of a beast if it ate a bluebird before having been correctly catalogued. **"+100% Ate a bluebird"**
- [in red] the sum of all the points a beast was worth at the end of the calculation (also branded with a 'p.').

During general game-play, points will be shown in the area labelled as 'position 2' in picture 3A (or position 6 in case you're referring to picture 0C). As already mentioned, when points will be achieved, the score will instantaneously update. We imagined that the score as the page number of the book, meaning that upon update, the new score will be found on another page than the one currently under the edge curl (see the picture below). This means that score updating will take place with the scrolling up of some pages.

Figure 5B: The in-game edge curl will reveal the amount of points collected and the status of the collection of food-items (*please remember that 3 items equal a completed meal*).

When points will need update due to their increase the pages will need to turn to symbolically reach that new score. A sound effect will need to be added to the turning of the pages. I suppose that a maximum six digit number in the format 000.000 would be desirable (the zeros on the left hand side will be omitted, for example 64 points will not be represented as '000.064' but as '64'). Also the number grows to the right side (it is therefore aligned to the left side) - like a page-number would.

The score should always align to the left hand side of the page (thus progressively elongating rightwards).

5.1 HIGH-SCORE

When the high score is surpassed, the appropriate in-game message will appear. As usual it will be accompanied by the voice of the narrator. The game should have a set

limit to be surpassed before the high-score in-game rewards (notes, congratulations and achievement) are awarded. As already mentioned, I am guessing this limit should be around 2400 points.

The programmers should implement a way to automatically send hi-scores with names to our official webpage (www.gua-le-ni.com) and, possibly, give the option to do the same for Facebook and-or Google+. It would be desirable if the social media high-score-report could be voluntary and presented with simple and captivating graphics.

6. INITIAL MENU AND GAME MODES

Once again let me remind the kind reader that the game will try to present itself as the remediation of a book. The menu will consist of a vision of the book, still closed. A primary relevance will be given to certain bookmarks on the side of the book, which will be the way we will deal with the menus. Note that certain game possibilities and functions will only be accessible after having unlocked them, meaning that some bookmarks will not be immediately present.

The game will start presenting the top of a desk with a disorderly bunch of papers on it (and maybe one of the cataloguing cubes?), which will serve as a sort of integrated 'presented by' screen. An initial mock-up of what is intended is presented below here. A couple of the game cubes will also be lying on the tabletop.

Figure 6A: A mock-up of the top of the desk before the arrival of the book.

After 3-4 seconds, a closed, old book with an upper binding will enter the camera field. As part of the pre-game interaction, a note will be shown next to the closed book. The note will always begin with “Memo to myself:” and then be composed of at least two sentences, one of them must be randomly picked among the following funny ones:

"- Hardly anybody wants to hear about my bladder"
"- It is not that I am boring, it is life that is too short!"
"- Ask the doctor for suppositories with a nicer flavour."

And one of them from these more serious hints about the game:

"- Curled pages can be turned"
"- Subtitles can be disabled from the 'application settings' menu"
"- Carnivore beasts can digest meat, the herbivores ones cannot!"
"- It is the head of a specimen that determines its food preference."
"- Three food-items correctly fed to the beasts will add up to a scrumptious meal."
"- I should try to get at least two food items of the same kind in each meal."
"- Meat-based meals increase the value of all the beasts in the parade!"
"- Fruits and vegetables will delay the beasts' acceleration."

Once opened the book with an upward sliding gesture, the first page will become visible to the player. This initial page will serve both as a menu and as a credit page. The menu choices are offered in the form of hand-written book-marks (left of the relative mock-up below here).

Figure 6B: A mock-up of the first page of the book, serving both as a credits page and as an initial menu.

In this initial page we need to have special thanks for Oliver Davies, whose consistent help with the concept development at the beginning of this project contributed to making this game what it is.

The credits will need to feature the following items (the description can change to become more book-like):

Stefano Gualeni (writing / game-design) - All rights reserved.

B.F.D. Van Breda (illustrations)

Oliver Davies (special thanks / additional design)
Marcello Gómez Maureira (graphics / additional design)
Davide Pensato (music and sound effects)
Rev. Hugo Tissington (narrator voice)
Diego Zamprogno (programming)
Samir A. Hadi (additional programming)

Double Jungle, MMXI, Padova, Italia.

Initially, there will be no tags on the side of this page, just an edge curl on the upper side of the page. The player will need to be able to turn that page with either a one-finger or a two-fingers swipe. This will be a first necessary learning moment for the player who will need to understand that edge curls are indications that a page can be turned.

Turning the first edge curl, the player will reach the PREFACE section, which is the way *Gua-Le-Ni* offers access to the tutorial. The complete behaviour and structuring of the interactive tutorial will be explained in detail in chapter 6.2. Once the tutorial is completed successfully, the game will advice the player to now test her skills and understanding in the 'fiction' mode, tapping on the appropriate label. The pages of the book will then turn back to the initial page where two tags will now be present: PREFACE (the tutorial) and FICTION (relaxed, practice mode).

Once the player will have correctly catalogued more than 7-8 beasts in a row with at least two beasts of three modules in the bunch (quantity that could be perhaps tuned with the aid of biometrical measurements), an in-game message will inform the player that a competitive mode is now available: 'Non-fiction'. After playing a game of 'Non-fiction', the player will be taken to a new page called (temporarily) 'My notes', the page is handwritten and will be a record of the best scores of all the competitive modes. A tag will appear for it as well.

The next time the game will be played, the unlocked tags will need to be already present, of course.

The following paragraphs will describe what every single tag (or book-mark) will correspond to in terms of game-play. As already mentioned, to go to the desired section of the book, it is sufficient to touch one of the labels. The order and position of the labels in the book was designed to allow the access to any game mode from either the tutorial (Preface) or the score page (My notes).

I would like to point out here that, after selecting the desired game mode, *Gua-Le-Ni* will not begin abruptly. The beginning of the game, coinciding with the entrance of the first beast, will be anticipated by two generic 'in-game' messages. The first would bear the writing "Ready..." (with the narrator also saying "Ready..."), the second would say "Commence!" (still commented enthusiastically by the narrator).

Swiping away with one or two fingers the first note (the one saying “Ready...”) would let the game begin immediately.

6.1 MY NOTES

Touching this label will transport the player to what can be identified as a classic 'HI-SCORE' screen. This section will not need to look as if it were printed, but hand-written by a reader who took notes while reading the book. Below is a mock-up of what I imagine it to look like. Please do not forget to put the game name at the top of this page, still hand-written.

The part of this page which is going to be present from the beginning is the one labeled ‘preface’ (‘intro’ in the latest versions of the game). The other three – fiction, non-fiction and poetry) will need to appear upon specific unlocking.

The list will be updated once a new high-score is reached at the end of a game. During the update, I would like the game to show a page with the beast that caused the game-over with its correct name and the result achieved. On this page, the player will be given the possibility to ‘brand’ her result with three letters using the *iPad* standard keyboard. Then the page will turn and it will show directly the ‘my notes’ section (shown in the picture above), with the score just added highlighted in some clever way.

I also imagine there will be a sort of *Facebook* (or other social network or group thereof) ‘sticker’ somewhere around this page to allow a player to post and share her results with the community. I would like the game to produce a little graphical strip with the top of the chart of the three modes and relative names that is posted automatically on the chosen social network with a link to the site for the game (www.gua-le-ni.com).

Only one book label will be visible from the ‘my notes’ menu and it will bear the words ‘close the book’. Tapping that label will lead back to the initial menu after having closed the book and reopened it (essentially resetting the game to its pristine state).

In later versions of the game we also introduced other information about single games and the general results of the player as well:

- GAMES PLAYED (in total)
- TIME PLAYED (the sum of the duration of all the games played expressed in hours, minutes and seconds)
- LONGEST PARADE (the longest game played)

- BEASTS OF TWO (the total amount of beasts of two modules catalogued)

- BEASTS OF THREE (the total amount of beasts of three modules catalogued)
- BEASTS OF FOUR (the total amount of beasts of four catalogued)

- MOST BUTTS EATEN (the total amount of beasts of two modules catalogued)
- MOST VALUABLE BEAST (the highest amount of points awarded to a single beast)
- MOST BEASTS OF FOUR (the highest amount of beasts of four catalogued in a single game)

In the latest installment of the game, I proposed a couple of extra pages accessible (with a page curl) from the 'my notes' section which will list (with appropriate icons which we already have for the game) and explain the achievement already awarded to the player. The complete list and the brief explanation for each achievement can be found in this document in chapter 11. I believe we will need two pages for that.

6.2 INTRODUCTION: THE TUTORIAL

This sub-chapter organizes the behavior of the game in its two tutorial parts.
The first part comes immediately after tapping on the game book for the first time, when the camera pans on the left-side of the book in the position it would be when the game is actually played, but without cubes or beasts. The second follows the correct cataloguing of seven beasts in a row in the 'fiction' game mode.

The two tutorials will be explained using both in-game messages and the voice of the narrator, the only voice of the game.

1. TUTORIAL, PART 1 (from the first time the user taps the book until the unlocking of the 'FICTION' mode as well as the 'POETRY' mode)

The first time the game will launch, the intro movie will stop by the game-book with the music still going. The player will need to tap the book to continue. This is going to be the behavior of the game only the first time the application is launched. The following times, the book will open automatically with the narrator uttering one of the four random welcoming sentences.

Upon tapping the book, the first time the application is launch, the music will stop and the narrator will say:

STEP 0:
Ah, greetings, old chap. Sorry about turning the muzzl... *Correcting himself* …The music off, but at my age one either reads or listens, not both. *following by noises which start like a chuckle end in a cough*

After this sentence, the bottom left corner of the first page of the book will curl leaving the indication that under it, the ‘preface’, the game intro, will start.

Upon the turning of the first page of the book, the player will be presented with a page which will essentially be empty except from containing a small dedication line and the logo of the game (the ink-drawn profile of a Greek sphinx). The text on the page should bear the writing in italics: *To Jos De M. and Paolo N., men of gallantry and taste*.

At the bottom of the page, the name of the game testers will be listed as follows: *Proof-reading, play-testing and well-wishing: Samir Hadi, Freek Hoekstra, Marta Clavero Jimenéz, Petra Abreu de Pinho, Irina Tomova, Bart Wagemans.*

This ‘dedication page’ will only be a page the player observes in passing. As soon as this intermediate page appears, the narrator will say:

> STEP 1:
> N: Blah, blah, dedications, introductions… We should just keep turning pages until we can start exploring the content of this fabulous bestiary, shouldn’t we?

(the step 1 in-game message slides in, the page will curl once again when the note has disappeared or was swiped away)

> STEP 2:
> N: Ah, very well then. Allow me, with the help of some paper notes, to elucidate the general functioning of this marvellous book about taxonomy, eh! Swipe this first note of mine away to continue.

(swiping the note away allows to go to step 3, when a condor [CON-DOR] appears on the right side of the page)

> STEP 3:
> N: Oh, observe! A CON-DOR! (STEP 3 in-game message comes in just before the very fast CON-DOR manages to escape - five or six seconds would do) By the beard of Conrad Gesner, that was not supposed to happen! Beasts should never walk away without being correctly catalogued! (automatically go to STEP 4)

> STEP 4 (1):
> N: Let’s see how that can be achieved, shan’t we?
> (the STEP 4 in-game message ‘note one’ comes in and does not leave until the player performed one correct spinning, in this first mode the one-finger rotations need to be deactivated, it will be only possible to manipulate the cube with two fingers)

> STEP 4 (2):
> N: Well done, now! Allow me to recommend you to always lift or spin a taxonomic cube using your thumb and your index finger, as shown in this

pretty note that I personally crafted for you. (the STEP 4 ‘note two’ comes in, substituting the previous one)

N (added): Now try using two fingers to drag the cubes around and change their order.

(followed automatically by)

(STEP 5 ‘note two’ comes in)

STEP 5:

N: Oh, how exciting! Look over there, a rare specimen of land LOB-STER! Let’s catalogue it using the cubes, fast!

(when the player makes it, excitedly)

N: What a splendid effort, what a brilliant taxonomist! (go to STEP 7)

(if the player does not succeed)

N: A most tragic occurrence indeed, the LOB-STER fled! But let’s just wait, my dear, I am sure there must be other majestic LOB-STERS around…

(and a new LOB-STER appears)

STEP 6: (the camera switches into the same position it would have during a pause, the STEP 7 note slides in and the narrator comments)

N: Well, enough for now, my friend. Less talking, more cataloguing.

(the STEP 7 note leaves the book while the unlocking note for the ‘FICTION’ mode comes in with no comments from the narrator but with a positive sound effect. The game will then move to the initial page of the book and the ‘fiction’ label will appear).

2. TUTORIAL, PART 2 (automatically starting after starting the ‘NON FICTION’ mode for the first time)

STEP 8:

N: From the looks of it, you already are a good enough taxonomist to access more advanced tricks of the trade. Very well, then. Here comes more paper! (the STEP 8 in-game message slides in)

STEP 9: (the labels come out and the STEP 9 in-game message comes in. The following label has the hunger indication on it. After a few seconds the narrator says):

N: Ah, those… The labels. Yes.

(the STEP 10 note slides in)

N: Oh, and here comes another bru... Another b-b-beast!

(a beast comes in and the player is asked to categorize a beast with three cubes and no redundancies)

(if the player manages to correctly catalogue it)

N: Ah, brilliantly done! (go to STEP 11)

(if the player does not manage to catalogue it)

N: I am afraid we need to exercise that more, young one. (a new beast will come in and the cycle for this step restarts)

STEP 11: (another three-modules beast comes in and it has the hunger label under it)

N: Ah, see that beast? Yes, the one with the red label! I can tell you from my octogenarian experience that the beasts will only start to accelerate once you will have catalogued that very specimen. I find it despicable when it happens, just despicable…

(if the player manages to correctly catalogue the animal)

N: So it goes, sir, so it goes. Try to remember that the longer an animal, the most vali… Sorry, the most valuable it is. (automatically go to STEP 13)

(if it does not)

N: Let’s try that one again, now. Shall we not?

(the player is asked to retry the cataloguing)

STEP 13: (together with the appearance of note STEP 11)
N: Cataloguing combinatorial fauna: has taxonomy ever been this fun? (pause) That was a rhetorical question!

After that, the game goes back to the starting page and the ‘non fiction’ label appears sliding out of the book.

6.3 THE ‘NON-FICTION’ MODE

The unlocking criterion for the unlocking of the ‘NON-FICTION’ mode relies on the correct cataloguing of at least four specimens of three modules each in the same game of the ‘fiction’ mode.

‘Non-fiction’ will be the basic game mode and it is the fundamental game-mode outlined in this document. Will start slow (see below for initial speed), but the speed of the beastly parade will increase of per each occurrence of the hunger, will eventually end and lead the player to the ‘my notes’ section. Every hunger after the first one will diminish of a delta that, from the initial 0,75, would diminish of 0,015. So the hunger series would go: 0,75 – 0,765 – 0,78 – 0,795 – 0,81 etc.

The initial time a beast will take a two-module to cross a page in this mode will be of 36 seconds. Three modules: 40. Four modules: 46.

There is nothing else to add to this game mode apart from the fact that the ‘non-fiction’ mode will present a special feature. They will record the time in which a player will manage to first correctly categorize two beasts of four modules. Essentially, the ‘Two-of-Four race’ is a sub-game mode that asks the players to grow their beasts as quickly as possible and to be fast in categorizing two beasts of four modules. When that point is reached, the game will offer an in-game message which would report this achievement stating something along the lines of: **Two-of-Four: 00’ 45’’ 88’’’** (obviously marking the time of its actual reaching). The voice of the narrator will also comment on this event as with any other in-game messages. The shortest time needed will be marked in the ‘my notes’ page in the section dedicated to this achievement.

I would strongly remind the programmers to disable this calculation for the ‘fiction’ mode as the cataloguing of two beasts of four modules could be reached either very early or exceed the possible capacity of the counter (depending what the player sets its ‘fiction’ mode like, determining how many modules she can handle). This might cause problems similar to those of *Bejeweled 2* and the possibility to exceed the maximum score expected by the designers (overflow). Please disable the clock counter for the ‘fiction’ mode.

Upon the reaching of the ‘game over’ state, the narrator will comment with a game-over sentence, a game over note will be presented to the player and the game will automatically turn a page to the pause page which, without text, will display the beast that caused the game over to occur, together with its correct name. From that page, the only possibility for the player will be that of closing the book tapping on the corresponding red tab that will stick out of the left hand side of the book.

6.4 THE ‘POETRY’ MODE

The poetry mode was initially planned as part of the original release of the game but is now going to be featured in the first big content update. The ‘POETRY’ mode will be unlocked together with the ‘FICTION’ game mode. This decision is meant to provide the players of this new version with NEW gaming experiences early in the interaction with the game, as opposed to the way this mode could be accessed as originally planned, which would take extensive gameplay and expertise.

Poetry mode revolutionizes gameplay as well as the cognitive processes involved in beasts cataloguing. Three features in particular will distinguish this mode from all the others. Such features are the following:

- The presence of the horrendous WHITE cube, unavailable in any other game modes.
- The gameplay which separates the actions of the beasts crossing the page from their cataloguing, essentially removing all time pressure from the game.
- The unique rotation of the book and the absence of book labels (see picture underneath)

Figure 6.4A: The organization of the game-space in the ‘poetry’ mode (new orientation and no book-labels).

The two paragraphs that will follow will elaborate on each of these new and unique aspects in complete detail. The third one in this bracket (6.4.3) will, instead, structure the tutorial for this new game mode, to be played only the first time that the mode is accessed AFTER the introduction (or after the introduction is played again).

6.4.1 The horrendous white cube

The sixth and white cube present in the game will only be used in the POETRY mode. As you can notice from the way it is composed, it was based on the distribution of the yellow one.

6th CUBE) WHITE:
Head of a walrus (C) [WAL] {4}
Head of a human (H or C … still to decide but irrelevant for now) [HU] {2}
Head of a rabbit (H) [RAB] {5}
* * *
Body of a walrus [RUS] {1}
Body of a lizard [ZARD] {6}
Body of a human [MAN] {3}

This cube will be the only one ALWAYS present in any combinations of beasts that the POETRY MODE will present to the player, as explained in the following section.

6.4.2 POETRY MODE: GAMEPLAY

This mode will be the first one to creepily introduce humans in the animal combinations, which hopefully would provide an even eerier feeling in the people approaching our digital taxonomic efforts. The background will need to iterate on themes of human hybridization with animals as well as decay and meaninglessness. In that sense, we thought of an Egyptian theme (or rather a retour-d'egypte) which nicely brings together colonization, exploration and human-beast hybrids (sphinx, gods, etc.) AS WELL as themes of death and decay, take for example 1818 Percy Bysshe Shelley's *OZYMANDIAS*, a famous English sonnet about the aspirations of the Pharaoh Ramesses which will organize the gameplay for this mode. The sonnet goes like this:

1. "I met a traveller from an antique land
2. Who said: Two vast and trunkless legs of stone
3. Stand in the desert. Near them, on the sand,
4. Half sunk, a shattered visage lies, whose frown,
5. And wrinkled lip, and sneer of cold command,
6. Tell that its sculptor well those passions read

7. Which yet survive, stamped on these lifeless things,
8. The hand that mocked them and the heart that fed:
9. And on the pedestal these words appear:
10. ‘My name is Ozymandias, king of kings:
11. Look on my works, ye Mighty, and despair!’
12. Nothing beside remains. Round the decay
13. Of that colossal wreck, boundless and bare
14. The lone and level sands stretch far away”.

In this game mode, groups of beasts will cross our new scenario (or scenarios as will be explained later) before the possibility for the player to interact with them. Yes, I wrote ‘groups of beasts’. In the POETRY MODE, the challenge offered to the player does not take the shape of a pressing race against time but of a memory game featuring more than one beast at a time. Let me make myself clearer: more than one beast of various compositions will cross the book at a comfortable speed without the possibility for the player to do anything apart from tapping them. Memorizing the passing beasts is central to being successful in the game, as the player will be – then – asked to recompose the entire series correctly. The game will not feature any feeding or any extra objects flying or growing on the game page.

The game will initially be very simple, asking the player to memorize a series composed of two beasts of two modules each. However, the series but will rapidly increase in complexity and quantity of the beasts to keep in mind.

IMPORTANT: one cube will be always present in any beast to be categorized, and this cube is the WHITE cube. There can be up to TWO WHITE CUBES in play at once (so WHITE-WHITE is a valid 2-cube setting, so is CYAN-WHITE, where neither BLUE-RED-CYAN nor WHITE-WHITE-WHITE are valid 3-cubes settings).

IMPORTANT: whenever a beast is correctly composed (head+body, head+body+body, etc.) **in game, the beast will actually form on the book. The mode will hence allow to create your own beasts. To approve of a beast, the player will need to tap on it (**as will be explained in the tutorial**). If the beast is correct, it will emit a positive sound and will be blown away. If the beast is incorrect, it will emit a negative sound and will rush out of the page, leading to the gameover state for this game mode.**

The page-crossing speed of the beasts in this game mode will be 7 seconds for a 2-module beast and 8 seconds for a 3-module one.

The following is a series of beasts and relative modules which will compose the 14-step gameplay of this mode. For example, “2 3” indicates that the animals passing by at that stage of the game will be two beasts of respectively two and three modules each:

1. 2 2
2. 2 2
3. 2 2
4. 2 3
5. 2 3
6. 2 3
7. 2 2 2
8. 2 2 2
9. 2 2 2
10. 2 2 3
11. 2 2 3
12. 2 2 3
13. 2 3 3
14. 3 3 3

We will consider adding a HELP button, usable only once per game, that solves an individual beast when the player is in trouble.

HELP sentences ENG:
"POETRY_HELP_1" = "Cannot remember a beast? \nTap on the HELP bookmark!";
"POETRY_HELP_2" = "Tapping on HELP lets you \nskip a whole page! Yay!";
"POETRY_HELP_3" = "The HELP bookmark can \nonly be used once per game!";

HELP sentences ITA
"POETRY_HELP_1" = "Non ricordi una bestia? \nNiente panico, c'e' sempre HELP!";
"POETRY_HELP_2" = "Toccare HELP ti permette \ndi saltare alla pagina successiva!";
"POETRY_HELP_3" = "Il segnalibro HELP puo' \nessere utilizzato solo una volta!";

Each series will only work with the same group of cubes, all including the white one to begin with, for example the 10th series of beast (2-2-3) could go:

2 - WHITE YELLOW (HU-STER)
2 - YELLOW WHITE (CON-BRA)
3 - WHITE YELLOW CYAN (WAL-STER-STER)

In order to only have cubes adding to the group of cubes as the correct cataloguing progresses.

It is perhaps important to note here, that the two gameplay 'moments' of this game are temporally separated in this game mode. In other words, there is no overlapping between the passing of a beast and its being correctly catalogued. On the basis of this foundation, we might want to have a closer zoom on the book when the animals are walking and a higher position of the camera while manipulating the cubes, comfortably fitting all the needed game elements into the screen frame.

Ideally, the game will start (after the tutorial) by turning a page on the desert scene which represents the first scenario of the game where we can read the first line of Ozymandias next to a landscape which corresponds to the first line of the sonnet. Essentially, the player will be rewarded for every correct passing step with a new line and a new luscious background picture progressing with the narration of the story of Ozymandias, gratifying the player with the warm voice of the narrator, new great illustrations and a constant suggestion of progress and wonder.

In order to differentiate from the FICTION and NON-FICTION mode, I suggest a different book orientation and perhaps some difference in lighting the scene.

Once the last series will be catalogued (series number 13), the player will be shown the last page, where the last line is read and the poem is complete, after which the narrator (Reverend Hugo Tissington) will say:

N: Ozymandias reminds us about the vanity and frailty of our temporal existence. Congratulations, for what it's worth.

The completion of the POETRY mode will (after the reaching of the last page and the reading of the narrator) trigger an achievement note saying

"CONGRATULATIONS! Poetry mode completed."

The first time it will be completed, the reaching of a new achievement, the OZYMANDIAS achievement will be shown to the player (100 achievement points).

After the achievement note will be removed from the page, the narrator will give his final comment:

N: In case you have not had enough yet, continue with harder beast combinations by tapping the bookmark saying ‘MORE’… Well done with the beasts, anyway. Well, like it bloody matters…

And two tabs (CLOSE BOOK and MORE!) will appear from the left hands side of the book. Tapping the ‘MORE’ bookmark will allow the players to continue the series from where they left it increasing in single steps to 3 3 3, 3 3 4, 3 4 4, 3 4 4, then stably 4 4 4 until game over.

As far as the ‘MY NOTES’ page is concerned, we will need an extra line or an extra counter in the ‘my notes’ section that will account for the line of the sonnet the player managed to reach in his or her best effort.
(for example, the listing):

POETRY MODE: Ozymandias’ verse n. XX.

Will indicate precisely that in the POETRY MODE, the player reached level 4.

POETRY MODE: poetic verse n. XX.
Will inform the player that that in the POETRY MODE, the player reached level 55, which means 41 after the poem was completed.

- HOW TO CATALOGUE A SERIES OF BEASTS IN THE POETRY MODE -

While spinning the cubes (and consequently without beasts parading) I would like the beasts that the player will compose to actually form on the scene WITHOUT WALKING. I would like the beasts to compose on screen only when the beast has a logical composition (head-body, head-body-body or head-body-body-body). In order to accept the combination, the player will be trained in the tutorial to tap the beast. If the accepted combination will correspond to the first not-yet catalogued beast of the current series, then the beast will happily walk away while the game will give out a progressive sound of approval.

In case the beast will be wrong, the wind will blow it away together with a sound effect (in line with the progressive and positive ones).

IT IS IMPORTANT TO UNDERSTAND THAT ALL THE CATALOGUING NEEDS TO PROCEED IN A CHRONOLOGICAL ORDER! The player will be required to categorize the first beast first, then the second, then an eventual third and so on… This will make cataloguing easier and will allow for cubes to just always be added to the playfield and never removed from it. This information is crucial for the player and will need to be repeated often in the tutorial.

The completion of the series will add extra auditory feedback. In summary, the auditory feedback could go from: 1+2+END (in the case of the completion of

a series of 2 animals) to 1+2+3+END (in the case of the completion of a series of 3 beasts). Accepting the wrong combination will immediately lead to a game over state. The turning of the page to the game-over page will be accompanied by a negative jingle and one of the five following game-over lines (to be played in order:

N: Oh well, that's probably a blessing in disguise: I'd forgotten how the sonnet went anyway.
N: Sad… That was sad!
N: You, sad… You are SAD!
N: Sad, sad, sad… Sadsadsad, sad. Sadville Arizona.
N: Somebody of your age should have a mind… *mumbles*... Your mind is shoddy!
N: Ah, what was the point of that useless recollection anyway? [frustrated or sad]
N: Ignore me… I cannot remember a bloody thing. But you, with a young, fertile, livid… Awh...
N: To be honest with you, I'd just go home.
N: I've seen children do better than that!

The game-over page will need to bear the following information:

(GAME ICON)

- Half sunk, a shattered visage lies, whose frown, -
Ozymandias' verse n. XX

(dividing line)

The horrific sequence of beasts that could not be remembered went:
HU-DOR
TI-MAN
LOB-ZARD

From that page, the only possibility for the player will be that of closing the book tapping upon the corresponding red tab that will stick out of the left hand side of the book.

In case the game will be taken to a gameover state from a verse past the end of Ozymandias (14^{th}), then no verse should appear on top of the gameover page, but only the line: poetic verse number XX (where XX will indicate the verse the 'game over' state was reached).

6.4.3 HORRIFIC TUTORIAL

The first time the horror mode will be run, an introductory page will be shown to the player. The page will serve as an introduction to this mode. It will feature a small illustration by Martin (probably an unused sketch) and will mention the fact that the poetry mode of this game is freely based upon a sonnet by Percy Bysshe Shelley, published in 1818, and a few painterly pieces of inspiration that Martin will provide. The narrator will comment the following:

N: Oh yes, the poetry mode! As you have probably grown aware of, CREATIVITY is a most important quality a successful taxonomist. It is only second to… to… What's that other thing? Uhm… Ahem… To… Uhm… Ah, memory!

N: That also reminds me that I tend to find this section of the book more appealing with some background music. I hope you do not mind. Where was it, where was it… Uhm where was it? Ah, there!

[After the narrator's piece, the background music for this game mode will start and the poetry mode intro page will curl, allowing the player to turn it and start the tutorial].

On the traditional game's background (with no cubes in play) the narrator will continue:

N: Focusing on memory and not of slight of hand, this specific bestiary section will prompt the aspiring scholar – that would be you - to recompose a series of beast after they have passed, with no time restrictions.

N: Let me make an example… Was there not a WAL-RUS stinking up my bestiary just a minute ago? [Enter the WAL-RUS] Uh, there he is! That miserable bastard!

N: Here, it is perfectly acceptable for you to allow the beast to walk across the page. Watch it go! Feet first! Du-de-Dum…

N: Now, do you remember what creature just crossed the screen? It was a wal… A wal… What do you say?! A WAL-RUS indeed! Since my hearing is not what it used to be, I am afraid just saying its name is not an option. Try to recompose it using these two brand-new white cubes, instead! [Enter two white cubes, the animals do not form yet when completed, only the WAL-RUS forms]

N: [All controls stop, the cubes disappear] There! Did you see? The beast you've created actually came together in paper form! Once you are happy with the way you recomposed your WAL-RUS, just tap on its paper body! [Once tapped, the walrus screams and walks out of the screen]

N: Well done! Easier than being potty-trained, isn't it? [Followed by]

N: Let's try again! With two brutes, this time!

(the next beasts are HU-MAN e WAL-RUS and whenever a real beast is composed, it actually forms on the book)

N: (at the first beast correctly remembered) One down…

N: (at the second beast correctly remembered) And two! Outstanding! Ah, my dear, I believe we are finally ready to start (or obscure British expression to indicate the same thing)! (The narrator clears his voice for the first line of the poem) [The poetry mode effectively starts]

N: Here we go. Let's start, then.

In case the player would get one wrong there are two sentences to play alternatively:

N: Oops! No, no… That was not it! D-don't get me wrong, old chap, I know it's difficult and you're doing your best., but… More focus this time around!

N: Beep! Nooo! NOOO! Not good. If you were not that young, I'd recommend you the same tablets I take. Now try AGAIN!

In both cases, the game will pick two randomly generated beasts that can be solved with two white cubes and let them walk through the screen.

(Let's remember to add a couple of different starting lines:

N: Here we go again… *clears his voice*

N: Let's just hope I will remember it all, this time…

N: Gua-Le… Wait! This is the one about Ozymandias, right? Very well…

N: Tig-er-man!)

6.5 'FICTION' MODE (A RELAXED WASTE OF TIME)

In 'fiction' the time that the beasts will take to cross the screen will be constant and set. This time will need to be tuned to make it extremely easy for players to categorize every beast. We might even consider leaving it at 32 seconds or so (with the bonus of one sixth of the initial time for a three-modules beast and a bonus of one third of that same initial time for a four-modules beast as explained in point 6.3).

This game mode will not feature points. It will neither feature food. Consequently, it will not need the food labels either. It will just provide a player with random beasts of random lengths to categorize, essentially transforming the game in a pastime.

Essentially it needs to be a relaxed way to get to know what's on each cube and to spend some time fiddling around with them.

The player will be given the possibility to decide the number of the cubes in play (and consequently the modules of the beasts in play) utilizing paper snippets which will be found on the side of the cubes area (area 'A') ONLY IN THIS GAME MODE. The paper snippet on the right hand side will represent a cube with an arrow indicating its entry in the playing field, the paper snippet on the left hand side, a cube with an arrow indicating its removal from the playing field (which, as explained in chapter 2, will happen on the leftmost side of the screen). It would be desirable to only have the possible snippets appear in the playing field, meaning that if the current situation is that of two cubes, we will only have the possibility for adding new cubes (no snippet for the removal on the left-hand side). If the current situation is that of four cubes, we will only have the possibility for removing cubes (and so we will not need the snippet for the addition on the right-hand side). The game-state with three cubes will be the only one which will feature both snippets.

In case a player will correctly catalogue six beasts of two modules in a row CORRECTLY without adding extra cubes, the narrator will point her attention to it. The walking of the beasts will temporarily stop and the narrator would say:

N: Ah, I might have forgotten to mention that the intricacy of the cataloguing is can indeed be increased. Tap on that piece of paper on the right side of the cubes to add more taxonomic devices! Come on, come on...

(the beasts will automatically stop after a few seconds either if the player taps the snippets or not)

As explained, tapping on one of those (possible) snippets modifies the beasts' complexity and the number of cubes in play, but this will not be an instantaneous addition. The snippet(s) will retract outside of the playing area until the next beast will enter the book-space with the requested beast / cubes modifications. New snippets will be also presented then. It is worthy to remind that between the correct cataloguing of a beast and the appearance / disappearance of a cube there will be a moment in which the beast will not walk (as was explained before, the beast will scream, its body will be blown away by wind, points will be shown, etc.). The player could use that time to position at the leftmost side of the playing field the cube he would like to get rid of, or the one he feels the least comfortable with, adding further depth to game-play decisions.

The 'fiction' game mode will still finish if an animal manages to cross the whole screen uncategorized. At the end of the game, the book will go back to the first page instead of passing by the 'my notes' section.

When the player will have correctly catalogued four beasts of three modules each in a single relaxed mode game, the occurrence will trigger the unlocking of the ‘NON-FICTION’ mode as well as the ‘POETRY’ mode. Such unlocking will be commented by the narrator as follows.

N: It is my belief that you are ready to face a more challenging taxonomic enterprise. Why not trying the “non-fiction” mode, then? Tap on the “non-fiction” bookmark in the initial page of this book!

(the note for the unlocking comes out, underscored by a positive sound... And the beasts start walking again in the on-going fiction mode).

7. SOUND

As far as sound is concerned, *Gua-Le-Ni* relies on a stark minimalism. The reason behind this choice lies essentially in the casual nature of its game-play (in casual games and puzzle games sound iterates on information which is primarily given in textual or otherwise visual form) and its style, striving towards minimalism and integration (the game pretends to be a real book on a real desk, hence an abstract layer of sound would be perceived as poorly fitting).

What we would like from the auditory part of *Gua-Le-Ni* is essentially this:

BEASTS' VOICES

- The main version of the voice for Head of a rhino (H)
- The main version of the voice for Head of a tiger (C)
- The main version of the voice for Head of a lobster (H)
- The main version of the voice for Head of a warthog (C)
- The main version of the voice for Head of an camel (H)
- The main version of the voice for Head of a condor (C)
- The main version of the voice for Head of a salmon (C)
- The main version of the voice for Head of a rabbit (H)
- The main version of the voice for Head of a bison (H)
- A sorrowful version of the voice for Head of a rhino (H) (to be used upon correct classification)
- A sorrowful version of the voice for Head of a tiger (C) (to be used upon correct classification)
- A sorrowful version of the voice for Head of a lobster (H) (to be used upon correct classification)
- A sorrowful version of the voice for Head of a warthog (C) (to be used upon correct classification)
- A sorrowful version of the voice for Head of an camel (H) (to be used upon correct classification)
- A sorrowful version of the voice for Head of a condor (C) (to be used upon correct classification)
- A sorrowful version of the voice for Head of a salmon (C) (to be used upon correct classification)
- A sorrowful version of the voice for Head of a rabbit (H) (to be used upon correct classification)
- A sorrowful version of the voice for Head of a bison (H) (to be used upon correct classification)
- A unique disgusted voice to be played when each head is fed the wrong food

- Unique delighted munching sound to be played when each head is fed an edible food
- Unique sound to be played when each head eats an alien slime

FOOD ITEMS

- The cheesy and B-movie-like sound of the U.F.O.
- The U.F.O. cracking in two.
- Falling sound (Alien Slime falling from the sky, bluebird falling from the sky, Apple falling from the tree)
- The Alien Slime landing on the ground with a disgusting, dense splash.
- The bluebird flying and chirping.
- The carcass of the bluebird thumping on the ground.
- The flower blossoming on the apple tree.
- The flower transforming into an apple.
- The apple being shot and detaching from tree
- The apple landing on the ground with a subtle ‘thump’.

MENU & HUD

- Positive sound effect based on the Turkish March for when the animals size up
- Negative sound effect based on the Turkish March for when the animals size down
- Positive sound effect for apparition of an in-game message regarding a meal completed
- Negative sound effect that emphasizes the reaching of the hunger
- Positive sound effect for the apparition of an in-game message about the reaching of a new high-score or unlocking a new game mode

GENERIC GAME STATE

- The sliding of a note (in-game message) on the book page
- The sliding of a note (in-game message) off the book page
- the sliding of the ‘animal labels’
- A sound of paper being stamped upon the collection of a food-item.
- Turning fast multiple pages (score assigned)
- Menu - Book enter onscreen
- Menu - Tap label
- Turning a single page
- The beast and the points blown away from the page by a gust of wind (wind blowing for a brief period of time).

WOODEN CUBES

- Cubes will click together fully (loud clicking) upon snapping after a translation Cubes will click together in an average way (middle volume) upon reconnecting to another cube after a spin or rotation
- Cubes will click together lightly (subtle clicking) when closing back together after having separated slightly

The clicking of the cubes should be quite various (at least two versions of each type of clicking picked randomly by the code) and will need to give the sense that the cubes are physically present and magnetically attracted to one another. The faster and more skilled a player gets, the more the clicking should be frequent and rhythmical.

Here is the list of the spoken audio files which do not belong to the tutorial section of the game. As already specified in the tutorial part of this document (6.2), they will all be pronounced by the invisible narrator, an old British taxonomist (the reverend Hugo Tissington).

7.1 UPON OPENING THE BOOK (to be played at random)

N: Welcome back, my friend.
N: The animals came two by two… And three, and four…
N: Ah, greetings, old chap. Sorry about turning the muzzl... *Correcting himself* …The music off, but at my age one either reads or listens, not both. *Following by noises which start like a chuckle end in a cough*

7.2 UPON BEGINNING A GAME (after "Ready..." the following notes could be played randomly)

N: Ready...

N: Let the parade commence! (random with next – 20%)
N: Gua-Le-Ni! (random with previous – 40%)
N: GO! (in two versions - 20%+20%)

7.3 UPON GAME-OVER (the three following game over sentences should be played at random)

N: Bummer!
N: A most terrible circumstance!
N: Game Over, old chap.
N: Awww…

7.4 BEASTS CATALOGUING (only categorizing one beast correctly before its label passes the tree)

(at random)

N: Marvellous!
N: Just splendid!
N: Ah, Superb!
N: Incredible!
N: Outstanding!
N: Delightful!
N: Bravo!
N: Simply terrific!
N: Brilliant!
N: My friend, you are a scholar!
N: A noteworthy scientific effort indeed.

7.5 UPON THE COMPLETION OF A MEAL

(meal with no combinations – at random with a 50% chance of occurrence)
N: Meal completed, well done, my dear!
N: A fed beast is a happy beast!

(meal with a combination of 2 of a kind – at random with a 50% chance of occurence)
N: N-U-T-R-I…Well, etc.!
N: Just peachy, another meal!
N: Yummy!

(meal with a combination of 3 of a kind – at random, with a 100% chance of occurrence)
N: What a dietary talent! A splendidly organized meal!
N: Yes, yes, quite astonishing indeed.
N: Masterfully accomplished, sir! What a zoologist!

7.6 UPON UNLOCKING EVENTS

(at random)

N: Allow me to congratulate you on that! Simply marvellous.
N: More exotic taxonomy? Say no more!
N: By George, what an achievement!
N: A remarkable attainment, I daresay!

(reminder: the spoken text should not be used upon the unlocking of the ‘fiction’ mode during the tutorial)

7.7 UPON REACHING THE HIGH-SCORE FOR THE CURRENT GAME MODE

(at random)

N: Great Carl von Clausewitz! A new record!
N: What a score! I deem it worthy of Linnaeus himself!
N: By the chest wig of Albertus Seba, appearances really ARE deceiving! That was quite an impressive display of skill for somebody with your ignoramus looks!

7.8 UPON CATALOGUING THE FIRST TWO BEASTS OF FOUR MODULES (in the ‘non-fiction’ mode only)

(at random, every time the first two beasts of four are catalogued)

N: Two-of-four, sir!
N: Ah, and that makes two beasts of four modules each!
N: Four of tw… Ahem I mean two of four!

7.9 UPON THE OCCURRENCE OF HUNGER

(at random and one third of the times hunger strikes)

N: Hunger creeps and makes the beasts frenzied.
N: Hungry again? My oh my…
N: These beasts have a phenomenal metabolism indeed.

7.10 FILLER SENTENCES

(the next four options can be used in different occasions in the game, when the game is not played, for example during idle time in the initial menu, upon reaching the hi-score menu or spending a lot of time in pause. The filler sentences need to be used to fill the silent time in the game in a random time lapse between 10 and 15 seconds. Clearly the counter for this event needs to be reset every time that a functional line is uttered by the narrator. By functional I mean necessary and gameplay-relevant).

N: Du-de-du du dum... (on the notes of the “skeleton dance” in Monkey Island 2)
N: Brilliant weather for cataloguing, isn’t it just?
N: A whole lot of weather we are having…
N: Du-dee-dee doo de dum... (mocking the initial theme for the game)
N: *COUGHS A BAD COUGH*

(plus others improvised by Rev. Tissington during the recordings)

7.11 UPON THE CATALOGUING OF A BEAST WITH 3 or 4 REDUNDANCIES

(see chapter 2.1.1)

N: A very complex beast, that one!
N: That specimen was horrendously redundant, well done!
N: What a brute!
N: Did you see the eyes on that thing?!
N: That was bloody ugly!
N: I would have bet my false teeth you would have missed that one, and yet…
N: Amazingly well done, relatively to your wit.
N: Ugliest beast in the parade, I tell you…

8. LIGHT VERSION (short and free)

The light version of the game will essentially only feature the tutorial and the relaxed version. There will not be food or any competitive modes. The light version will feature an occasional in-game note while playing (the relaxed version) appearing randomly every 2 to 5 beasts reminding the players of the following things printed on a general scrap-paper note. The message showed as well as their order will need to be randomized. The scope of this design decision is to both annoy and inform the player.

- With this light version you can move the first steps in the world of combinatorial taxonomy, but would it not be fun to add some discomforting competition? Buy the full version of Gua-Le-Ni and put your scientific might to the test!
- Did you know that the full version of the game allows you to feed the beasts with a combination of different meals, allowing to regulate their speed, complexity and value?
- More beasts, more frenzy, torrid passions and superstition... All of this and more in the full version of Gua-Le-Ni!
- Tired of this pointless drag yet? Want to make your cataloguing skills more meaningful? Challenge yourself with the deeper and competitive full version of this game!
- Remove these exasperating notes! Buy the full version of this game and do your autonomic nervous system a favour!
- Did you know? If a beast is correctly catalogued before it walks past the tree, it is worth twice as many points! Well, you only have points if you play the full game (wink wink).

Remember that in the light version, the relaxed version will not allow for the unlocking of any of the competitive modes. That check should be disabled.

9. PAUSE TEXT

The following is the text that needs to be rendered on the pause page. I will provide you with 15 chunks of text from my PhD research. I am asking the programmers to render any of these chunks of text randomly on the pause page upon pausing, so that a modular and procedural combinatory logic is also part of the textual nature of our imaginary book. Please pay close attention to maintain style between the opening page of the book and the font size and typeface of the pause text.

CHUNK 1:

In his work, Jorge Luis Borges, the Argentine author of philosophical reveries and literary criticism, often insinuated imaginative alternatives to the univocal and customary way Western thought understood and represented the world. In a short story titled T*he Analytical Language of John Wilkins*, for example, Borges reports to his readers that 'a certain Chinese encyclopedia' (the *Celestial Emporium of Benevolent Knowledge*) divided animals into:

> "(a) belonging to the Emperor, (b) embalmed, (c) tame, (d) suckling pigs, (e) sirens, (f) fabulous, (g) stray dogs, (h) included in the present classification, (i) frenzied,
> (j) innumerable, (k) drawn with a very fine camelhair brush, (l) *et cetera*, (m) having just broken the water pitcher, (n) that from a long way off look like flies."
>
> - Jorge Luis Borges, *El idioma analítico de John Wilkins* (*The Analytical Language of John Wilkins)* in *Otras Inquisiciones* (*Other Inquisitions*), 1952.

CHUNK 2:

The chasm between this fictional taxonomy and the scientific cataloguing of the fauna started by Carl von Linné is vertiginous. Michel Foucault commented that Borges' fabulous categorization demonstrates through the "exotic charm of another system of thought", the "limitation of our own, the stark impossibility of thinking *that*" (Michel Foucault, The Order of Things, 1994, P.xv).
In her 1996 essay *The Time of Being and the Metaphysics of Presence* (referencing Heidegger's 1975 writing *The Basic Problems of Phenomenology*), Carol J. White noted that within Borges' taxonomy "[a]n animal could change categories moment to moment or fall into more than one of these 'species' at once depending on its relation to the viewer, current activity and so forth".

CHUNK 3:

Focusing on Heidegger's understanding of the 'temporality of Being', White emphasizes that the metaphysics which underlies the categorization presented by the 'Chinese encyclopedia' diverges radically from the aspiration to the univocality, consistency and stability of knowledge which characterizes and guides Western thought. The temporality of Borges' fictional metaphysics in fact derisively deconstructs the traditional understanding of time as linear, progressive and constituted of identical 'nows'.

CHUNK 4:

The incongruence between the Chinese encyclopedia and the scientific way to organize knowledge are, however, not limited to temporality. Jorge Luis Borges proposes, for example, the idea that some beasts can be distinguished from others because "from a long way off look like flies", thus offering a classification of objective properties that, as also White noted, depend on their spatial relation with the observer rather than the stability of their temporal relationship. Moreover, in the previously mentioned passage of *The Analytical Language of John Wilkins*, Borges stated that a possible metaphysical categorization of animals could rely on their being "drawn with a very fine camelhair brush", also violating the traditional ontological divide between the 'things in themselves' and their representations.

CHUNK 5:

Simulations were defined as designed, artificial systems which have the qualities of being self-changing. The experiences involving the perception and interaction of simulations are spatio-temporally and metaphysically independent from those that humans can access in their everyday relationships with the genuine world. Simulations bear no necessary metaphysical (temporal, cognitive, causal, etc.) or spatio-temporal connection in with the world indexed as genuine, albeit connected to it in a number of ways, not the least of them being dependent from it for their existence.

CHUNK 6:

This last quality of simulations – and of digital simulations in particular – sets them apart from the fictional alternatives to the world presented by traditional media. Linear and non-interactive media of communication offer, in fact, experiences which are also separated and independent from the genuine world, but cannot be recognized as stemming from the

relationship with one or more worlds. Simulations are designed, artificial systems that grant access to the perception and the interaction with virtual worlds, allowing for user experiences which are virtual in the sense explained in the third chapter: 'real not in fact, but in effect'. Interactive digital media can consequently be recognized as capable of providing experiences which are virtually real, relying on objective perceptions and interactions, and are ontologically different from the ones offered by traditional media which – relying on subjective imagination – remain relegated to a fictional level.

CHUNK 7:

According to philosophers and aesthetics scholars of the last century like Heidegger or Hans Robert Jauss (a pupil of Heidegger's), traditional forms of artistic expression held sufficient rhetoric power to detach people from their everyday and functional existence and lead them into a freer realm of sensory appreciation. Heidegger and Jauss maintained that establishing a relation with phenomena in the less functionally constrained context of art would foster the re-discovery of the world in what was considered its authentic, unabridged essence. Twentieth century theories of aesthetical liberation from the habitual relationship with the world (or the Western functional objectification of it) like the characteristically politically utopian vision of Herbert Marcuse, inevitably attributed the power to deeply affect human thought to traditional media of representation. 'Pataphysics and the Theatre of the Absurd are particularly evident cases in point of how such awareness influenced last century's cultural production.

CHUNK 8:

A commonly used example to illustrate this point is the idea of the Pegasus: having read Greek mythology or even having been exposed to its modern remediations, most people can be said to possess the mental concept of a Pegasus. Pegasus is commonly described as a mythological horse that could fly using its legendary eagle wings. In David Hume's 1748 *An Enquiry Concerning Human Understanding*, the idea of the Pegasus is presented as an idea which is impossible to be derived from empirical observation: those creatures do not exist in the actual world.

CHUNK 9:

A winged horse is, hence, a mental concept with no direct relationship with the world. The conception of the Pegasus (which Hume would label a 'complex idea') was possible in human minds precisely due to their capability to creatively combine ideas derived from empirical knowledge ('simple ideas'). The example of the Pegasus reinforces one of the assumptions at the base of this study: the idea of ontology as essentially a theoretical elaboration of empirical data is restricted by the human sensory and intellectual possibilities to experience the world.

CHUNK 10:

Revelatorily titled *Fictions*, Borges' most critically acclaimed book is a collection of non-interactive, literary infringements of traditional metaphysical conventions. His novels could be described, using the author's own words in *Tlön, Uqbar and Orbis Tertius*, as "[…t]he conjunction of a mirror and an encyclopedia": a deliberate and deceptive use of the possibility of the textual medium not only to embed re-presentations of the world, but also abstractions, replications and distortions of such representations. In other words, language can not only describe what is actual, but can fictionally evoke what could be possible.

CHUNK 11:

Uruguayan scholar Gonzalo Frasca noted in his 2003 essay Simulation Vs. Narration: Introduction to Ludology, that the full potential of simulation has been unleashed from its technical (textual-representational) limitations with the invention of computer. Computers grant access to worlds whose perception and interaction are characterized by objective persistence. Their ontological stability as well as the aesthetical immersion they offer in comparison to traditional media have also been recognized by theorists and philosophers as the cardinal elements of a crucial cultural shift. What computers intrinsically suggest is that the world can be interpreted as functioning as a state machine and that the present state is neither the best, the ultimate nor in any way univocal.

CHUNK 12:

Michael Heim, for example, openly identified the advent of interactive digital media as responsible for a crucial ontological event in the history of philosophy precisely because the interaction with the virtual environments they grant access to involves the whole spectrum of the processes through which humans were traditionally considered to relate to the reality outside of their consciousness. Similarly, Frasca noted that, with the advent and the cultural penetration of the digital medium, the aesthetical possibilities of simulation as well as the complexity of the systems they grant access to increased immensely and that the encounter between a simulative mindset and digital media opened a whole new horizon of possibilities.

CHUNK 13:

According to Nagel, such subjective quality implies that that the answer to the question 'what is it like to be a bat?' cannot be handled within the limitation of human metaphysics and that, consequently, no world-view can be objectified in the truth of propositions describable in human language. The impossibility to complete the objectification of alternative ontologies is not confined to perceptually alien cases like those of a bat, a whale or a mosquito, but it is

commonly experienced even between one human being and another. In the face of these limitations, Nagel decided to conclude his essay with a speculative proposal: the hypothetical possibility of closing the gap between subjective and objective knowledge from another direction than the human imaginative capabilities. Nagel envisaged the creation of an objective phenomenology that is not based on imagination, which is to say not based on subjective representations.

CHUNK 14:

Even if virtual technology cannot yet objectively reproduce the subjectivity of a bat, it does offer ways to objectively reveal previously inaccessible, modal aspects of reality. The crucial point in this understanding of the metaphysical relevance of interactive digital media content is that it prompts humans to apply their cognitive and perceptual equipment as well as their subjectivity to a context that could not be encountered in their ordinary life. As Heidegger observed, human ontology is grounded in the ontic characteristics of human subjectivity. Interactive experiences within digital media must consequently be recognized as affecting ontic aspects of the characteristic human mode of existence, and this cannot happen without ontological consequences.

CHUNK 15:

The shift towards simulation might also give philosophy the added chance of overcoming the limitations and the effects that its traditional association with books had on mental processes. Since Plato, in fact, the history of philosophy has been the history of written philosophy. One of the first advocates for a critical attitude towards the association between thinking and writing was the Austrian philosopher Ludwig Wittgenstein who was almost addicted to going to the movies and that he often used the film to illustrate his philosophical points. Similarly, twenty-first century philosophers could utilize gameplay to exemplify and test theirs. The projective and persuasive qualities of digital media already laid the foundations for a new branch of philosophy which I propose to call ‘experimental ontology’.

CHUNK 16:

Whereas the mechanicistic technology (which is what the later Heidegger mainly focuses on) aims at a rational domination of the world for the benefit of mankind, the informationistic sciences pursue the creation of new worlds. “These sciences”, wrote Jos de Mul, “transform the world into a field of virtual possibilities. Beings are regarded as recombinatorial information . […] From a *thrown* project, Dasein [the specific name Heidegger gives to the characteristical human way of being in the world] seems increasingly to become a thrown *project*.”

CHUNK 17:

Discussing the social impact of digital technology from an analogue perspective, Vilém Flusser wrote that:

> "[W]e begin to liberate ourselves from the tyranny of an alleged reality. The slavish attitude, with which we, as a subject, approach objective reality in order to master it, has to give in to a new attitude, in which we intervene in the fields of possibilities in- and outside us, in order to intentionally realize some of these possibilities. From this perspective, the new technology means that we are starting to raise ourselves from a subjectivity into a projectivity." (Vilém Flusser, 1992, P. 25)

CHUNK 18:

This is not to say, however, that digital media are or are going to be the ultimate philosophical tools or the all-encompassing climax of the modernistic will to rationally control the world. Marshall McLuhan observed that technology does not only provide advantageous enhancements of the human mental and bodily capabilities, but is also a form of self-amputation. In other words, new ways of establishing relationships with reality necessarily entail a balance between the increase in acuity of certain cognitive functions and the desensitization of others. With these effects in mind, the use of virtual technologies as philosophical tools must be pursued with the awareness that, far from being a neutral technology, computers also disclose reality in ways which are both revealing and concealing.

CHUNK 19:

"[…] Everything: but for every sensible line or accurate fact there would be millions of meaningless cacophonies, verbal farragoes, and babblings. Everything: but all the generations of mankind could pass before the dizzying shelves – shelves that obliterate the day and on which chaos lies – ever reward them with a tolerable page. […] I have tried to rescue from oblivion a subaltern poetry: the vast, contradictory library, whose vertical wilderness of books runs the incessant risk of changing into others that affirm, deny, and confuse everything like a delirious God." (Borges, The Total Library, 2001, P. 216)

CHUNK 20:

In accordance with what Ian Bogost claimed in his 2007 book 'Persuasive Games: the expressive power of video-game', I believe that video games are computational artifacts that have cultural meaning precisely due to their unique form by which they mediate their content. However, differently from Bogost, I do not understand video games as rhetorical allegories, which is to say as persuasive and expressive instruments of a language, bur rather as poetic allegories. As such, I argue that digital entertainment is characterized by a meta-linguistic heuristic potential which allows it to transcend written text as a tool to develop and disseminate philosophical ideas.

CHUNK 21:

Similarly, the game-designer presents worlds 'as in act' which have no direct or necessary connection with the world he inhabits as a biological beings. To clarify this point with a practical example, the appearance of an imaginary beast like the LOB-MEL-STER (head of a lobster, body of a camel and hind legs and tail of a lobster) in the iPad video game Gua-Le-Ni, or: The Horrendous Parade does not claim the actual existence of a real LOB-MEL-STER. Such beast, however, exists in the derivative world the game sets up and discloses. 'To play' indicates precisely the act of willingly perform under the acceptance of a metaphorical 'detour'.

CHUNK 22:

The understanding of video games as interactive allegories essentially embraces them as systems of logical and aesthetical relationships among game elements. The structure of such interconnectedness constitutes the very ontological (mediaphysical) core of video games: the game mechanics. In this study I do not simply argue that digital simulations set up interactive, allegorical worlds, but also that, specifically resorting to the poetical use of their digital allegories, they are heuristic, philosophical instruments.

CHUNK 23:

"[P]oiesis, in fact, is a play-function. It proceeds within the play-ground of the mind, in a world of its own which the mind creates for it. There, things have a different physiognomy from the one they wear in 'ordinary life', and are bound by ties other than those of logic and causality." (Johan Huizinga, 'Homo Ludens', 1955, P. 199) - It is perhaps also interesting to note that its title, *Gua-Le-Ni*, is not a combination of syllables (or animal parts) which is factually possible within the combinatorial set of the game. The title was meant, instead, as a declaration of combinatorial meaninglessness which transcends the boundaries of the virtual world where the game takes place. It was chosen to suggests that not only game elements

such as the beasts, the pages, the food items and the cubes are insignificant combinations of data, but that everything is.

10. INTERACTION APPENDIX

10.1 ACTIONS AND GESTURES

This section explains the actions and gestures that can be performed in the application *Gua-Le-Ni* and illustrates how to perform them.

10.1.1 Tapping

Tapping is done by using **one finger** to touch the *Apple iPad* surface shortly. The connected action is performed as soon as the finger leaves the surface.

If the finger moves while touching the surface, it might be interpreted as a **single-finger swipe** (see paragraph 10.2), if that action can be performed at that moment. A small feature should be, that the application recognizes a command even if it is not performed perfectly, as long as it is the most probable command given at a time. This means that a gesture that could be interpreted as a finger-swipe is interpreted as tapping if the swipe gesture can not be performed anyway (for example in the menu).

10.1.2 Single-Finger Swipe (spinning the cubes)

A **single-finger swipe** is performed by using **one finger** to touch the *iPad* surface and **slide the finger in a direction** before leaving the surface. Generally, the game should be able to distinguish swipes in four different directions (up-to-down, down-to-up, left-to-right, right-to-left). It seems to us that monitoring the speed for the swipe movements is not necessary, but it might be useful to have it (if we could) as an extra control measure for some moves (for example the move indicated below as the 'rotation by two increments).

The distance that a player has to slide the finger should be at least 1 cm in distance to ensure that the direction can be processed accurately. Inaccurate swipes (diagonally on the surface) should be interpreted by the game. For example, a swipe that goes from left-down to right-up would be interpreted as down-to-up swipe, if the angle is closer to a down-to-up gesture than it is to a left-to-right gesture.

10.1.3 Two-Finger Drag (moving the cubes)

A **two-finger drag** is performed by using **two fingers** touching the *iPad* surface and **moving the fingers on the surface** without leaving the surface. **Velocity** is monitored by following the finger motion. The drag stops as soon as the finger leaves the surface.

This gesture is initiated by touch and should therefore follow the motion as soon as it is activated. It can also be activated directly from a two-finger cross-swipe (further described below) - allowing the player to go freely from a two-finger drag to a two-finger cross-swipe and vice-versa, as long as two fingers keep touching the surface.

10.2 MENU CONTROLS

- **Accessing an option / mode:** Tapping on the paper-slip.
- **Turning a page (Preface section):** Single-finger or Two-finger swipe on the page curl (if that were not possible in real time, maybe we should also consider making this into a tap-controlled action).

10.3 CUBES CONTROLS

As stated in chapter 2, the player begins the game with two cubes: a DARK RED cube and a YELLOW cube. The player can interact with the cubes using specific gestures depending on which action should be performed. The four possible actions are:

- **10.3.1 - Moving a cube**
- **10.3.2 - Spinning a cube**
- **10.3.3 - Rotating a cube** **(z axis)**

10.3.1 Moving a Cube

To move a cube, the player has to perform a two-finger drag, placing two fingers on a cube and dragging it through the cube area. This gesture causes the selected cube to turn semi-transparent and to hover slightly (about half its own height). This also means that only one cube can be positioned at the same time. While hovering, the cube can be moved freely left or right. Dragging a cube vertically is not possible in *Gua-Le-Ni*. Cubes on the cube area move aside to free space between them, if a cube is hovered between two cubes.

If the player releases the gesture between two cubes, the formerly dragged cube snaps back to the cube area, with possible neighbors snapping on it under a prominent ‘click’ sound. If the player releases a cube at the most right or most left side (depending on where the cube is dragged to) - or even as far as possible from the other cubes away - the cube snaps to the most left or most right position. Upon release, the cube is not semi-transparent anymore.

It would be desirable if the movement of the cube could hold some translational inertia. It could, perhaps, render it possible for players to ‘hurl’ cubes from one end of the cube area to the other without physically dragging them. This would allow the players to perform quick gestures which can lead to automated endings, perhaps enhancing the efficiency and the depth of control achievable when maneuvering the cubes themselves.

10.3.2 Spinning a cube

Rotation of a cube is performed through a one-finger swipe on the cube. The direction of the motion dedicated the direction in which the cube rotates. With a swipe from left to right, the cube turns right and vice-versa. A swipe from down to up rotates the cube

up. Generally, the game tries to translate a swipe into either a vertical or horizontal motion. Every rotation is performed on the spot - which means that the rotated cube does not “roll” to a new position. Neighboring cubes are pushed aside shortly by the rotation and snap immediately back - highlighted by a characteristic ‘click’ sound.

Cubes can also be rotated by two increments at once. This can be done through a relatively long swipe motion. If the finger travels at least 10 cm on the surface while swiping into the desired rotation direction, the cube rotates by two increments. Any shorter distance causes the cube to rotate by a single increment.

10.3.3 Rotating a Cube (Z axis)

Rotating a cube is another action which requires the player to resort to a two-finger gesture. The essential behaviour I envisage for this action involves spinning two fingers relatively to one another once the cube was lifted. Essentially I’d consider it ideal if it started from the position of ‘hovering’ which allows the dragging of the cubes themselves (as observed in the previous sub-paragraph).

Cubes will only be able to snap, when spun on their z axis, on an orthogonal ninety degrees grid. I would like the code to let the player perform rotations only when a small minimal amount of degrees of rotation of one finger relatively to the other is recognized. Probably as little as 15° could be enough to trigger a ninety degrees rotation in the same direction.

Empirically, we determined that a factor of 1.5 between the actual rotations of the fingers of the player and the in-game rotation of the cube would be desirable.

As mentioned for the movement of the cubes in paragraph 10.3.1, it would be desirable if the rotation of the cube on the z-axis also had a little of rotational inertia once the gesture is terminated. It is expectable that, in this case also, the inertia would allow the players to perform quick gestures which can lead to automated endings, perhaps enhancing the efficiency and the depth of control achievable when maneuvering the cubes themselves.

10.4 IN-GAME MEASUREMENTS

This section lists the measurements for in-game elements, illustrated in descriptive images.

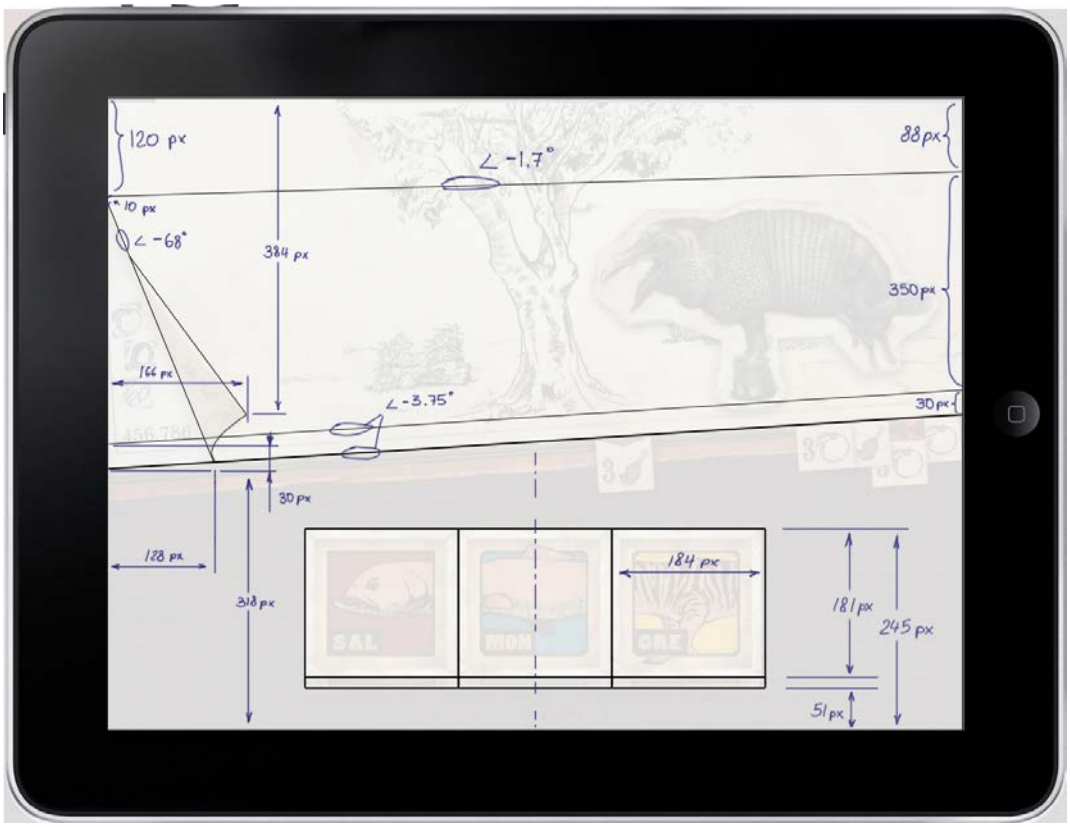

Figure 10A: In-Game interface measurements (from down to up) for the cube position & measurements, the border separating action area and cube area, the walking line for animals and the sky-line for UFOs and birds.

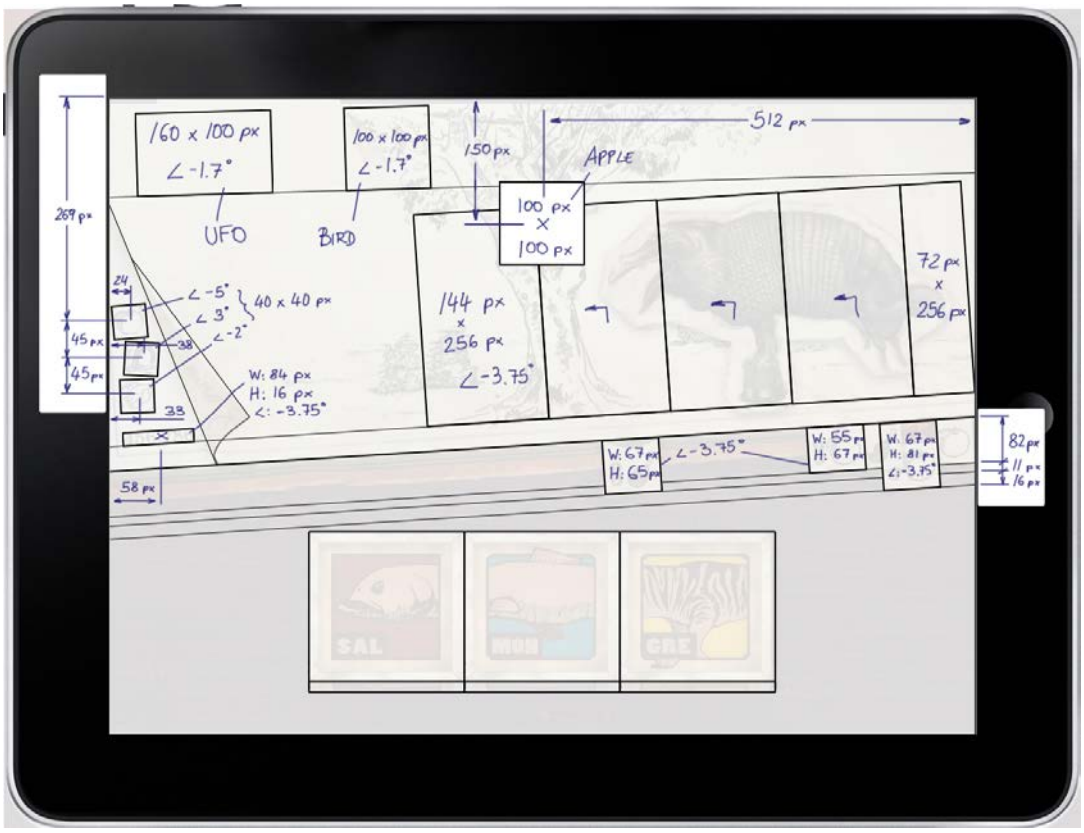

Figure 10B: In-Game interface measurements for edge-curl elements, UFO, bird, apple, the beast parts and beast labels.

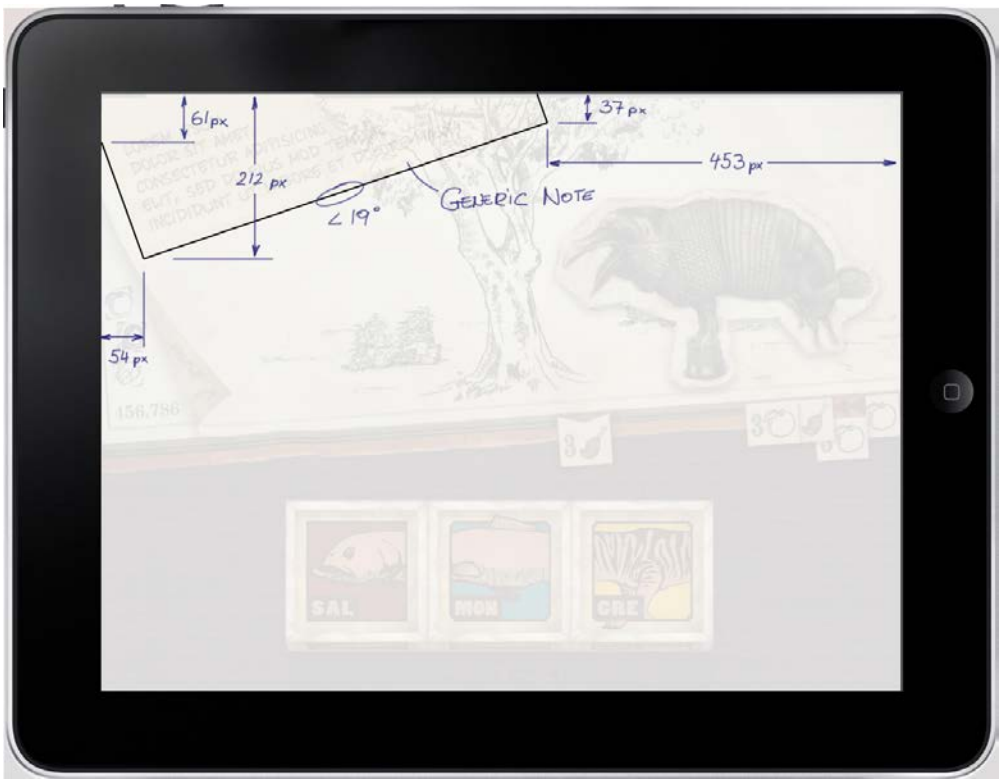

Figure 10C: In-Game interface measurements for generic in-game messages.

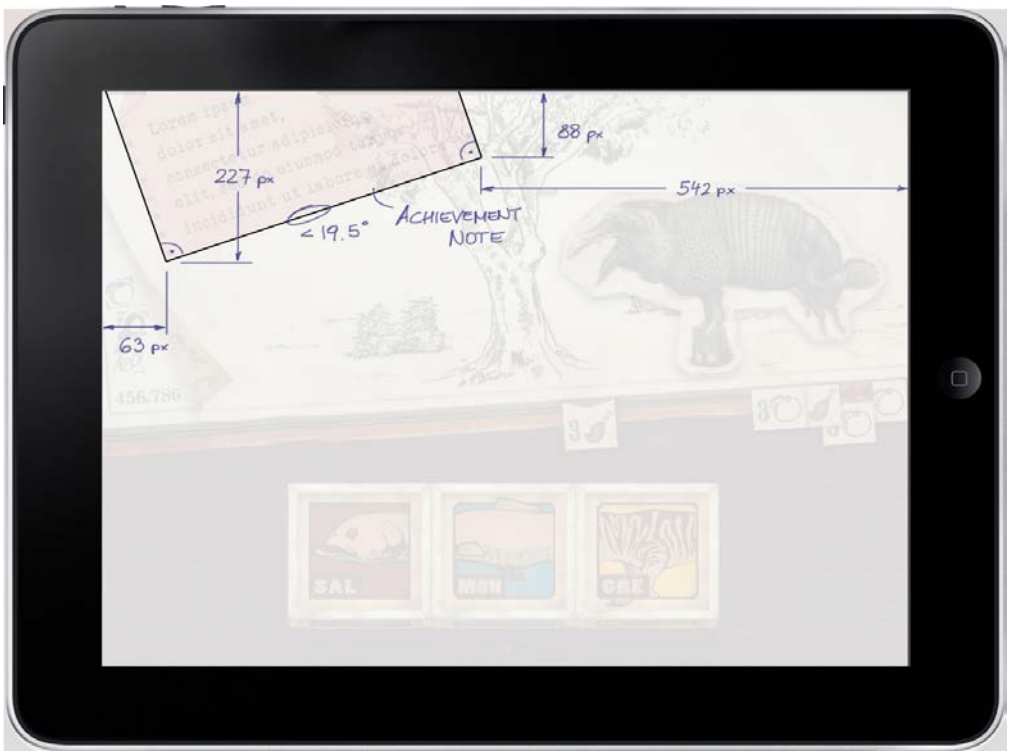

Figure 10D: In-Game interface measurements for achievement in-game messages.

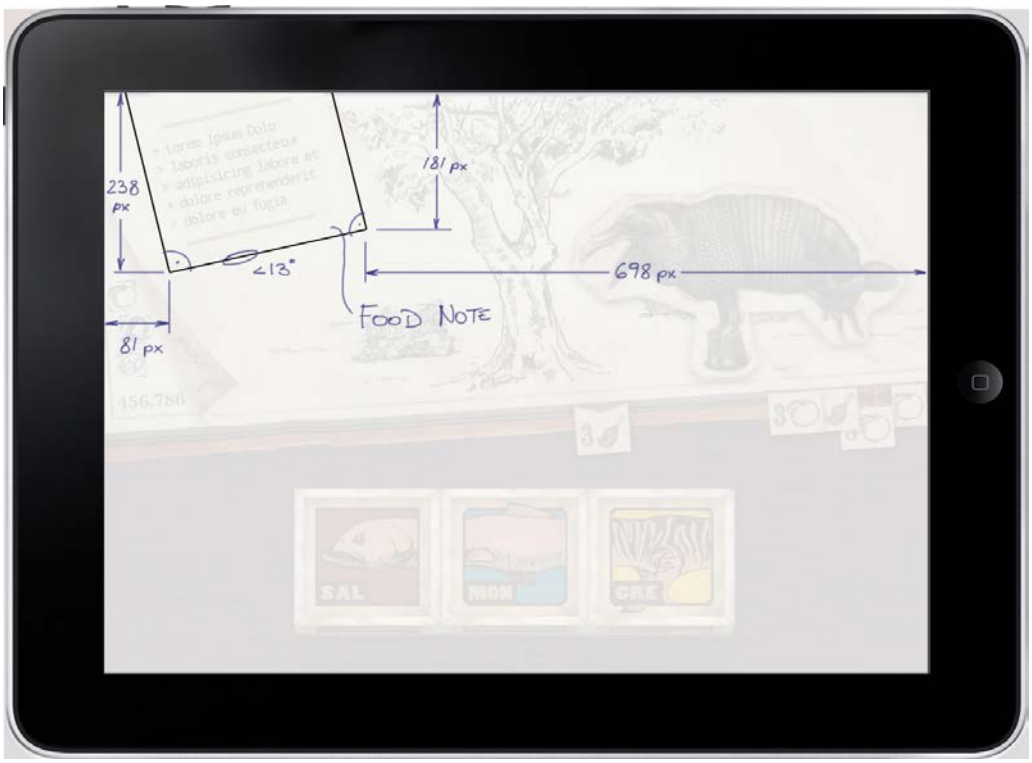

Figure 10E: In-Game interface measurements for food-related in-game messages.

10.5 OTHER IN-GAME CONTROLS

In this section the interactive elements of the game are listed together with their interactive behaviour. Since the player controls the game directly through touch, the controls are usually substituting gestures that suggest interaction with the interface as if it would physically exist. Similar physical actions are therefore performed through the same gestures.

It should be noted that, in case of overlaying control possibilities (for example having an UFO on screen that is overlay-ed by an in-game message), the player will always interact with the visible (the highest layered element on screen) object.

10.5.1 Pause Option

Pausing the game: Turning the edge-curl with a one-finger or two-finger swipe. The game shows the page which is ideally BELOW the one where the game is played on. It is a mostly textual page (for the textual content, please refer to chapter 09).

Returning from pause: Turning back the page at the right side of the screen with a one-finger or two-finger swipe. The animals will have to start walking again only when the page is be fully in its original position.

10.5.3 UFO Interaction

Destroying the UFO: Tap on the U.F.O. (the U.F.O. cracks in two like a metallic egg releasing an alien slime).

Dragging the Alien Slime: Keep a finger on the Alien Slime on the ground and drag it around. Release the slime anywhere in the playing field to let it drop again (as if it were falling from the cracked UFO). An Alien Slime can also be fed to a beast directly if dropped on an animal's head.

10.5.4 Bluebird Interaction

Turn a bluebird into a dead bird: Tap on the bluebird while it is flying by.

Dragging the dead bluebird: Keep a finger on the Dead Bird on the ground and drag it around. Release the dead bird anywhere in the playing field to let it drop again (as if it were falling from the sky). A dead bird can also be fed to a beast directly if dropped on a carnivore animal's head.

10.5.5 Apple Interaction

Destroy an apple flower: Tap on the apple flower.

Pick an apple: Tap on the apple.

Dragging the Apple: Keep a finger on the Apple and drag it around. Release the apple anywhere in the playing field to let it drop again (as if it were falling from the tree). An apple can also be fed to a beast directly if dropped on a herbivore animal's head.

THE GAME DOES NOT REQUIRE A TURNING RECOGNITION SYSTEM NOR THE POSSIBILITY TO PERSONALIZE THE GAME'S CONTROL SCHEME.

11. ACHIEVEMENTS LIST

Every game to be published on an Apple platform can distribute 1000 achievement points among the different forms of in-game success the developers want to award the players' behavior with. Those points serve the pretty autoerotic purpose of having players compete on quantity of general achievement points collected as a measure of their expertise, individual value, status.

In Gua-Le-Ni, or rather its first release, I would like to distribute 900 of the 1000 points, leaving some space for further editions, new game modes and expansions. The achievements I intend to award are the following (together with the respective number of achievement points):

TWO-OF-FOUR! (the player correctly catalogued two beasts of four modules each during the same game in "non-fiction" section): 50 achievement points

NEW HIGHSCORE! (the player surpassed the initial high-score of 2400 points for a single game in "non-fiction" section): 50 achievement points

THE BLACK PLAGUE! (the player got to play with the legendary and dreaded black cube): 50 achievement points

THIRTY THOUSAND FEET! (the player scored more than thirty thousand points in the 'non-fiction' section): 75 achievement points

JACKPOT! (the player completed a food combination of three-of-a-kind): 50 achievement points

TONY TOUGH AWARD! (the player fed a pumpkin to a herbivore beast): 50 achievement points

DAVID HUME AWARD! (the player scored more than ten thousand points in the 'non-fiction' section): 50 achievement points

TASTES LIKE BUTT-ER! (the player fed a butt to a carnivore beast): 50 achievement points

STARFISH! (the player reviewed Gua-Le-Ni on iTunes, yay!)

POODLE + (the player posted a note about the Horrendous Parade on Google+) 25 achievement points

BIRD IS THE WORD! (the player posted a note about the Horrendous Parade on Twitter) 25 achievement points

FLEECEBOOK! (the player posted a note about the Horrendous Parade on Twitter) 25 achievement points

GAMEY CENTER! (the player posted hi-scores on the Apple Game Center) 25 achievement points

A BEAST WITH A THOUSAND HEADS! (the player correctly catalogued a specimen worth more than 1000 points) 75 achievement points

OZYMANDIAS! (the player completed the poem in the POETRY MODE) 100 achievement points

NAOTO DATE AWARD! (the player correctly re-created a TI-GER-MAN in the POETRY MODE) 50 achievement points

A couple of extra pages containing the achievements collected by the player, a large icon and a detailed description of what the achievements consisted of will need to be accessible from the 'my notes' page, which will function as a sort of hub for player-related information. On the game's mantis page I specified that my preference would be that of having two pages dedicated to the achievements, each containing nine achievement in a matrix of three by three.

12. ADDENDUM

In this section of the design document I am listing the new sentences that were added after the release of the game on November the 28th 2011 in order to integrate certain group of phrases, the tutorials and embrace a couple of gameplay changes.

NEW CANNIBALISM AND DOUBLE CANNIBALISM:
N: (upon cannibalism) Uh-oh… CANNIBALISM!
N: (upon the entrance of the black cube) Great Alexander von Humboldt, the black cube!
N: Was it really necessary to feed a beast its own arse… More than once?

AFTER THE END OF TUTORIAL NUMBER 1 (as a sort of greeting upon opening the book again):
N: Well I'll be blown! Two new bookmarks! Tap on the one corresponding to the book section that you wish to explore!

DURING THE FICTION MODE:
N: Getting bored with it?! Access some real taxonomic challenges by categorizing four beasts of three modules each! Come on, jump to it!

DURING TUTORIAL NUMBER 2:
N: …Their purpose is to show whether the beast is a herbivore or a carnivore and how many animal parts it is composed of! By looking at them, I know that the next beast will be a herbivore of three modules and the subsequent three will be carnivores! … I think.
(to complete tutorial n.2)
[we will need to remove the one that should follow this one: "Oh, here comes another br… Beast!"]

FILLERS:

N: Move those bloody hands, come on!
N: Quicker with those phalanges, quick quick!
N: Moving, moving, dancing fingers!
N: Ah-uhm… Indeed! …What?!
N: Ahhh! Uhm… Hrrrm… Indeed, yes! What?!
N: What? Ah, hrrrmmm… Indeed!
N: Get those bloody hands moving!
N: Barley sugar! Mhhh… (sucking a candy) These were bloody good! Thank you… (still sucking)
N: My throat's killing me! (sucking a candy) Ah, that's better! Uhm, where was I?
N: Has anyone seen my spectacles?
N: Has anyone ever played Cricket?
N: Has anyone got an indigestion tablet? I've got a bit of wind.

BEFORE THE TREE:
N: Wasn't that plain marvelous?!
N: Dreadfully well done!
N: That was very well done!
N: Bloody marvelous!

VERY COMPLEX BEASTS:
N: Well, I be blown!
N: Did you see the legs on that beast? Whoa, legs akimbo!
N: Owh, my eyes!

WRONG FOOD:
N: That was a carnivore! They don't eat things like… That.
N: Wrong food! That was a carnivore!
N: That was a herbivore! They don't eat dead things.
N: WRONG! Wrong food! That was a herbivore!

ACHIEVEMENTS:
N: LOB-STER-STER-STER!
N: Well, I'll be a monkey's uncle!

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BIOGRAPHY

Stefano Gualeni is first and foremost an individual human being. When asked to talk about himself in third person, he customarily starts by stating that he was born on the shores of a northern Italian lake in 1978 and that he released his first commercial video game at the age of sixteen.

Stefano obtained his *Laurea Magistralis* in Architecture *Cum Laude* in 2004 at the Politecnico di Milano (Italy). In his final thesis, developed in Mexico and supported by ITESM (Tec de Monterrey, Campus Ciudad de Mexico), he explored the speculative reversal of Mexican archaeoastronomy as a postmodern architectural design model. He published his first commercial video game in 1995 (*Mikro Mortal Tennis* for the Commodore Amiga500) and he kept developing video games all through his academic career.

Since 2006 Stefano has been lecturing and researching in game design, game studies and game user research at NHTV Breda University of Applied Sciences (The Netherlands). He obtained his Masters of Arts in 2008 at the Utrecht School of the Arts (The Netherlands). Since 2009 he has been a PhD candidate at the Erasmus University of Rotterdam, exploring the philosophical and ontological effects of interactive digital media both in terms of a postphenomenological reflection on simulations and in his game design practice.

When time allows, he keeps pursuing game design and development with the instrumental objective of crafting playable experiences which materialize philosophical notions, problems and hypotheses. He also often works as a columnist and avidly plays Bridge at every possible occasion.

ACADEMIC PUBLICATIONS DERIVED FROM THE PRESENT DISSERTATION:

1. **Gualeni, Stefano. 2013. 'Augmented Ontologies; or, How to Philosophize with a Digital Hammer'. Journal article published in Springer's 'Philosophy of Technology'. 2013. Edited by Luciano Floridi, Vol. 26, N. 2, ISSN 2210-5433, Philos. Technol., DOI 10.1007/s13347-013-0123-x** - The 'digital hammer' is the most extensive publication directly derived from the present dissertation. Summarizing the core arguments of my doctoral work, it connects and refashions the theoretical positions and claims that, working as the spine of my argument, were presented in chapter 01 and further elaborated in chapters 04 and 06. In this article, I articulate the specific claim according to which, working with (and within) the flexible and programmable worlds afforded by computers grants philosophers the possibility to objectively craft, experience and divulge their claims, ideas and hypotheses within simulated environments. Through the interactive mediation of digital simulations, their work is no longer restrictively experienced through the subjective filters of the individual capabilities for abstraction and imagination.

2. **Caruso G., Fassone R., Ferri G., Gualeni S., Salvador M. 2013. 'G|A|M|E on games. The meta-panel'. Proceedings of DiGRA 2013 Conference: DeFragging Game Studies in Atlanta (GA), U.S.A. August the 28 – 29, 2013. -** For my contribution to a panel about self-reflexivity and the possibilities offered by video games as critical tools, I presented *Necessary Evil*, a free, critical web-game I designed in 2013 specifically for the DiGRA conference and that I mention in the third chapter of the present text (cfr. chapter 3, note 2). *Necessary Evil* problematizes and demystifies the unquestioned (subjective) idealistic way in which video games are designed and developed. The game pursues its critical goal primally giving the player control over a trivial creature that is trapped in a dungeon and is deprived of any meaningful interactive possibilities. This is meant to make the player

experience feeling marginal and to reveal what a virtual world feels like, once it is designed around someone else's perceptions and desires.

3. **Gualeni, Stefano. 2012. 'La Voce Del Sonnambulismo Contemporaneo' (The Voice of Contemporary Somnambulism). Article published in the critical section of the first issue of 'G|A|M|E – The Italian Journal of Game Studies', May the 29th 2012. -** Written in my native language for the Italian Journal of Game Studies, *The Voice of Contemporary Somnambulism* borrows its title and its theoretical framework from a notorious passage of the introduction to Marshall McLuhan's 1964 book *Understanding Media: The Extensions of Man*. In this critical article, the anthropological and social effects of digital media (as presented in my dissertation) are utilized instrumentally to cast light on the hypocritical position held by the video games industry and by the 'proceduralistic' orientation in the context of game studies in relation to violence in video games.

4. **Gualeni, S., Janssen, D., Calvi, L., 2012. 'How psychophysiology can aid the design process of casual games: A tale of stress, facial muscles and paper beasts'. ACM conference paper on biometry-aided casual game design presented at the 7th 'Foundation of Digital Games Conference' in Rayleigh (NC), United States, May 28 – 30, 2012. -** This paper, presented in the academic context of Human Computer Interaction and Game User Research conferences, summarize the methodologies, the insights and the game design guidelines derived from the application of biometric, bodily analysis of interactive digital experiences. The original research proposal and the humanistic objectives of the research that I initiated and pursued in the field of psychophysiology at NHTV Breda University of Applied Sciences were openly inspired by De Mul's re-thematization of Hemuth Plessner's philosophical anthropology in the age of digital media. Three extra conference papers, characterized by a more specifically technical and methodological angle, are related to this fourth. These works are:

    a. Gómez Maureira, M., Janssen, D., Gualeni, S., Westerlaken, M. 2013. 'Comparing Game User Research Methodologies for the Improvement of Level Design in a 2-D Platformer'. ACE 2013 Conference (Springer Lecture Notes in Computer Science) in Twente, The Netherlands. November 13 – 15, 2013.

    b. Janssen, D., Calvi, L., Gualeni, S., 2013. 'A framework for biometric playtesting of games'. Short paper on a technical framework aimed at optimizing the gathering of biometric data presented at the 8th 'Foundation of Digital Games Conference' (ACM) in Heraklion (Crete), Greece, May 14 – 17, 2013.

    c. Gualeni, S., Janssen, D., Calvi, L., 2012. 'Psychophysiology and casual games: always a good match?' Full conference paper on biometry-aided casual game design presented at the '2012 ECREA Conference' in Istanbul, Turkey, October the 24 – 27, 2012.

5. **Gualeni, Stefano. 2011. 'What is it Like to Be a (Digital) Bat?' Conference paper published in the proceedings of the '2011 Philosophy of Computer Games Conference', Panteion University of Athens, Greece, 6-9 April 2011. –** *What is it Like to Be a (Digital) Bat?* is a shorter and embryonic version of the *Digital Hammer* article (the first article in this list). The paper restructured early themes of the present dissertation in order to align with one of the themes discussed in the 2011 *Philosophy of Computer Games* conference, namely that of the relationship between in-game identity and immersion.

INDUSTRY PUBLICATIONS DERIVED FROM THE PRESENT DISSERTATION:

- **Gualeni, S. 2013. 'Self-reflexive video games as playable critical thought'. Article featured on Gamasutra.com.** This short article for the prominent game-development website Gamasutra.com focused on how the instrumental and often uncouth gameplay serves the goal of bringing into question and demystifying aspects of the way in which we currently understand and design interactive digital experiences. This article was issued on October the 19th 2013 (http://www.gamasutra.com/blogs/StefanoGualeni/20131029/202847/SELFREFLEXIVE_VIDEO_GAMES_AS_PLAYABLE_CRITICAL_THOUGHT.php)

- **Gualeni, S. 2012. 'The Case for Casual Biometrics'. Industry-oriented four-page feature for Gamasutra.com.** This article for the prominent game-development website Gamasutra.com was concerned with the practicalities and the desirability of a biometric approach to the design of independent video games. This article was issued on December the 20th 2012 (http://www.gamasutra.com/view/feature/183887/the_case_for_casual_biometrics.php)

- **Gualeni, S. 2012. 'Lie Detectors and Paper Beasts: A Casual Tale of Biometric Design'.** Reflecting on my experience with the biometric tuning of Gua-Le-Ni, this industry-oriented four-page article for the Summer 2012 issue of 'Casual Connect Magazine' discussed the merits and the shortcomings of the use of biometry in the context of casual video game development (http://casualconnect.org/mag/summer2012/CasCon_Sumr2012_FINAL.pdf)

- **Gualeni, S. (2010-2012). 'Notes from the Otherground'.** 'Notes from the Otherground' is a series of columns looking at game design as applied philosophy and/or as the substrate for philosophical reflection on the Dutch online industry magazine CONTROL (www.control-online.nl).

PHILOSOPHICAL VIDEO GAMES DESIGNED IN RELATION WITH THIS TEXT:

- Gualeni, Dini, Gómez Maureira, Sánchez Sarquiz. 2013. *Necessary Evil* (video game). Windows. The game is freely available online at http://evil.gua-le-ni.com (the game released on August the 27th, 2013).

- Double Jungle S.a.s. 2011 – 2013. *Gua-Le-Ni; or, The Horrendous Parade* (video game). iPad and iPhone. More information on the game can be found online at www.gua-le-ni.com (the game was released on November the 28th, 2011).

- TEAM UBIK. 2010. *EXP* (video game). Windows.

- Technically Finished. 2009. *Haerfest* (video game). Windows.

SUMMARY (ENGLISH)

Through the lens of classical phenomenology, the cultural role of technology is understood as that of revealing dimensions and qualities of reality that could not be observed or experienced without its intercession. In other words, technologies frame world-views and disclose new worlds. Elaborating on the phenomenological tradition and inspired by Martin Heidegger's existential phenomenology and his pioneering work in the field of philosophy of technology, this dissertation focuses on interactive virtual worlds as disclosed by digital simulations and video games. In particular, it structures an account of the effects that such artificial phenomenologies have on human kinds of ontologies.

The objectives of my study are those of both

- assessing the expressive potential of interactive digital simulations from a postphenomenological framework, and

- complementing the current horizons of philosophy of technology, media studies and game studies with the largely overlooked perspective of digital mediation as ontological instruments as well as mediators of philosophical thought. Digital simulations are recognized as technologies capable of materializing alternative phenomenologies and new ways of interactively understand causation and they can pragmatically disclose philosophical notions, hypotheses and experiments as well as give raise to new questions that could only emerge and be experienced in those virtual contexts.

In line with the theoretical framework of reference, the term 'ontology' is used to indicate, in this dissertation, the rationalization of certain relationships that are constituted between a being and a world. This understanding of 'ontology' presupposed an inextricable engagement between beings and worlds, a relationship which is always characterized by biological as well as historical dimensions. Closely following the path laid by Heidegger, the term 'metaphysics' is, instead, specifically utilized to indicate a family of world-views that ensues from the establishment of a theoretical standpoint. From Heidegger's perspective, metaphysics is the very, perverted pursuit of objective truth that went largely overseen in the methods and goals of Western thought and is a defective heritage that must be 'overcome'.

The inspiration derived from Heidegger's work is evident in several components of my study, among which – most notably – lexical ones as well as those related to his overarching philosophical aim of 'overcoming' the unsatisfactorily limited perspectives offered by the Western tradition of though. When describing the social and cognitive effects of the exposition to interactive virtual worlds, for example, I refrain from referring to them as ruptures, revolution or from using paradigm-breaking expressions. Instead, terms like 'alteration', 'shift' or 'overcoming' are the ones that map the understanding of the ontological effects that I recognized in the progressive diffusion of interactive, digital mediation in social practices. The term 'overcoming', in particular, is utilized in accord with Heidegger's embracing of the concept, which is not to be understood in the dialectical meaning of the German term *Überwindung* (surpassing) but must be interpreted in the nuanced conjunction of two other terms: *Andenken* (rememoration) and *Verwindung* (distortion, twisting, incorporation).

How can the 'overcoming' of the traditional limitations of metaphysical thought be pursued, according to Heidegger? The early Heidegger recognized a possibility for salvation in a regression to the pre-Socratic pursuit of philosophical truth. In two of his later writings, instead, he suggested

that the 'overcoming' of the metaphysical horizon of Western thought could be actualized (if at all) through the apex of metaphysics itself: technology.

Inspired by several aspects of the early phase of Heidegger's thought and by the openness and the reflections on technology of his later work, **my dissertation chiefly understands digital mediation as an ontological instrument.** Embracing such position, my work does not propose an understanding of humans as beings who will ever have the possibility to 'liberate' themselves from their characteristic finitude or their fundamental limitations to develop and structure thought. It however understands this particular moment in the process of Western civilization as one in which human projectivity, their innate tendency to try to overcome their limits and supplement their finitude, is the dominant background upon which human beings and technology are mutually constitutive in their fundamental interrelation.

The fundamental question at the basis of this research was, consequentially, enunciated as follows: **"how can digitally mediated simulation supplement human beings in 'overcoming' the horizon of their traditional (pre-digital) ontologies?"**

From the outlined perspective, it should be evident that the 'overcoming' of traditional kinds of human ontologies through the use of any technologies (embraced as a projective ontological tools) could never be understood as a complete and definitive 'abandonment' of our biological heritage and philosophical traditions, but rather as *'Andenken* and *Verwindung'*: as "a going-beyond that is both an acceptance (or 'resignation') and a 'deepening'." (Vattimo, 1991, xxvi) In particular, interactive, digital simulations are recognized as intrinsically affording the 'overcoming' of two specific aspects inherent in being humans that traditionally determined the way in which they structured and elaborated ontologies:

1. Their customary and exclusive engagement with the world commonly indexed as 'actual'. Digital simulations are recognized as artefacts capable of granting access to perceptually stable, self-changing and interactively intelligible virtual worlds. Such worlds are, in general, causally and spatio-temporally independent from those that humans share as biological creatures, although depending on it for their existence in what could be largely defined as a parental relationship. Working with (and within) the flexible and programmable worlds afforded by computers, twenty-first century philosophers can objectively craft, experience and divulge ontological alternatives as well as philosophical claims within simulated environments. Presented as virtual experiences, philosophical concepts and alternative phenomenologies cannot only be accessed without the mediation of subjective imagination, but take a novel projective dimension which I propose to call 'augmented ontology'.

2. The specific structure of their 'positionality'. Adapting the anthropological perspectives offered by Helmuth Plessner's theory of 'positionality' to the age of digital technologies, interactive digital simulations are understood as capable of enhancing and expanding the native *body schemas* of human beings with supplementary, virtual *body schemas*. As a corollary of this approach, the proposed perspective to philosophy of technology opened the way to (and was complemented by) the structuring of a phenomenological account of biometry in relation to interactive, digital experiences.

Allowing for the transcendence of such fundamental aspects of how human kinds of ontologies were pre-digitally developed and structured, the interactive experiences of virtual worlds disclosed by digitally mediated simulations are understood as the contexts where a new, projectual humanism is already arising. In other words, I recognize computers as media capable

of ‘overcoming’ the constraints and the effects of written text as the dominant form of mediation for the development and the dissemination of thought.

In his 1986 book *Experimental Phenomenology*, Don Ihde wrote that “[w]ithout entering into the doing, the basic thrust and import of phenomenology is likely to be misunderstood at the least or missed at the most.” (Ihde, 1986, 14) In agreement with Ihde and firmly believing that the work of a digital humanist is necessarily interdisciplinary and involved in practical ‘doings’, I developed ‘the question concerning digital technology and projectual humanism’ and elaborated an answer to it in a way that is not purely speculative, but is also experiential and generative. The material activity of ‘doing philosophy’ that I propose in my study involves, in fact, designing and developing digital interactive experiences (mostly in the forms of video games) and using such experiences for three interrelated pursuits: as ontological instruments, as new media to disclose and negotiate philosophical ideas and as a vehicle to understand the concept of incorporation in virtual worlds.

Two are the essential dimensions in which my work was involved with some form of *praxis* and materialized through ‘doing’:

1. my activity as a video game designer and video game developer, through which I created several philosophical games (commercial as well as experimental) aimed at making certain notions playable and interactively disclose alternative world views, and

2. the development of a postphenomenological approach to biometrically-aided design which led to the grant-funded launch of the applied research project *BD4CG - Biometric Design for Casual Games* in collaboration with the University of Antwerp, Belgium.

The practical outcomes of the activities summarized above as well as several of the theoretical elaborations contained in my dissertation were published in academic journals, presented at academic or industry conferences and were made available online both in their textual and in their interactive, ludic form. A complete list of published works, video games and articles derived from this study is available in the section of this text dedicated to my biography.

SAMENVATTING (NEDERLANDS)

Door een klassiek fenomenologische bril bezien, ligt de culturele rol van technologie in het onthullen van eigenschappen en dimensies van de realiteit, die zonder haar bemiddeling niet gezien of ervaren zouden kunnen worden. Technologieën stellen met andere woorden nieuwe werelden open en vormen tevens een kader voor onze visies op de wereld. Dit proefschrift richt zich op interactieve virtuele werelden zoals deze tot uitdrukking komen in digitale simulaties en computerspellen. Mijn onderzoek is geïnspireerd door Martin Heideggers existentiële fenomenologie en zijn baanbrekende werk in het veld van techniekfilosofie en bouwt voort op de fenomenologische traditie. Meer in het bijzonder biedt dit proefschrift een analyse van en beschouwing op de effecten die dergelijke kunstmatige werelden hebben op menselijke ontologieën.

De doelstellingen van mijn onderzoek zijn

- het vaststellen van de expressieve potentie van interactieve digitale simulaties vanuit een post-fenomenologisch kader en

- het aanvullen van de huidige horizonnen van techniekfilosofie, mediastudies en gamewetenschap met de – tot op heden vaak onderbelicht gebleven – opvatting van digitale mediatie als ontologisch instrument en medium voor filosofisch denken. Het gaat daarbij om technologieën die in staat zijn om een alternatieve fenomenologie te realiseren, nieuwe wijzen van een interactief te ervaren causaliteit op te roepen en nieuwe filosofische concepten, hypotheses en experimenten te bewerkstelligen, die enkel in deze virtuele contexten voorkomen en ervaarbaar zijn.

In lijn met het geschetste theoretische kader, wordt de term ‘ontologie’ in dit proefschrift gebruikt om de rationalisatie van bepaalde relaties – die vormkrijgen tussen een zijnde en een wereld – aan te duiden. Deze opvatting van ‘ontologie’ veronderstelt een onoverkomelijke band tussen een zijnde en een wereld, een relatie die altijd wordt gekarakteriseerd door zowel biologische als historische aspecten. In navolging van Heidegger wordt de term ‘metafysica’ specifiek gebruikt om een familie van wereldbeelden te duiden, die voortkomt uit een theoretische instelling. Vanuit Heideggers perspectief bezien is de metafysica te begrijpen als een ontaard najagen van objectieve waarheid, hetgeen echter in de dominante methodes en doelen van het westerse denken werd miskend en nu een gebrekkige erfenis vormt die te boven moet worden gekomen.

De inspiratie die Heideggers werk voor mij vormt, is terug te zien in diverse elementen van mijn onderzoek. Dit is evident in het gehanteerde vocabulaire, maar ook in mijn streven om de onbevredigend beperkte perspectieven van de westerse denktraditie te boven te komen. Wanneer ik bijvoorbeeld de sociale en cognitieve effecten van een blootstelling aan interactieve virtuele werelden beschrijf, doe ik dat niet in termen van ‘breuken’, ‘revoluties’ of paradigmawisselingen. In plaats daarvan gebruik ik termen als ‘verandering’, ‘verschuiving’ en ‘te boven komen’ om de ontologische effecten – zoals ik deze waarneem in de voortgaande verspreiding van interactieve, digitale mediaties in sociale praktijken – te omschrijven. De term ‘te boven komen’ wordt toegepast in overeenkomst met Heidegger’s gebruik van dit concept en dient niet begrepen te worden in de dialectische betekenis van de Duitse term *Überwindung* (overwinning), maar als een genuanceerde combinatie van twee andere begrippen: *Andenken* (aandenken) en *Verwinding* (vervorming, verdraaiing, inlijving).

Hoe kan het ‘te boven komen’ van de traditionele beperkingen van de metafysische denkwijze volgens Heidegger worden bewerkstelligd? De vroege Heidegger meende in een teruggang naar de

pre-Socratische zoektocht naar filosofische waarheid de mogelijkheid van verlossing te herkennen. In zijn latere werken suggereert hij echter dat het 'te boven komen' van de metafysische horizon van het westerse denken geactualiseerd zou kunnen worden (indien dit al mogelijk is) in het toppunt van de metafysica: de technologie.

Geïnspireerd door verschillende aspecten van Heideggers vroege periode en door de openheid en de reflecties op technologie in zijn latere werk, **benadert mijn proefschrift digitale mediatie voornamelijk als een ontologisch instrument**. Vanuit dit standpunt worden mensen overigens niet opgevat als zijnden die ooit de mogelijkheid zullen hebben om zich te 'bevrijden' van hun kenmerkende eindigheid, hun fundamentele beperking in het ontwikkelen en structureren van het denken. Dit specifieke moment in de ontwikkeling van westerse civilisatie wordt evenwel begrepen als een periode waarin het menselijke ontwerpen – de aangeboren neiging om onze grenzen te overstijgen en onze eindigheid uit te stellen – de dominante achtergrond vormt voor de wederzijdse constitutie van mensen en technologie in hun afhankelijkheidsrelatie.

De fundamentele vraag die aan dit onderzoek ten grondslag ligt, is bijgevolge als volgt geformuleerd: **"Hoe kunnen digitaal gemedieerde simulaties de mens helpen de horizon van hun traditionele (pre-digitale) ontologieën 'te boven te komen' ?"**

Vanuit het geschetste perspectief zou het duidelijk moeten zijn dat het 'te boven komen' van traditionele menselijke ontologieën door middel van het gebruik van enige vorm van technologie (opgevat als ontwerpend ontologisch instrument), nooit begrepen dient te worden als het geheel en definitief 'afstand doen' van onze biologische erfenis en filosofische tradities. We moeten dit eerder opvatten als een '*Andenken-Verwinding'*: "a going-beyond that is both an acceptance (or 'resignation') and a 'deepening'." (Vattimo, 1991, xxvi). Meer in het bijzonder kunnen we stellen dat interactieve, digitale simulaties het mogelijk maken om de volgende twee specifieke aspecten die eigen zijn aan het menselijk bestaan (en die van oudsher de manier bepalen waarop de ontologie wordt gestructureerd en uitgebreid) 'te boven te komen':

1. **Onze alledaagse en exclusieve betrokkenheid op de wereld, die als het 'werkelijke' te omschrijven valt.**
   Digitale simulaties worden begrepen als artefacten die toegang verlenen tot virtuele werelden die we door interactie begrijpen en die zowel zelfveranderlijk als in onze waarneming stabiel zijn. Zulke werelden zijn over het algemeen genomen causaal en ruimtelijk-tijdelijk onafhankelijk van de wereld die wij mensen als biologische wezen delen, hoewel ze – in de zin van wat een ouderlijke relatie genoemd kan worden – toch afhankelijk zijn van deze wereld voor hun bestaan. Werkend met (en binnen) de flexibele en programmeerbare werelden die computers voor ons beschikbaar maken, kunnen filosofen uit de eenentwintigste eeuw binnen gesimuleerde omgevingen op objectieve wijze ontologische alternatieven en filosofische stellingen creëren, ervaren en onthullen. Gepresenteerd als dergelijke virtuele ervaringen, zijn filosofische concepten en alternatieve fenomenologieën niet enkel toegankelijk zonder de mediatie van het subjectieve voorstellingsvermogen, maar bieden ze ook ruimte voor een nieuwe, projectieve dimensie, die ik aanduid met de term '*augmented* ontologie'.

2. **De specifieke structuur van onze 'positionaliteit'.**
   Wanneer we de antropologische perspectieven in Helmuth Plessner's 'positionaliteitstheorie' aanpassen aan het tijdsperk van digitale technologieën, kunnen we interactieve digitale simulaties begrijpen als een mogelijkheid om onze aangeboren

lichaamsschema's met alternatieve virtuele *lichaamsschema's* uit te breiden. Voortvloeiend uit deze benadering, opent het voorgestelde perspectief op de techniekfilosofie een weg naar (en wordt het tevens aangevuld door) het ontwikkelen van een fenomenologische benadering van biometrie in samenhang met interactieve, digitale ervaringen.

Door op deze manier fundamentele aspecten van pre-digitale ontologieën te ontstijgen, openen interactieve ervaringen met virtuele werelden een ruimte waarin een nieuw type 'ontwerpend humanisme' mogelijk (en reeds in opkomst) is. Met andere woorden vat ik computers op als media die de bepaalde beperkingen en effecten van geschreven tekst als dominant medium voor de ontwikkeling en verspreiding van het denken 'te boven' kunnen komen.

In zijn boek *Experimental Phenomenology* (1986), schreef Don Ihde dat "[w]ithout entering into the doing, the basic thrust and import of phenomenology is likely to be misunderstood at the least or missed at the most." (Ihde, 1986, 14) In overeenstemming met Ihde en in de overtuiging dat het werk van een digitale humanist noodzakelijkerwijs interdisciplinair en verweven met praktische bezigheden moet zijn, ontwikkelde ik een vraag met betrekking tot 'de digitale technologie en het projectief humanisme' en heb ik in detail een antwoord geformuleerd op een niet puur speculatieve, maar ook experimentele en generatieve wijze. De materiële activiteit van het 'doen' van filosofie, welke in mijn onderzoek wordt geopperd, bestaat in feite uit het ontwerpen en ontwikkelen van digitale interactieve ervaringen (met name in de vorm van video games) en het gebruik van dergelijke ervaringen voor drie met elkaar verbonden doelstellingen: als ontologische instrumenten, als nieuwe media die filosofische ideeën tot uitdrukking brengen en als een middel om het concept van inlijving in virtuele werelden te begrijpen.

Twee essentiële feiten maken dit onderzoek tot een vorm van een gematerialiseerde *praxis*, een wijze van 'doen':

1. mijn werk als een video game designer en video game ontwikkelaar, waarbij ik diverse (commerciële en experimentele) filosofische games heb gecreëerd, erop gericht om bepaalde concepten speelbaar te maken en alternatieve wereldbeelden op een interactieve wijze te openbaren, en

2. de ontwikkeling van een postfenomenologische benadering van een biometrisch-ondersteund design dat heeft geleid tot een gesubsidieerde opstart van het toegepaste onderzoeksproject *BD4CG – Biometric Design for Causal Games*, in samenwerking met de Universiteit van Antwerpen, België.

De praktische uitkomst van de hierboven samengevatte bezigheden en de diverse theoretische uitweidingen zijn opgenomen in mijn proefschrift, gepubliceerd in academische tijdschriften, gepresenteerd op academische of industriële conferenties en online verkrijgbaar gemaakt in zowel tekstuele alsook interactieve, ludieke vorm. Een complete lijst van gepubliceerd werk, video games en artikelen gebaseerd op dit onderzoek is te vinden in het aan mijn biografie gewijde gedeelte van dit boek.