

2023

**PATRICIA BARROS
FRANCISCO**

**DESIGN'S INTRINSIC INFLUENCE
IN THE CREATION OF REALITY.
A SEMIOTIC ANALYSIS ON THE RELATION
BETWEEN DESIGN AND REALITY
WITHIN THE CONTEXT OF OUR CURRENT
HYPERMOBILE ERA.**

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Dissertation presented to IADE - Faculty of Design,
Technology and Communication of Universidade
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Rodrigo Morais, Professor at IADE - Faculty of
Design, Technology and Communication of the
Universidade Europeia.

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To my family, chosen or given, who persisted to share their unconditional love and support, even when I wasn't open to receive it.

To my mother, which in her own way, always cared and supported me. Watching her persist through all the hardships with such resilience and strength, inspired part of the woman I have become.

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And finally, to my younger self, who struggled but persisted.

Keywords

Design; Perception of reality; Cyberspaces; Semiotics.

abstract

As technological innovations multiply at fast rates, it can be observed how the borders between the physical world and the cyber world are becoming blurry. When observing how technological devices keep blending within our society, it can be perceived how human kind has evolved into ubiquitous beings, who are able to be at multiple places at the same time. As we entered this so called era of hypermobility, not only are we able to move around physical spaces, but we also gained the ability to navigate through cyberspaces. As technology complexifies, a multidimensional aspect of space emerges, triggering changes within the spatial rules as we know them, while also rising questions about our perception of reality itself. Design, also plays an important role in human life, both in how we perceive our world, as well as how we navigate and experience it. Therefore, this investigation seeks to explore this intrinsic relation that design has with the creation of the reality we live in. To do so, the analysis of a case study is conducted by proposing Charles S. Peirce's semiotic as a scientific analysis methodology.

palavras-chave

Design; Percepção da realidade; Ciberespaços; Semiótica.

resumo

À medida que as inovações tecnológicas se multiplicam a um ritmo acelerado, é possível observar como as fronteiras entre o mundo físico e o mundo do ciberespaço estão se a tornar cada vez mais tênues. Ao observar como os dispositivos tecnológicos se vão fundindo em nossa sociedade, percebe-se como os seres humano tem vindo a evoluir como seres ubíquos, capazes de estar em vários lugares ao mesmo tempo. Tendo entrado nesta chamada era da Hipermobilidade, não somos mais capazes de apenas nos movimentar nos espaços físicos, mas viemos ganhar também a capacidade de navegar pelos ciberespaços. À medida que a tecnologia se complexifica, o espaço vai ganhando um aspeto multidimensional, desencadeando mudanças nas regras espaciais como as conhecemos. Levantando ao mesmo tempo questões sobre a nossa percepção da própria realidade. O design, também desempenha um papel importante na vida humana, tanto na forma como percebemos o nosso mundo, como na forma como o navegamos e experienciamos. Assim, esta investigação busca explorar essa relação intrínseca que o design tem com a criação da realidade em que vivemos. Para tanto, realiza-se a análise de um estudo de caso, propondo a semiótica de Charles S. Peirce como metodologia de análise científica.

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INTRODUCTION

Humanity has walked the spaces of earth since the beginning of times, spaces which have always surrounded us and to which we naturally accommodated to. Nowadays, our current fast moving era, marked by the emergence of the digital technologies, comes to defy our notions of space, as they inaugurate a new kind of environment for us to navigate and experience, known as the cyberspace. Thus, challenging us to reflect about the new ways we can perceive the spaces that represent our reality, as they now extend through more dimensions and even at times overlap each other. Overall, deep philosophical questions around the nature of reality have resurfaced as it is challenged by the repercussions provoked by the new digital devices that opened a whole new world to us. Apart from that, such technological advancements, open up infinite new ways for humanity to rethink, shape and create spaces to their own will.

Moreover, talking about creation, designers have also acquired greater social significance. The design field has spread through multiple more sites of knowledge, as the expectations from designers is also evolving. Nonetheless, design revolves around the creation of solutions to a certain problem, often regarding to improving human experience. As the new virtual and digital spaces come to existence, design plays its part in the creation of the products and interfaces which help us navigate with ease through these new spatial mediums. Therefore, by analysing more in depth the role and application of design in the creation of these new virtual environments, we might not only be able to have a better understanding of how these new environments affect reality, but also about how design may affect the fundamental nature of reality. Having that in mind, the focus of this dissertation revolves around exploring the relation between design and reality within the context of our current hypermobile era.

To do so, three objectives were chosen to guide this whole investigation. The first objective consists on exploring this new hypermobile era our society has entered into, as it brings multiple repercussions in the way we interact and communicate as a society. Then, a second objective directs our research towards exploring more deeply the concept of design. Namely, what its role is within our society, since it seems to have great implications in human life, both in the way our world is perceived as well as how it is created. Consequently, this brings us to our third and main objective of this dissertation, whose goal is to explore the

intrinsic relation between design and the creation of reality, as we inhabit and navigate through its spatial manifestations. Therefore, it is possible to define the research question of this dissertation as followed:

Can design be considered a creator of reality?

Considering how a great part of this investigation is of philosophical nature, the use of a qualitative research method is deemed as most adequate for the obtention of more in-depth conclusions for solving our question problem. Bearing in mind, how Charles S. Peirce's semiotic is an applied philosophy, it makes it possible to be used as a methodological tool. Therefore, the analysis of a design case study is conducted through the use of semiotic as a scientific analysis methodology for the purpose of this investigation.

I. LITERATURE REVIEW

First of all, it is worth noting that for the purpose of this dissertation, a main focus is attributed to the founder of modern semiotic, scientist-logician-philosopher Charles Sanders Peirce (1839-1914) (Santaella, 1983). Considering how dense and complex this author's work can be, although his *Collected Papers*¹ will indeed be referenced at times, it was deemed necessary to use other author's writings on Peirce's work as references in order to deeply explore his philosophy. Lucia Santaella is one of the authors whose works are mostly present in this dissertation, playing a prominent role throughout this whole research. Such decision is taken as she covers most of the topics presented through the following literature review. Besides the fact that overall Santaella is known for having dedicated a great part of her publications into further studying Peirce's philosophy and his semiotics, also within a more accessible language usage (Santaella, 2005).

Equally important is to explain the chosen chapters that compose this literature review and their respective order. Having in consideration the prominent role that semiotics play throughout the whole dissertation, an initial introduction on this matter was deemed necessary. Semiotics' concepts reoccurring quite often in other chapters, raised the need to firstly familiarize the reader properly this field. Then, follows a contextualization on the current hypermobile era, as it is marked by the growth of cyberspaces which bring multiple repercussions within our society. Namely how the borders between the physical and cyber world are becoming more and more blurry, raising multiple questions regarding our perception of the world and our understanding of reality. Afterwards, an overlook is made on certain concepts which constitute some of the ways through which design can manifest itself, such as the concept of language, image and aesthetic. This shall enrich the reader with knowledge that will contribute to a better understanding of the following chapter dedicated to the exploration of what design is. At last, this literature review ends with a chapter dedicated to reality, more precisely in demystifying its concept.

¹ *Collected Paper*. Digital edition.

1. The semiotic of Charles Sanders Peirce

The word *semiotics*, originally known as *semeiotics*, has its roots from the ancient Greek word *semeion*, which translates to “sign” (Nöth & Santaella, 2017). Nöth & Santaella define semiotics as “a ciência dos sistemas e dos processos signícos na cultura e na natureza”² (2017, p.7). It’s a science that studies shapes, types, systems of signs and the effects caused by the use of signs, signals, evidences, symptoms or symbols (Nöth & Santaella, 2017). The processes in which signs are involved and how they develop their potential are “processos de significação, comunicação e interpretação”³ (2017, p.7). Santaella (1983) also emphasizes how when mentioning the term “sign” in a semiotic context, it is always referred to signs in languages. Therefore, she defines semiotics also as “a ciência geral de todas as linguagens”⁴ (1983, p.1). Many other predecessor terminologies were used to refer to *semiotics*, one namely being *semiology* (or *semeiology*) (Nöth, 1995). The term *semiology* predominated in roman-speaking countries, linked more to Ferdinand Saussure’s semiotic tradition, while in Anglophone and German countries, the term *semiotics* was preferred. This certain rivalry, led to some semioticians elaborating conceptual distinctions between both terms. In 1969, the International Association of Semiotics, adopted *semiotics* as the general term to be adopted in the investigation field of the traditions of semiology and general semiotics.

According to Santaella (1983), there’s a necessary distinction to be made between two sciences of language, which made their appearance during the 20th century. On one side we have Linguistics described as the science of verbal language. On the other, we have Semiotics, which as previously stated, is the science of all and any language. Santaella (1983) states how the language used to speak, and which in turn is used to write, is actually not the only exclusive kind of language that the human being is capable of creating, transforming and consume in order to communicate. As social individuals our being in the world is mediated by an intricate and plural network of languages, based on communication systems that go beyond speech and/or writing. Santaella mentions how we also communicate through other means:

A leitura e/ou produção de formas, volumes, massas, interações de forças, movimentos; que somos também leitores e/ou produtores de dimensões e direções de linhas, traços, cores... Enfim, também nos

² Translation by the author : “the science of sign systems and processes in culture and nature”.

³ Translation by the author : “processes of signification, communication and interpretation”.

⁴ Translation by the author : “the general science of all languages”.

comunicamos e nos orientamos através de imagens, gráficos, sinais, setas, números, luzes... Através de objetos, sons musicais, gestos, expressões, cheiro e tato, através do olhar, do sentir e do apalpar. Somos uma espécie animal tão complexa quanto são complexas e plurais as linguagens que nos constituem como seres simbólicos, isto é, seres de linguagem.⁵ (Santaella, 1983, p.2)

Human beings have always resorted to different and diverse modes of expressions, of meaning manifestations and of social communication ever since they've inhabited the earth (Santaella, 1983). Santaella reinforces this statement by mentioning other examples of how humans have communicated besides the use of verbal language, such as the drawings in the caves of Lascaux, "primitive" tribes rituals, ceremonies, dances, music and games. Additionally, she also mentions other forms of languages usually referred as art, such as drawings, paintings, sculptures, poetics and more. In sum, Santaella states that there exists an enormous and simultaneous variety of other languages who are formed by social and historic systems of representations of the world. Therefore, languages refer to a very intricate range of social forms of communication and signification, both including verbal language and so many more.

The relation between phenomena and languages is also important to comprehend:

Considerando-se que todo fenômeno de cultura só funciona culturalmente porque é também um fenômeno de comunicação, e considerando-se que esses fenômenos só comunicam porque se estruturam como linguagem, pode-se concluir que todo e qualquer fato cultural, toda e qualquer atividade ou prática social constituem-se como práticas significantes, isto é, práticas de produção de linguagem e de sentido.⁶ (Santaella, 1983, p.2)

⁵ Translation by the author : The reading and/or production of shapes, volumes, masses, interactions of forces, movements; that we are also readers and/or producers of dimensions and directions of lines, strokes, colors... Anyway, we also communicate and orient ourselves through images, graphics, signs, arrows, numbers, lights... Through objects, musical sounds, gestures, expressions, smell and touch, through looks, feel and touch. We are an animal species as complex as how complex and plural the languages, that constitute us as symbolic beings, that is, beings of language.

⁶ Translation by the author : Considering that every phenomenon of culture only works culturally because it is also a phenomenon of communication, and considering that these phenomena only communicate because they are structured as language, it can be concluded that each and every cultural fact, each and every activity or social practices are constituted as significant practices, that is, practices of language and meaning production.

In the quest for understanding phenomena, human kind unveils meaning (Santaella, 1983). The process of changing signals (any stimulus emitted by objects from the world) into signs (products of consciousness) takes place in and by the person itself as well. Thus, extending the term *language* from inhuman systems, such as binary languages for example, used for communication between machines and people, to everything, that in nature, communicates to humans.

Haverá, assim, a linguagem das flores, dos ventos, dos ruídos, dos sinais de energia vital emitidos pelo corpo e, até mesmo, a linguagem do silêncio. Isso tudo, sem falar do sonho que, desde Freud, já sabemos que também se estrutura como linguagem.⁷ (Santaella, 1983, p.2)

Last but not least, Santaella (1983) emphasizes how at the base of Peirce's thinking was his theory defending that there was a continuous growth in the universe and in the human mind. The following excerpt reflects Peirce's idea conceiving science and philosophy as gradually maturing processes:

Isso nos dá uma ideia de sua concepção da ciência e Filosofia como processos que amadurecem gradualmente, produtos da mente coletiva que obedecem a leis de desenvolvimento interno, ao mesmo tempo que respondem a eventos externos (novas ideias, novas experiências, novas observações), e que dependem, inclusive, do modo de vida, lugar e tempo nos quais o investigador vive.⁸ (Santaella, 1983, p.5)

Peirce (cited in Santaella, 1983) stated that "O universo está em expansão, onde mais poderia ele crescer senão na cabeça dos homens?"⁹ (p.5). Human thought is described to be capable of generating concrete products who are able to affect and transform materially the universe, while being affected by it at the same.

⁷ Translation by the author : Thus, there will be the language of flowers, of winds, of noises, of vital energy signals emitted by the body and even the language of silence. All this, not to mention the dream that, since Freud, we already know is also structured as language.

⁸ Translation by the author : This gives us an idea of his conception of science and philosophy as processes that gradually mature, products of the collective mind that obey to laws of internal development, while responding to external events (new ideas, new experiences, new observations), and which depend, inclusive, on the lifestyle, place and time in which the researcher lives.

⁹ Translation by the author : "The universe is expanding, where else could it grow if not in the heads of men?"

1.1. Classifying architecture of the sciences

Semiotics is just one part of Charles S. Peirce’s whole philosophical system, which itself is contained inside an even larger system: his classifying architecture of the different sciences (Figure 1) (Santaella, 1983). It is important to note how the categories in his classifying systems will always be influenced and be dependent on categories which come before them. Peirce devoted his life working around a great amount of science fields, but above all he was passionate about logic. As described by Santaella, the diversity of fields he studied are quite impressive, going from exact sciences to natural, physical or psychic sciences. Peirce’s scientific background led him to propose that philosophical disciplines are or could also become sciences through the application of observational, hypothesis and experimental methods that are usually practiced in scientific fields.

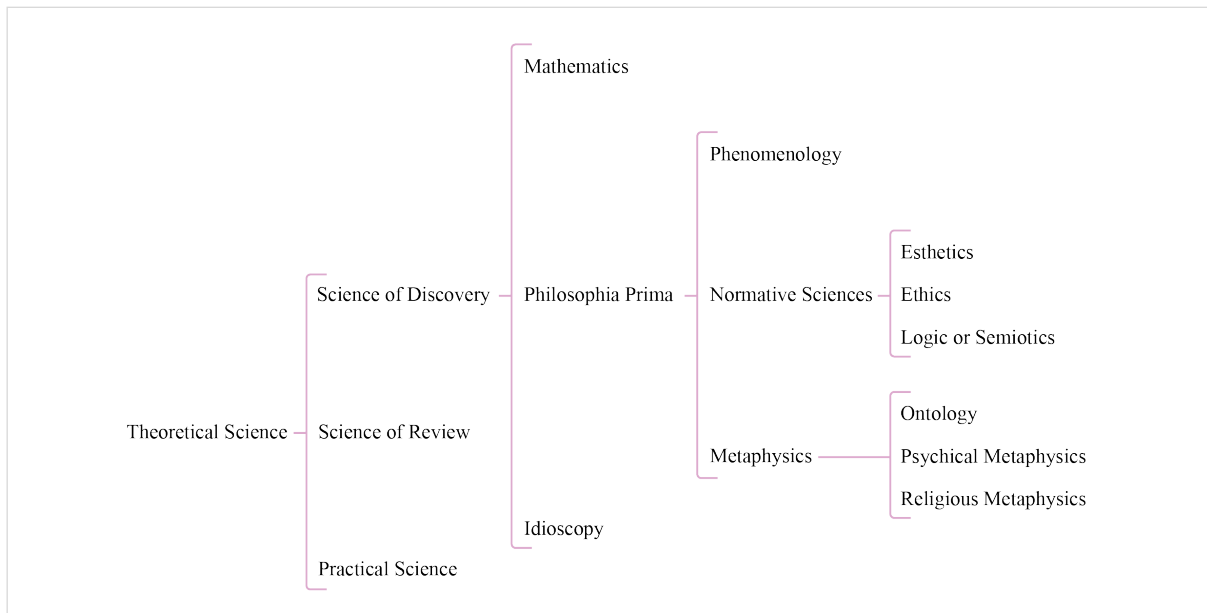


Figure 1 : Peirce’s classifying architecture of the sciences
 Source: Santaella, L. (1983). *O Que é Semiótica*. Brasiliense.

In Peirce’s classification, three main groups of sciences have to be considered firstly: (1) sciences of discovery; (2) sciences of review, who digest and disseminate discoveries to create new philosophies of science; (3) practical science (Santaella, 1983). Inside the sciences of discovery are comprised another three sub-categories: (1) mathematics; (2) philosophy, which includes semiotics; and (3) ideoscopy/special sciences. These last three are also known as observation sciences, although they are seen as the most abstract of all sciences. Mathematics observes imaginary objects, which are assembled constructions of the imagination according to abstract precepts. It studies “o que é e o que não é logicamente

possível, sem se fazer responsável pela existência atual desse possível”¹⁰ (Santaella, 1983, p.5). Thus, making it the science that can be applied in all other sciences, including phenomenology and logic. Philosophy is a positive science, in the sense that it tries to discover what is true within the limits of truth that can be deduced from common experience (Nöth & Santaella, 2017). It's a science fundamentally based on observations and on organizing these observations that are in the open for everyone at all times.

Focusing on the configuration of Peirce's philosophical architecture it can be observed three sub-categories: phenomenology, normative sciences and metaphysics (Santaella, 1983). Within normative sciences we observe three more sub-divisions, namely aesthetics, ethics and logic or semiotics. Phenomenology is Peirce's fundamental base of all his philosophy and any science, since it observes and analyzes phenomena, postulating its universal forms and properties. While phenomenology is completely independent from the normative sciences, these last are developed based on phenomenology. Nöth & Santaella (2017) define aesthetics as “ciência daquilo que é objetivamente admirável sem qualquer razão ulterior”¹¹ (p.7). Aesthetics will serve as base for ethics and by extracting both's principles is structured the science of semiotic, theory of signs and deliberate thought. The last science of the philosophical edifice is metaphysics, also known as the science of reality, that which is independent of our fantasies since we “vivemos num mundo de forças que atuam sobre nós, sendo essas forças, e não as transformações lógicas do nosso próprio pensamento, que determinam em que devemos, por fim, acreditar”¹² (Nöth & Santaella, 2017, p.7).

1.2. Phenomenology and the three universal categories

Languages are semiotics main object of investigation, meaning that it is the science whose aim is to examine the ways each and every phenomenon is constituted as a phenomenon of meaning and sense production (Santaella, 1983). As stated by Santaella:

As linguagens estão no mundo e nós estamos na linguagem. [...] Nessa medida, não apenas a vida é uma espécie de linguagem, mas também todos os sistemas e formas de linguagem tendem a se comportar como

¹⁰ Translation by the author : “what is and what isn't logically possible, without making itself responsible for the actual existence of that possible”.

¹¹ Translation by the author : “science of what is objectively admirable without any ulterior reason”.

¹² Translation by the author : “live in a world of forces that act on us, these forces being, and not the logical transformations of our own thinking, what determines what we must ultimately believe in”.

sistemas vivos, ou seja, eles reproduzem, se readaptam, se transformam e se regeneram como as coisas vivas.¹³ (Santaella, 1983, p.2)

As mentioned by Santaella (1983), semiotics' interest lies in describing and analyzing the constitution of phenomena as languages. Although, semiotics' field of study and inquiries are quite intricate and heteroclitic, which spread through many other sciences and domains, semiotics aren't looking to take over other science's specific knowledge and investigation.

Nos fenômenos, sejam eles quais forem — uma nesga de luz ou um teorema matemático, um lamento de dor ou uma ideia abstrata da ciência —, a Semiótica busca divisar e deslindar seu ser de linguagem, isto é, sua ação de signo.¹⁴ (Santaella, 1983, p.3)

Santaella (1983), states that there is nothing more open to observation as phenomena and follows by defining it as:

Qualquer coisa que esteja de algum modo e em qualquer sentido presente à mente, isto é, qualquer coisa que apareça, seja ela externa (uma batida na porta, um raio de luz, um cheiro de jasmim), seja ela interna ou visceral (uma dor no estômago, uma lembrança ou reminiscência, uma expectativa ou desejo), quer pertença a um sonho, ou uma ideia geral e abstrata da ciência, a fenomenologia seria, segundo Peirce, a descrição e análise das experiências que estão em aberto para todo homem, cada dia e hora, em cada canto e esquina de nosso cotidiano.¹⁵ (Santaella, 1983, p.7)

Many philosophers since Aristotle have tried to structure into fundamental categories the multiplicity of phenomena that present themselves to human perception and cognition (Nöth & Santaella, 2017). Aristotle reduced them into ten categories, while Kant reduced them into

¹³ Translation by the author : Languages are in the world and we are in the languages. [...] To that extent, not only is life a kind of language, but also all systems and forms of language tend to behave like living systems, meaning that, they reproduce, adapt, transform and regenerate themselves like living things.

¹⁴ Translation by the author : In phenomena, whatever they may be — a flare of light or a mathematical theorem, a cry of pain or an abstract idea of science — Semiotics seeks to discern and unravel its being of language, that is, its action as a sign.

¹⁵ Translation by the author : Anything that is somehow and in any sense present to the mind, that is, anything that appears, whether it be external (a knock on the door, a ray of light, a scent of jasmine), whether it is internal or visceral (a stomach pain, a memory or reminiscence, an expectation or desire), whether it belongs to a dream, or a general and abstract idea of science, phenomenology would be, according to Peirce, the description and analysis of experiences that are open to every man , every day and hour, in every nook and cranny of our daily lives.

twelve (Nöth & Santaella, 2017). Peirce, dissatisfied with those preexisting category proposal lists, developed a phenomenology with only three universal categories, named by him as *Firstness*, *Secondness* and *Thirdness*. These categories represent the three possible modes of apprehension of any and all phenomena, as described by Santaella (1983).

Firstness is “the mode of being, which consists in its subject's being positively such as it is, regardless of aught else“ (CP 1.25). Considering that existence is determined by a place established in time and space, these phenomena are mere possibilities that do not exist yet, as long as they aren't determined by something else (Nöth & Santaella, 2017). Nöth & Santaella follow up by stating that it is “a categoria do sentimento sem reflexão, da liberdade sem qualquer restrição, do imediato, da qualidade ainda não distinguida, da independência, do frescor, da espontaneidade e originalidade”¹⁶ (CP 1.302, c. 1894; 1.328, c. 1894; 1.531, 1903; 6.32, 1891 cited in Nöth & Santaella, 2017, p.37). Some examples given by Peirce of phenomena of firstness are “a vague, unobjectified, still less unsubjectified, sense of redness, or of salt taste, or of an ache, or of grief or joy, or of a prolonged musical note” (CP 1.303).

Firstness is the mode of being which consists in its subject's being positively such as it is regardless of aught else. That can only be a possibility. For as long as things do not act upon one another there is no sense or meaning in saying that they have any being, unless it be that they are such in themselves that they may perhaps come into relation with others. The mode of being a redness, before anything in the universe was yet red, was nevertheless a positive qualitative possibility. And redness in itself, even if it be embodied, is something positive and sui generis. (CP 1.25, 1903 cited in Mayorga, 2007, p.116)

Secondness is described by Nöth & Santaella (2017) as “aquilo que existe e, para existir, chama por algo como tempo e espaço, categoria dos fatos no seu aqui e agora, da ação e reação, do esforço e resistência, da realidade e da experiência real”¹⁷ (p.38). Thus, making it a dual category of phenomena, meaning phenomena in relation to something else. Moreover,

¹⁶ Translation by the author : “the category of feeling without reflection, of freedom without any restriction, of the immediate, of the as yet undistinguished quality, of the independence, of the freshness, of the spontaneity and originality”.

¹⁷ Translation by the author : “it is what exists and, in order to exist, calls for something like time and space, a category of facts in its here and now, of action and reaction, of effort and resistance, of reality and real experience”.

according to Peirce secondness “meets us in such facts as another, relation, compulsion, effect, dependence, independence, negation, occurrence, reality, result” (CP 1.358).

The second category of elements of phenomena comprises the actual facts. The qualities, in so far as they are general, are somewhat vague and potential. But an occurrence is perfectly individual. It happens here and now . . . Qualities are concerned in facts but they do not make up facts. Facts also concern subjects which are material substances. We do not see them as we see qualities, that is, they are not in the very potentiality and essence of sense. But we feel facts resist our will. That is why facts are proverbially called brutal. Now mere qualities do not resist. It is the matter that resists. (CP 1.25, 1903 cited in Mayorga, 2007, p.118)

Thirdness is the “categoria do geral, da continuidade e da mediação de um terceiro entre um primeiro e segundo”¹⁸ (CP 1.337-349, c.1875; 5.66, 1903 cited in Nöth & Santaella, 2017, p.38). Therefore, a phenomenon of thirdness is generality as it implies continuity. Thirdness represents also the category of semiosis and signs, of representation, communication, laws, rules, necessity, habit and synthesis. The process of semiosis is constituted by triads evolving the sign itself (1), the object (2) and the interpretant (3), which will be discussed in the following sub-chapter regarding the sign’s definition.

[Thirdness] consists of what we call laws when we contemplate them from the outside only, but which when we see both sides of the shield we call thoughts. Thoughts are neither qualities nor facts. They are not qualities because they can be produced and grow, while a quality is eternal, independent of time and of any realization... No more is it a fact. For a thought is general. I had it. I imparted it to you. It is general on that side. It is also general in referring to all possible things, and not merely to those which happen to exist. No collection of facts can constitute a law; for the law goes beyond any accomplished facts and determines how facts that may be, but all of which never can have happened, shall be characterized. (CP 1.420, c. 1897 cited in Mayorga, 2007, p.119)

¹⁸ Translation by the author : “category of the general, of the continuity and of the mediation of a third between a first and a second”.

1.3. Definition of the sign

Being able to study, speculate or reflect on signs is pointed out by Nöth & Santaella (2017) as being a fundamental characteristic of the human culture. Actually, all living beings, even plants, communicate through signs. Both communication and signs are described as being essential for survival, but signs aren't only produced by living beings: a cloudy sky signifies rain; ice signifies a temperature below 0°C; and a fever and a sore throat signify the flu. These examples are described as “signos naturais”¹⁹ (Nöth & Santaella, 2017, p.9). Like animals, humans are able to communicate and interpretate messages through the use of multiple senses, but they are the only species who is able to speak. Verbal language, which is manifested through hearing and visual written form, produces auditory and visual signs. When using the example of the word “duck” again, proposed by Nöth & Santaella, it can be perceived how different types of signs can represent the same object (Figure 2). The object of the duck sign can represent a verbal and non-verbal auditive form, such as the sound of the pronunciation of the word “*duck*” itself and the “*kwak*” sound the animal produces. In a visual modality, this sign’s object can also represent the written form of the word “*duck*” and an image of the animal, which are also verbal and non-verbal forms respectively. These four sign exemplifications have different natures when compared to the object that they all represent, a real living animal.


SIGN			
Visual		Auditive	
Non verbal	Verbal		Non verbal
Image	Written	Oral	Acoustic
	<i>duck</i>	['dæk]	[kwak]

Figure 2 : Visual, verbal and auditive signs. (Translation by the author)
 Source: Nöth, W., & Santaella, L. (2017). *Introdução à semiótica. Passo a passo para compreender os signos e a significação. Paulus.*

The sign is constituted by three components, which Peirce referred to as *the sign*, *the signified thing* and *produced cognition in the mind*, on an initial terminology (CP 1.372).

¹⁹ Translation by the author : “natural signs“.

Later on, he readapted the terms to the *sign* also known as *representamen*, who is the first to relate to a second, entitled as *object*, capable of determining a third, known as the *interpretant* (Nöth & Santaella, 2017).

A sign, or *representamen*, is something which stands to somebody for something in some respect or capacity. It addresses somebody, that is, creates in the mind of that person an equivalent sign, or perhaps a more developed sign. That sign which it creates I call the *interpretant* of the first sign. The sign stands for something, its *object*. It stands for that object, not in all respects, but in reference to a sort of idea. (CP 2.228)

Nöth & Santaella (2017) give a simplification of Peirce's sign definition:

O signo é algo que “representa alguma coisa, o seu objeto” (CP 2.228, c.1897) e assim produz um efeito na mente de um interprete ou usuário, efeito que Peirce chama de interpretante do signo (CP 8.343, 1908).²⁰ (Nöth & Santaella, 2017, p.39)

Santaella (1983) also mentions how there's actually an enormous quantity of definitions of the sign throughout Peirce's papers, but she picked one specifically to be exemplary:

Um signo intenta representar, em parte pelo menos, um objeto que é, portanto, num certo sentido, a causa ou determinante do signo, mesmo se o signo representar seu objeto falsamente. Mas dizer que ele representa seu objeto implica que ele afete uma mente, de tal modo que, de certa maneira, determine naquela mente algo que é mediatemente devido ao objeto. Essa determinação da qual a causa imediata ou determinante é o signo, e da qual a causa mediata é o objeto, pode ser chamada o Interpretante.²¹ (Peirce cited in Santaella, 1983, p.12)

²⁰ Translation by the author: The sign is something that “represents something, its object” (CP 2.228, c.1897) and thus produces an effect in the mind of an interpreter or user, an effect that Peirce calls the interpretant of the sign (CP 8.343, 1908).

²¹ Translation by the author : A sign intends to represent, in part at least, an object which is therefore, in a sense, the cause or determinant of the sign, even if the sign falsely represents its object. But to say that it represents its object implies that it affects a mind, in such a way that, in a sense, it determines in that mind something which is immediately due to the object. That determination of which the immediate or determining cause is the sign, and of which the mediate cause is the object, may be called the Interpretant.

An important observation to specify is how the sign isn't a class of things, but it is an element of a process, denominated by Peirce as *semiosis* or *semeiosis* (CP 5.472, c.1907 cited in Nöth & Santaella, 2017, p.39). He defines semiosis as “o processo pelo qual o signo tem um efeito cognitivo sobre o interprete”²² (CP 5.484, c.1907 cited in Nöth & Santaella, 2017, p.39). Nöth & Santaella (2017) give the example of a landscape photograph, where in this case the photograph, is the representamen, and the landscape is its object. The photograph (representamen) allows the landscape (object) to reach the interpreter's mind, producing some sort of effects such as a memory, a surprise or melancholy, known as the interpretant.

In 1897, Peirce proposed that “O signo [...] é algo que está no lugar de algo para alguém”²³ (CP 2.228, c.1897 cited in Nöth & Santaella, 2017, p.9). This being said, Nöth and Santaella emphasize how the sign can never take the object's place. When saying “standing in the place of”, it doesn't mean that the sign replaces the object it is referring to. To better understand the meaning behind this definition, the authors propose a simple example: neither the word or the image of a duck can replace the real animal it is representing, since a real duck can swim and fly whereas the word “*duck*” can not. Nöth and Santaella conclude that “Para que alguma coisa deva ser um signo, ela deve representar, por assim dizer, alguma outra coisa, chamada seu objeto”²⁴ (CP 2.230, 1910 cited in Nöth & Santaella, 2017, p.9).

As explained, the sign refers to, represents or indicates something that is different from the sign itself, known as its *object* (Nöth & Santaella, 2017). On another note, a sign's object doesn't have only materialistic attributes, it can also represent human experiences, such as the verbal sign “*love*”, or represent something fictional, such as an *unicorn*. Again, there is no need in a sign's objects having to be “something” existent and tangible as pointed out by Nöth & Santaella (2017). It is also conceived depending on our knowledge, which is always incomplete, or on our experience, which is always partial, on what the sign is referring to. Therefore, Nöth & Santaella (2017) emphasize how one of the foundations of Peirce's sign theory is that “não só os signos externos, mas também as cognições, os pensamentos, as ideias e até o homem mesmo são signos”²⁵ (p.36). As concluded by Peirce “the fact that every

²² Translation by the author : “the process by which the sign has a cognitive effect on the interpreter”.

²³ Translation by the author : “The sign [...] is something that stands in the place of something for someone”.

²⁴ Translation by the author : “For something to be a sign, it must represent, so to say, something else, known as its object”.

²⁵ Translation by the author : “not only external signs, but also cognitions, thoughts, ideas and even man himself are signs”.

thought is a sign, taken in conjunction with the fact that life is a train of thought, proves that man is a sign” (CP 5.314). René Descartes defends the thesis that the universe is divided into two substances, the mind, which manifests through thoughts and ideas, and the matter, which extends throughout the physical space (cited in Nöth & Santaella, 2017). On an opposite opinion, Charles S. Peirce (cited in Nöth & Santaella, 2017) goes against this division made between the external and internal world. This being said, he also goes against the division of the realm of signs and the one of the objects, since objects don’t have to be seen only as external and “real” as they can be something internal and fictional for example, as discussed before. He defends that objects represented by signs are also signs, since it is through signs that the universe of things presents itself to us.

Another important division to be emphasized, is how Peirce (cited in Nöth & Santaella, 2017) divided the objects into two species known as “o objeto imediato e o objeto mediato, real ou dinâmico”²⁶ (p.43). The immediate object is defined as the “objeto dentro do signo”²⁷ and the object which is “como o signo mesmo o representa e cujo ser depende, portanto da sua representação no próprio signo”²⁸ (CP 4.536, 1905 cited in Nöth & Santaella, 2017, p.43). Nöth & Santaella (2017) state that the object can only be immediate if it is apprehended firstly, considering that the representamen is always a first in the triadic relation. On another hand, the mediate object, also known as real or dynamic, is the “objeto dentro do signo”²⁹, which means it is “a realidade que, de certa maneira, realiza a atribuição do signo à sua representação”³⁰ (CP 4.536, 1905 cited in Nöth & Santaella, 2017, p.43). Simply put, the immediate object is what determines the sign. It is a segment of reality, also known as *real object* which is described to be mediate and dynamic due to the fact that it can only be indicated by approximation. Thus, it isn’t represented in its entirety in the semiosis process. Therefore, it is “aquilo que, pela natureza das coisas, o signo não pode exprimir e que só pode indicar, deixando para o interprete descobri-lo por experiência colateral”³¹ (CP 8.314, 1897 cited in Nöth & Santaella, 2017, p.43).

²⁶ Translation by the author : “the immediate object and the mediate object, real or dynamic”.

²⁷ Translation by the author : “object inside the sign”.

²⁸ Translation by the author : “as the sign itself represents it and whose being therefore depends on its representation in the sign itself”.

²⁹ Translation by the author : “object outside the sign”.

³⁰ Translation by the author : “the reality that, in a certain way, carries out the attribution of the sign to its representation”.

³¹ Translation by the author : “that which, by the nature of things, the sign cannot express and which it can only indicate, leaving to the interpreter to discover it through collateral experience”.

Peirce's sign theory goes beyond the triadic phenomenological characteristics of the sign briefly described above, but the information discussed is carefully selected according to this dissertation's research purpose and objectives.

2. The current hypermobile era

Before diving deeper into understanding what reality is, it is important to firstly explore what composes such a vague concept. That is, our society, more specifically, the group of minds who are capable of processing the existence of reality itself. Human minds inhabit, navigate and evolve within the spaces that construct reality. Throughout this chapter, the objective is oriented towards better understanding our society and its culture. Especially during the current era we live in, which is marked by the emergence of the digital technologies that are described to be specially defying our former notions of space and consequently, also defying our perception on reality.

Throughout human history, technology has always been part of our culture in intrinsic ways, leading to a stream of constant new innovations and consequently to the perpetual evolution of our society. Going back to our current era, it is interesting to look at the factors that lead to its fast waves of change, one of them mainly being its major technological innovations. Regarding the term technology itself, it seems misleading to keep up with the multiple meanings the term has been associated with. Such is described to be due to the fact that it has indeed carried multiple meanings with it through the years, also often being confused with other similar words such as the word “technical” for example (Mitcham & Schatzberg, 2009). As explained, it is mainly due to problems of translations as the terms are quite similar. Mitcham and Schatzberg (2009) follow up by stating how “the cognates of “technology” generally refer to the science of or discourse about the practical, material arts, while cognates of “technique” are applied to the actual processes and methods of these activities” (p.27). Etymologically speaking, both words “technique” and “technology” root from the Greek, *τέχνη* (techne), which translates into “art”, “craft” or “skill” (Mitcham & Schatzberg, 2009). According to Mitcham and Schatzberg (2009), many discussions on the nature of *techne* can also be found in Greek philosophical tradition:

Carl Mitcham [1994] has noted how techne came to be conceived not only as an activity but as a kind of knowledge. In Plato’s *Gorgias*, for instance, Socrates argued that every techne involves *logoi* (words, speech, reason) bearing on the art involved (450b). Additionally, Socrates distinguished two types of techne, one consisting primarily of physical work that required minimal use of conscious reason (such as painting or sculpture) and another depending more intimately on

reason that required little physical exertion (such as arithmetic, logistic, or astronomy). (Mitcham & Schatzberg, 2009, p.33)

Mitcham and Schatzberg (2009) make it clear that the meaning behind the word “technology” varied not only through time but it also varies across communities of discourses, such as in science and engineering, in the humanities, and in the social sciences. Larry Hickman (2001, cited in Mitcham & Schatzberg, 2009), a sociology oriented philosopher argued that technology is “a cognitive activity within the evolutionary history of complex organisms”. This interesting perspective joins to the definition of technology the ideas of “making” and “inventing”, which are linked again to human evolution. On a general overview, it can be complicate to come to a final definition of what technology is, besides the common agreement on how it spreads through multiple fields of knowledge and how it has accompanied humanity ever since its origin and throughout its whole evolution process.

Santaella (2007) also proposes an even deeper perspective on how technology links back to the origin of the human constitution:

A técnica, hoje transmutada em tecnologia, remonta às origens da constituição do ser humano como ser simbólico, ser de linguagem, de modo que as tecnologias atuais estão em uma linha de continuidade e representam uma crescente complexificação de um princípio que já se instalou de saída na instauração do humano.³² (Santaella, 2007, p.49)

She follows up by saying that the first symbolic technology is in our own body under the unsuspected disguise of naturalness: the technology of speech. Back in the turn of the 1920s, Freud (cited in Santaella, 2007) also shared a similar opinion by stating that the ability of speaking is what denaturalizes the animal being, speech pulls us out of the natural realm with no return possible. From a semiotic perspective, it is important to note how Santaella (2007) states that the evolution and complexification of technology has a parallel relation with the growth and complexification of signs in the biosphere. This being fruit of the externalization of the human symbolic ability, which originated when humans first learned to speak as mentioned. Going back to the contemporary technological innovations of our era, Santaella

³² Translation by the author : The technique, nowadays transmuted into technology, goes back to the origins of the human being’s constitution as a symbolic being, a being of language, so that current technologies are in a line of continuity and represent a growing complexity of a principle that has already installed itself from the start in the establishment of the human.

(2007) points out to how they aren't as foreign to us human beings as they may seem. She defends that since they are created through the use of our organs, they are “prolongamentos do nosso corpo e da nossa mente”³³ (Santaella, 2007, p.50), which with evolution grew in complexity.

As tecnologias simbólicas, ou tecnologias da inteligência, que hoje já começam a tomar conta também do nosso corpo, são extrasomatizações do cérebro humano. Desde as primeiras imagens das grutas e das primeiras formas de escritura, o neocortex vem crescendo, expandindo-se na biosfera, fora da caixa craniana.³⁴ (Santaella, 2007, p.50)

Humans went from creating writing, to printing, to creating machines for the production of images and audio-visual sounds, to creating robotics and computer simulations in virtual reality.

As technology evolves and complexifies, repercussions can be observed within the way people interact and perceive space (Santaella, 2007). The invention of the internet enabled the creation of a new space of interaction and networking; a global, virtual and multidimensional space that can be accessed by computers, which came to be called “cyberspace” by William Gibson (cited in Santaella, 2007) in his novel *Neuromancer* in 1984. As a brief definition, Santaella defines the cyberspace as “o espaço informacional das conexões de computadores ao redor do globo”³⁵ (Santaella, 2007, p.178). A space in which physical geography doesn't matter, since any information or place in the world is only a click away. Not only is there uninterrupted and potentially infinite fluxes of information, but it also gives any individual the ability to be able to communicate with another individual from any other part of the earth. The multidimensional and multitemporality of the cyberspace intertwined with the multivocality of urban life as mentioned by Bauman (cited in Santaella, 2007, p.178), brings with it new concepts of “efemeridade, do fugaz, fugidio, aparecimento e

³³ Translation by the author : “extensions of our body and mind”.

³⁴ Translation by the author : Symbolic technologies, or technologies of intelligence, which today are already beginning to take over our body, are extra somatizations of the human brain. Since the first images of caves and the first forms of writing, the neocortex has been growing, expanding in the biosphere, outside of the braincase.

³⁵ Translation by the author : “the informational space of computer connections around the globe”.

desaparecimento”³⁶. This due to how fractions of seconds of rushed finger taps can lead to an extensive information load of images, sounds, videos, textual and graphical objects.

In addition to human’s physical mobility, due to the creation of these new mobile devices, Santaella states that they are now also able to navigate in the cyber realms allowing them what she denominates as *hypermobility* (Santaella, 2013). This allows humans to acquire an ubiquitous condition, which technologically speaking, transcribes into the ability to communicate at any time and any place through electronic devices spread around the environment (Santaella, 2013). On a side clarification, Santaella (2013) cited Souza and Silva (2006), who defined the concept of ubiquity as followed: “O conceito de ubiquidade sozinho não inclui mobilidade, mas os aparelhos móveis podem ser considerados ubíquos a partir do momento em que podem ser encontrados e usados em qualquer lugar”³⁷ (p. 15).

Santaella (2013) describes how this age of hypermobility arises a multidimensional aspect of space, enabling an ubiquitous, persuasive and embodied type of communication. Creating fluid spaces, present inside the networks and also inside the individual’s space-time displacements.

Em função da hipermobilidade, tornamo-nos seres ubíquos. Estamos ao mesmo tempo em algum lugar e fora dele. Tornamos nos intermitentemente pessoas presentes-ausentes. Aparelhos moveis nos oferecem a possibilidade de presença perpetua, de perto ou de longe, sempre presença. Da nos um sentimento de omnipresença. Corpo, mente e vida ubíquas.³⁸ (Santaella, 2013, p.16)

Texts, images and sounds have also become ubiquitous with the current digital culture (Santaella, 2007). Mobile devices offer us a feeling of omnipresence by enabling us the possibility of being always present even when far.

Another important statement from Santaella (2007) to highlight is how nowadays the omnipotence of the digital, marking this age of hypermobility, is triggering changes in our

³⁶ Translation by the author : “ephemerality and fugacity, of appearance and disappearance”.

³⁷ Translation by the author : The concept of ubiquity on itself does not include mobility, but mobile devices can be considered ubiquitous since they can be found and used in anywhere.

³⁸ Translation by the author : In accordance to hypermobility, we have become ubiquitous beings. We are both somewhere and outside of it. We become intermittently present-absent people. Mobile devices offer us the possibility of perpetual presence, from near or far, always present. It gives us a feeling of omnipresence. Ubiquitous body, mind and life.

perception of spaces and leading to the "desvanecimento do real"³⁹ (p.184). Peter Anders (1999, cited in Santaella, 2007) also has an interesting remark on how ubiquity is inherent to the human thinking, because when thinking we are here and somewhere else. He also states how hybrid systems, originated by the interconnexions between physical spaces and information networks, materialize and expand the potential of human consciousness. Overall, great paradigmatic changes within human condition can be perceived on many levels.

2.1. Liquid society

In this age of Hypermobility, all forms of culture start to mingle and blend together, coexisting in a complex game of overlaps and complementarities (Santaella, 2007).

A cultura oral que ainda persiste com força indiscutível, intensificada pela sua integração nos meios audiovisuais, principalmente o cinema e a televisão; a escrita, que se evidencia na multiplicidade das manifestações dos tipos gráficos e do design; a cultura impressa, que povoa as bibliotecas e os quiosques com suas profusões de manchetes e capas coloridas, fisingando a atenção de transeuntes apressados; a cultura de massas, que, longe de perder o seu poder, aprendeu a conviver com as suas competidoras, tanto a cultura das médias, que é a cultura do disponível, quanto a cibercultura, que é a cultura do acesso.⁴⁰ (Santaella, 2007, p.128-129)

Human culture exists in a continuum and is cumulative in the sense of constant interaction of tradition and change, persistence and transformation (Santaella, 2007). Santaella gives the examples of how painting didn't disappear with the emergence of photography nor did the theatre with the emergence of cinema. Things probably shall not disappear they might at most change of support just like books who went from leather to papyrus and from there to paper.

The growing digital universe is said to have brought with it the emergence of the cyberspace accompanied with new notions such as "nomadism", "ubiquity", "fluid borders

³⁹ Translation by the author : "fading of the real".

⁴⁰ Translation by the author : Oral culture that still persists with indisputable power, intensified through its integration in audio-visual media, mainly cinema and television; writing culture, which is evident in the multiplicity manifestations of graphic types and design; print culture, which fills libraries and kiosks with its profusion of headlines and colourful covers, catching the attention of hurried passers-by; mass culture, which, far from losing its power, learned to live with its competitors, both media culture, which is the culture of availability, and cyberspace, which is the culture of access.

and spaces”, “deterritorialization”, “place”, “non-place”, all belonging to the semantic field of space (Santaella, 2007). This being said, Santaella also points out to the emergence of a liquid, fluid and fleeting culture. She mentions Sigmund Bauman’s book *Liquid Modernity* and how it’s a suggestive title to account for the uncertainties that surround “as condições cambiantes, maleáveis, fluidas, excessivas, transbordantes, fugazes das complexas contradições das sociedades contemporâneas”⁴¹ (Santaella, 2007, p.13).

The metaphor of “liquidity” is borrowed by Bauman (cited in Santaella, 2007) to characterize the state of the current modern society, because just like liquids she is unable to maintain its form.

Os líquidos se movem facilmente. Eles fluem, escorrem, esvaem-se, respingam, transbordam, vazam, inundam, borrifam, , pingam, são filtrados, destilados; diferentemente dos sólidos, não são facilmente contidos – contornam certos obstáculos, dissolvem outros e invadem ou inundam seu caminho. (...) A extraordinária mobilidade dos fluidos é o que os associa à ideia de leveza.⁴² (Bauman, 2011, cited in Santaella, 2007, p.14)

Santaella (2007) also mentions how liquids are constantly ready and willing to change their form in spaces they fill only for a moment. Bauman is also cited by her about how he goes on describing in his book “liquid modernity” how the current modern society is in a permanent state of disassembly with no prospect of permanence. In opposition, the previous modern society, depicted as “solid modernity”, would always be disassembling the inherited reality as an attempt of improving and solidifying it back again. The emergence of the liquid modernity is described as having led to great changes in the human condition. Thus, requiring a need to rethink the old concepts surrounding the narratives of systematic structures who have now been melted by the fluids. Jobs, relationships, affections, love, know-hows in between other things, are now seen as having a tendency to remain in flux, to be volatile, unruly and flexible. Santaella emphasizes how Bauman alerts us on the imprudence of

⁴¹ Translation by the author : “the changing malleable, fluid, excessive, overflowing, fleeting conditions of the complex contradictions of contemporary societies”.

⁴² Translation by the author : Liquids move easily. They flow, drain, ooze, splatter, overflow, leak, flood, sprinkle, drip, are filtered, distilled; unlike solids, they are not easily contained – they go around certain obstacles, dissolve others, and invade or flood their path. (...) The extraordinary mobility of fluids is what associates them with the idea of lightness.

denying or underestimating the profound change that the emergence of the liquid modernity effects in the human condition.

2.2. Sloterdijk's foams

Another concept that is very close to the metaphor of “liquidity”, employed by Bauman, is the concept of “foam”. In 2004, Peter Sloterdijk (cited in Santaella, 2007) published his third volume called *Schäume (Foams)* from his trilogy *Sphären (Spheres)*. The physical abilities of the foam substance are qualities who inspired Sloterdijk (cited in Borch, 2008) to use them as a metaphor when analysing and exploring our current society in his final chapter of the *Sphären* trilogy. He describes how the foam's polymorphic capabilities with invisible and fragile contours is what differentiates them from the liquids. As supported by Santaella (2007), foams are “certamente mais subtis, delicadas, complexas e ainda mais leves do que os líquidos”⁴³ (p.19) and as said by Sloterdijk (cited in Santaella, 2007) they are “fast nichts, und doch nichts”⁴⁴ (p.19). Santaella describes them as something covered by a fabric of empty spaces that with the lightest touch explodes and rebuilds itself, making a metaphorical reference to our fragile and fleeting society, which also keeps deconstructing and reconstructing itself.

Shortly put, Sloterdijk's *Sphären* trilogy is “an attempt to rethink and re-conceptualize our being-together, its history and its spatial conditions” as described by Borch (2008, p.548). According to Bluemink (2020, para. 2), Sloterdijk “develops both a historically informed theory that details a shift in how humans understand the world, and an ontology of space which is concerned with the particular ‘spheres’ they inhabit”. Sloterdijk's spherology presents interesting arguments asking and attempting to answer the question of “where are we when we are in the world?” (Borch, 2008, p.550), which simply put by him is that we are in spheres. Furthermore, Borch (2008) describes how the trilogy takes us on “a fascinating journey demonstrating the underlying assertion that the being-in-spheres constitutes the basic condition of humans” (p.550). Throughout the three volumes, Sloterdijk's grand phenomenology aims to explore the spherical conditions of life (Borch, 2008). Regarding the first volumes of *Sphären* from Sloterdijk's trilogy, *Bläsen (Bubbles)* and *Globus (Globes)* are the first and second volumes respectively. While the author uses the subtitles “Bubbles” and

⁴³ Translation by the author : “certainly more subtle, delicate, and even lighter than liquids”.

⁴⁴ Translation by the author : “almost nothing and yet nothing”.

“Foams” for his first and third volume in a metaphorical way, the second volume’s subtitle “Globes” represents images of thought or rather figures of thought according to Santaella (2007). They originated from geometry and historically speaking derived from the Greeks in a morphological meaning, later converted by Plato into a cosmological meaning. It is important to note that for the purpose of this dissertation, a deeper description of the first two volumes of Sloterdijk’s *Sphären* trilogy didn’t seem relevant, since his third volume is the main point of interest as it explores the relation between spaces and society.

In *Foams*, Sloterdijk presents a philosophical theory about the contemporary life (Santaella, 2007), where he makes a diagnosis on “the spatial relationships between the human and its technological world through an analysis of architecture, urban planning, and environment” (Bluemink, 2020, para. 5). Sloterdijk (cited in Santaella, 2007) seeks to understand the nature of the bond that unites individuals, which the sociological tradition denominates as “society” (p.22). From a scientific aspect, Borch (2008) mentions how foam is characterized by trapping gas and a liquid, or gas and a solid substance together. He continues to describe how foams have several chambers or cells that are separated from one another by thin walls, implying “a state of co-fragility [...] (where) foam is generally disordered and has no centre” (Boch, 2008, p.552). Sloterdijk (cited in Boch, 2008) sees these physical qualities of foams as “theoretically illuminating” (p.552), to use as a metaphorical representation of today’s society. He schematized the modern world based on a theory of spatial multiplicities, starting with the argument that the world is not structured monospherically, as holistic thinking defends, but polyspherically (Santaella, 2007). Moreover, Bluemink (2020) refers to contemporary thinker, Bruno Latour (2009), who similarly to Sloterdijk is also interested in the relation between human, atmosphere and technology. Both are concerned about “the human actor as inherently related to the interconnected living and technological networks in which it exists” (Bluemink, 2020, para. 8).

Recapitulating, Sloterdijk’s third volume of *Sphären* states how foams are characterized by the mixing of different substances (gas, liquid and solid) and how its fragile structure could easily collapse (Borch, 2008). All these characteristics represent metaphorically the current society in a similar way as Bauman did, when he compares it to liquids and their incapacity of maintaining their form (Santaella, 2007). Sloterdijk (cited in Santaella, 2007) also emphasizes this instability of nowadays society presented by Bauman’s liquid metaphor, but from a slightly different approach focusing on exploring the concept of

space. He does so by stating that just like foam, who is light and fragile, current society explodes at the smallest touch and reconstructs itself again. On a general note, Santaella (2007) emphasizes how *Sphären* represents the author's denunciation of traditional ontology and logic and the dichotomic divisions they make between "o corpo e a alma, espirito e matéria, sujeito e objeto, liberdade e mecanismos, entre o eu e o mundo e, mais além, entre a natureza e a cultura"⁴⁵ (p.23). There seems to be a common agreement from multiple thinkers about the need in rethinking past the old solid boundaries of how humans inhabit and understand their world.

2.3. Concept of language

Image, text and audio aren't what they used to be, as they have lost the stability that fixed supports secured them (Santaella, 2007). As described by Santaella, they have become apparitions, fleeting presences who emerge and disappear with a simple finger swipe on a screen. All due to the ubiquitous mobile devices who have imposed themselves inside our societal lifestyles.

(Imagens, texto e áudio) deslizam uns para os outros, sobrepõem-se, complementam-se, confraternizam-se, unem-se, separam-se e entrecruzam-se. Tornaram-se leves, perambulantes. Perderam a estabilidade que a força de gravidade dos suportes fixos lhes emprestavam. Viraram aparições, presenças fugidias que emergem e desaparecem ao toque delicado da pontinha do dedo em minúsculas teclas. Voam pelos ares a velocidades que competem com a luz.⁴⁶ (Santaella, 2007, p.24-25)

On one hand, languages associated with time, such as verb, sound and video, have spatialized in the liquid and invisible cartographies of cyberspace (Santaella, 2007). On another hand, languages considered as spatial, such as images, diagrams and photos, have fluidified in the convulsions of fluxes. Santaella states how there is no more point of gravity for any kind of language as they enter into a new stage of instability. She describes how

⁴⁵ Translation by the author : "the body and the soul; the spirit and the matter; the subject and the object; freedom and mechanisms; and between the self and the world and beyond that, between nature and culture".

⁴⁶ Translation by the author : They slide towards each other, overlap, complement, fraternize, unite, separate and intersect. They became light, wanderers. They lost the stability that the gravity force of the fixed supports lent them. They became apparitions, fleeting presences that emerge and disappear at the delicate touch of the fingertip on tiny computer keys. They fly through the air at speeds that compete with light.

society entered an era ruled by mobile communication where material obstacles are progressively disappearing but allowing the unblocking of sign fluxes and information exchanges.

Duarte & Marchi (2006) emphasize how people are constantly operating in terrains where different systems of signs travel and blend between each other. These dialogues between languages occur through interfaces created by the cyberspace, which shouldn't be seen as barriers between both physical and digital world. Siegfried Zielinski (1995, cited in Duarte & Marchi, 2006) suggested that those interfaces should be seen as conceptual instruments who allow us to operate through those universes of differentiated languages. They follow to describe how “esses instrumentos tecnológicos não mudam apenas como representamos os espaços, mas alteram completamente o que denominamos espaço”⁴⁷ (Duarte & Marchi, 2006, p.135). It is also pointed out how the existent language patterns don't account for the apprehension, understanding and criticism of current urban spaces altered by technological innovations in a social, cultural or physical context.

Duarte and Marchi (2006) describe how the translation of a phenomenon into known signs will depend on the construction behind the critical subject. The multiple external stimuli go through biological and cultural filters, which then, through our ability of operating languages, get discriminated and ordered. The perception and knowledge of a certain phenomenon is translated into mastered languages and codes in order for us to perceive and articulate its diverse traits. We then reconstruct the phenomena within the sphere of the known, making it an object of reflection. The synthesis of this process is found in Charles Peirce's (cited in Duarte & Marchi, 2006) triad of phenomenology in the acts of seeing, discriminating and generalizing.

Peirce (1977 cited in Duarte & Marchi, 2006) affirmed that the “mais elevado grau de realidade só é alcançado pelos signos”⁴⁸ (p.134), which led to Duarte and Marchi correlating languages as dialectical approximations of phenomena. Therefore, it is described to be a two-way construction in the relation between reality and language. As phenomena can trigger perceptive and intellectual strangeness, they will stimulate new articulations of existent

⁴⁷ Translation by the author : “these technological instruments not only change how we represent spaces, but completely alter what we denominate as space”.

⁴⁸ Translation by the author : “the highest degree of reality is only reached by the signs”.

languages and stimulate the exploration of new language possibilities to account for those “strange” phenomena as Duarte and Marchi describe. Making them perceptually and intellectually easy to manipulate. Duarte and Marchi (2006) emphasize the example of how technological innovations are also arising language innovations:

Inovações tecnológicas inauguram espacialidades que demandam inovações de linguagem. Constroem-se imagens de uma realidade tão nova em sua essência que, por vezes, essas imagens parecem ser irreais. Neste aspeto, a relação imagem (i)realidade deste livro parece-nos a apontar para as possibilidades de as imagens (linguagem) construírem realidades ainda não codificadas, em um momento que é inaugural tanto para a realidade quanto para a linguagem.⁴⁹ (Duarte & Marchi, 2006, p.136)

As technological innovations unveil new spatialities, demanding for new language innovations, Duarte and Marchi (2006) comment on how there’s a construction of images in a new reality, so new in its essence, that it can easily be interpreted as unreal. They point at the possibility of images constructing realities yet to be codified, at a time that is inaugural for both reality and language.

2.4. Concept of image

Ever since pre-historic cave paintings, human culture has always expressed itself through images (Santaella & Nöth, 1997). Nowadays, in the digital age overflowed with constant information, our daily lives are permeated with visual messages from the moment we wake up until the moment we go back to sleep. Vilém Flusser (1985) makes an interesting statement on how images are mediations between humankind and the world. He follows by pointing out at how he believes that in this hypermobile era, it is now people who live in function of images and not the other way around:

O homem “existe”, isto é, o mundo não lhe é acessível imediatamente. Imagens têm o propósito de representar o mundo. Mas, ao fazê-lo, entropõem-se entre mundo e homem. Seu propósito é serem mapas do

⁴⁹ Translation by the author : Technological innovations inaugurate spatialities that demand language innovations. Images are constructed of a reality so new in its essence that, at times, make these images seem to be unreal. In this aspect, the relationship between image (i)reality of this book seems to point to the possibilities of images (language) to build realities not yet codified, in a moment that is inaugural for both reality and language.

mundo, mas passam a ser biombos. O homem, ao invés de se servir das imagens em função do mundo, passa a viver em função de imagens. Não mais decifra as cenas da imagem como significados do mundo, mas o próprio mundo vai sendo vivenciado como conjunto de cenas.⁵⁰ (Flusser, 1985, p.7-8)

Images are defined by Emerson (1986, cited in Santaella, 2006) as being able to both be interpreted as something strictly visual or as an indivisible and ambiguous complex of auditory, visual and emotional stimuli. This polysemic feature of the image originated from the Greek term “eikon” which comprises all types of images, those being natural or artificial; going from paintings to stamp prints, to shadows and to mirror images (Santaella, 2007).

Santaella and Nöth (cited in Santaella, 2006) point at the existence of at least three main domains of the image: the domain of mental and imagined images; the domain of directly perceptible images; and the domain of images with visual representations such as drawings, paintings, engravings, photographs, cinematography, television, holographical and infographic images. Mitchell (cited in Santaella, 2006) expands the domain of images up to five types. He added verbal images, such as metaphors and descriptions, and divided visual representations into graphical images, such as drawings, paintings or sculptures, and into optical images, such as mirrors or projections. It is important to note that this interpretation of the image by Santaella encompasses both perceptual images, images who are composed in the cerebral ocular apparatus, and images who are codified and embodied by some external device. This last categorisation of images, which she also denominates as represented images, will be the only kind of images to be referred to for the rest of this chapter. Therefore the applicability of the word “image” will be restricted to its visual reality even though it composes a wider field of references (Santaella, 2007).

Santaella (2007, p.355) states how “qualquer imagem produzida pelo ser humano, em qualquer suporte que seja, mesmo nas pedras da caverna, envolve algum tipo, por mais

⁵⁰ Translation by the author : Man “exists”, that is, the world is not immediately accessible to him. Images have the purpose to represent the world. But in doing so, they interpose themselves between the world and humankind. Their purpose is to be maps of the world, but they become screens. Humans, instead of using images as a function of the world, begins to live in function of images. It no longer deciphers the scenes of the image as meanings of the world, but the world itself is experienced as a set of scenes.

rudimentar que seja, de codificação”⁵¹. Therefore, any represented image is described to have a double character:

No caso das imagens figurativas, isto é, imagens que duplicam, de alguma maneira, coisas perceptivelmente visíveis do mundo, esse caráter de duplo é evidente, como, por exemplo, na imagem representada de uma paisagem existente ou na de um rosto etc. (ver Santaella, 2001, p.227). Entretanto, mesmo no caso de imagens de figuras imaginadas (uma cena de guerra não experienciada por um desenhista ou pintor, por exemplo), ou imaginárias (uma cena mitológica, por exemplo), mesmo no caso das imagens tidas como abstratas (figuras geométricas ou manchas de cores, por exemplo), todas elas inacessíveis a uma experiência visual colateral, o caráter de duplo, que é próprio de toda imagem, se mantém – é certo que em um nível menos evidente – porque elas colocam no mundo algo que, sem elas, o mundo visível não teria.⁵² (Santaella, 2007, p.355)

In the case of the figurative images, Santaella (2007) refers to a duplication of what would be visible through other means, which the image doesn't necessarily provide. Regarding the case of images of imagined or imaginary figures, these images are described to populate the world with coded signs, whose perceptual conditions are distinct from those presented by visible things.

In 1998, Santaella and Nöth (cited in Santaella, 2007) divided the world of image production into three main paradigms: the pre-photographic, the photographic and the post-photographic. Inside the pre-photographic paradigm are grouped all kinds of artisanal images such as drawings, paintings, engravings and so on. The photographic paradigm alludes to images who entail a physical and dynamic connexion between the image and the objects. In some way, they also bring traces of the object that they register. Within the post-photographic paradigm are classified the synthetic or infographic images, representing numeric images who

⁵¹ Translation by the author : “any human-produced image, on any support whatsoever, even on cave rocks, involves some kind of, however rudimentary, encoding”.

⁵² Translation by the author : In the case of figurative images, that is, images that duplicate, in some way, perceptibly visible things in the world, this double character is evident, as for example in the represented image of an existing landscape or of a face, etc. (see Santaella, 2001, p.227). However, even in the case of images of imagined figures (a war scene not experienced by a draftsman or painter, for example), or imaginary ones (a mythological scene, for example), even in the case of images considered to be abstract (geometric figures or patches of colors, for example), all of which are inaccessible to a collateral visual experience, the double character, which is typical of every image, is maintained – certainly at a less evident level – because they place in the world something that, without them, the visible world would not have.

are entirely calculated by computational algorithms. The division of these three paradigms was based on the methods of image production and their consequent sub-methods. Thus, constituting the four levels on which any sign or language process depends on, which are the following:

- A. The level of the search means;
- B. The level of the conservation or storage means;
- C. The means of exposition, transmission or diffusion; and
- D. The means and methods of reception, whatever they are. In the case of the image: perception, contemplation, observation, enjoyment or interaction.

Santaella (2013) mentions how by comparing the behaviour of each of these levels in each of the three paradigms – pre-photographic, photographic and post-photographic –, it was possible to analyse the changes processed in each level that will result in and justify a paradigmatic rupture. Briefly put, the transition from the pre-photographic to the photographic paradigm occurred due to the invention of gravure, giving rise to the principle of reproducibility. Impressionist modern art followed by Mondrian and Pollock, led to the transition of the photographic paradigm to the post-photographic one. This due to modern art's progressist objective to rupture the image's dependency on worldly objects. Thus, leading to a continuous transitioning path of modern art's where images don't depend on registering traces of the visible world anymore. Thus, bringing rise to the post-photographic paradigm of the image.

It is worth noting that the goal of mentioning these three paradigms of the image is mainly to emphasize the relation between images and reality, the main object of study in this dissertation. In the case of photography, when a shot is taken, the photographic device captures a certain cut and framing of reality (Santaella, 2006). Santaella (2006) also cites an affirmation from Barthes (1980) on how “aquele pedaço de realidade, fixado para sempre em uma projeção bidimensional, não é o objeto [...] é apenas uma emanção dele”⁵³ (p.180).

⁵³ Translation by the author : “that piece of reality, fixed forever in a two-dimensional projection, is not the object [...] it is just an emanation of it”.

Since cinema depends on cameras to record visible reality, it is still part of the photographic paradigm even though its visual regime is distinct from the photographic one. As stated by Santaella (2006), “os limites fundamentais da fotografia estão na sua impossibilidade de dar conta do caráter dinâmico da realidade visível [...] foi justamente essa limitação que o cinema veio superar”⁵⁴ (p.181). On another note, by finding its language in the narrative condensation, cinema began to communicate more the worlds of imagination than those of reality. The same applies in the case of photography and in the case of images and sounds produced by television, as they aren’t real either but so said representations of reality (Santaella, 2006). This also counts for some types of video content, while other types are representations of new invented possible realities. On another note, throughout the different paradigms, images present, indicate and represent what Santaella (2007) denominates as “realidade visível e/ou realidades imaginadas, imaginárias e simuladas”⁵⁵ (p.358).

Since the advent of photography, many new devices capable of producing images also emerged (Santaella, 2006). As technology evolves, new devices arise and new ways to produce and visualize images become available. When created through the mediation of mechanical devices, images can also be denominated as “technological” (Santaella, 2007). Santaella describes how these devices already have a certain intelligence embodied in them:

Enquanto as ferramentas técnicas, utilizadas para a produção artesanal, de desenhos ou pinturas, por exemplo, são meros prolongamentos do gesto hábil, concentrado nas extremidades das mãos, como é o caso do lápis, do pincel ou do cinzel, os equipamentos tecnológicos são máquinas de linguagem, máquinas mais propriamente semióticas. Sem deixar de ser máquinas, elas dão corpo a um saber técnico introjetado nos seus próprios dispositivos materiais. (Santaella, 2007, p.359) ⁵⁶

Santaella (2007) also makes reference to how the technological innovations of computationally produced images have triggered a big paradigmatic leap. As mentioned before, technological images, from the photography to holograms, belong to the photographic

⁵⁴ Translation by the author : “The fundamental limits of photography lie in its impossibility of dealing with the dynamic character of visible reality [...] it was precisely this limitation that cinema came to overcome”.

⁵⁵ Translation by the author : “visible reality and/or imagined, imaginary and simulated realities”.

⁵⁶ Translation by the author : While technical tools, used for the artisanal production of drawings or paintings for example, are mere extensions of the skillful gesture, concentrated on the ends of the hands, as is the case of the pencil, brush or chisel, technological equipment are language machines, more properly semiotic machines. Without ceasing to be machines, they embody a technical knowledge introjected into their own material devices.

paradigm and are characterized by their dependency on a recording machine. In other words, they require the presence of pre-existing physical objects. On the other hand, numeric images have established a new paradigm, which Santaella suggest to be the fourth image paradigm:

As imagens numéricas, por outro lado, instauraram um novo paradigma porque, diferentemente das anteriores, resultam da transformação de uma matriz de números em pontos elementares (os pixels) visualizados sobre uma tela de vídeo ou uma impressora. Seu processo de produção, (é) inteiramente independente de qualquer registro de uma realidade visível.⁵⁷ (Santaella, 2007, p.390)

After the mid-1990s, the emergence of planetary communication networks such as the internet for example, brought with it revolutions inside the media and cultural flows (Santaella, 2007). These new technological innovations put the image in a highly hybrid new environment, known as the hypermedia, which is characterized by its mixtures of sounds, noises and all kinds of static or animated images. One of the main consequences that emerged with this revolution, was a relocation of the centre of attention from the image to hybrid hypermedia languages.

Entre muitas outras consequências, o que a emergência dessa revolução produziu foi um novo deslocamento do centro das atenções, que migrou da imagem em si para as linguagens hipermísticas híbridas, as quais, por razões de precisão, prefiro chamar de “intersemióticas”, pois, ao fim e ao cabo, a hibridização não é outra coisa senão a justaposição, associação e inter-relação dos mais variados sistemas de signos, verbais, visuais e sonoros, em hipersintaxes espaciais e temporais.⁵⁸ (Santaella, 2007, p.391)

The ubiquitous attribute of the current hypermobility era, is also reflected on the current images that populate our world (Santaella, 2007). As they are sent through the air,

⁵⁷ Translation by the author : Numerical images, on the other hand, established a new paradigm because, unlike the previous ones, they result from the transformation of a matrix of numbers into elementary points (pixels) visualized on a video screen or a printer. Its production process, (is) entirely independent of any record of a visible reality.

⁵⁸ Translation by the author : Among many other consequences, what the emergence of this revolution produced was a new displacement of the center of attention, which migrated from the image itself to the hybrid hypermystic languages, which, for reasons of precision, I prefer to call “intersemiotic”, because, after all, hybridization is nothing but the juxtaposition, association and interrelation of the most varied systems of signs, verbal, visual and sound, in spatial and temporal hyper syntaxes.

they occupy multiple places at the same time, turning them into ubiquitous, nomadic and trivial images.

Chamo essas imagens de “voláteis”, pois, além da enorme facilidade que elas instauram para se fotografar qualquer situação, em qualquer lugar, sua natureza digital permite que elas sejam remetidas a quaisquer outros celulares com a mesma capacidade técnica ou para quaisquer terminais de computador em quaisquer pontos do planeta. Isso faz delas imagens fluidas, soltas, viajantes, migrando de um ponto físico a outro com a leveza do ar. Mesmo viajando para os mais variados lugares, tem a capacidade de permanecer em todos eles ao mesmo tempo. Por isso, são, sobretudo, imagens ubíquas.⁵⁹ (Santaella, 2007, p.386)

Nowadays, our fast paced interactions with liquid languages are described to be marked by these volatile images with fleeting apparitions on our computer or phone screens (Santaella, 2007). Just like all languages who transit through the cyberspace, volatile images are portrayed to also carry with them liquid and fluid traits. As a consequence, Santaella emphasizes how the image duplication of the world has reached exacerbated proportions ever since it originated with the invention of photography in the 19th century. Now, “qualquer coisa, qualquer situação, todo o visível se tornou reproduzível”⁶⁰ (Santaella, 2007, p.387). It has also become ubiquitous as it can be shared to any corner of the world and be present simultaneously in many places.

Grau (cited in Santaella, 2007) points out to how we have never before been surrounded by such a great amount of diverse imagery worlds that expand into new domains. Santaella (2006) also emphasizes how with each new image technology, images also change their nature and the way in which they make reality known to us.

Ora conforma muda o dispositivo e o modo de produção da imagem, quer dizer, conforme muda sua morfogênese, muda também seu regime de visualidade, muda sua natureza e a maneira pela qual ela

⁵⁹ Translation by the author : I call these images “volatile”, because, in addition to the enormous facility they provide for photographing any situation, anywhere, their digital nature allows them to be sent to any other cell phones with the same technical capacity or to any computer terminals, anywhere on the planet. This makes them fluid, loose, traveling images, migrating from one physical point to another with the lightness of air. Even traveling to the most varied places, you have the ability to stay in all of them at the same time. Therefore, they are, above all, ubiquitous images.

⁶⁰ Translation by the author : “anything, any situation, all the visible has become reproducible”.

nos da a conhecer a realidade. Mais do que isso, cada nova tecnologia da imagem nos obriga a repensar o estatuto do próprio conhecimento.⁶¹ (Santaella, 2006, p.173)

Through the mediation of telerobotic systems from the internet, cyberspace environments also made it possible to take action over distances in real time (Santaella, 2007). Now, these systems “longe de simplesmente representarem a realidade, a permitem que atuamos sobre ela”⁶² (Santaella, 2007, p.385).

Santaella (2007) also cites Goldberg’s argument on how it is vital to reconsider the relation between objects and their signs, now that these telerobotic systems attain a wider audience. It is important to highlight how in hybrid environments especially, the image appears in all possible forms and visual regimes, such as graphic, photographic, ideographic and synthetic. Moreover, it is also accompanied by texts, sounds and noises, all shaping together the hypermedia language, as previously referred. As stated by Santaella (2007): “Trata-se de uma linguagem polivalente que, a par das questões formais de justaposição e associação, também inclui a inter-relação ou colisão entre texto, imagem e som em camadas espaciais e temporais⁶³ (p.385)”.

In order to reassess the role of the image in the current hypermobile era, Santaella (2007) also makes another interesting remark on how the evolution of images is inexplicably linked to the evolution of the human sensorial faculties, since images exert a general influence on our ways of understanding space, objects and time. Traditional notions of aesthetics keep being drastically altered as they evolve. Thus, demanding according to Santaella, studies and discussions that can account for the historical development of technologies and their means of language production, as well as for the theories and specific creations they give rise to.

⁶¹ Translation by the author : Now, as the device and the mode of production of the image changes, that is, as its morphogenesis changes, its visuality regime also changes, it changes its nature and the way in which it makes reality known to us. More than that, each new image technology forces us to rethink the status of knowledge itself.

⁶² Translation by the author : “far from simply representing reality, they allow us to act on it”.

⁶³ Translation by the author : It is a polyvalent language that, along with the formal issues of juxtaposition and association, also includes the interrelation or collision between text, image and sound in spatial and temporal layers.

2.5. Concept of aesthetics

The word “aesthetics” derives from the Greek word *aisthesis*, meaning “to feel” (Santaella, 2017, p.8). In the verb *aisthonomai*, the Greek root *aisth* signifies to feel, not referring to the feelings of the heart or of the sentiments but referring to feel with the senses, the network of physical perception (Santaella, 2017, p.8). Santaella points out to how the word “*aesthetics*” is often carelessly employed.

O termo é hoje tão largamente utilizado que pode servir para qualificar tanto as filosofias do belo, quanto a elegância de uma fórmula matemática, os objetos artísticos, ou até mesmo um crepúsculo, as cercanias do mar, um rosto trabalhado pelo tempo (como diria Borges).⁶⁴ (Santaella, 2017, p.8)

Looking at the philosophical history of the term, well defined designations can be found. Alexander Gottlieb Baumgarten (1714-1762) came up with the word “aesthetics”, whose meaning first originated in his book *Aesthetica*, published in the first half of the 18th century (Santaella, 2007, p.254). The author didn’t restrict himself only on the meaning of what came to be understood by the word of art, but defined it as “a ciência da percepção em geral”⁶⁵ (Santaella, 2017, p.8).

Em 1735, nas suas reflexões filosóficas acerca da poesia, Baumgarten (1954) via a estética como a equivalente sensual da lógica, quer dizer, a estética estava para a sensorialidade, conhecimento inferior, do mesmo modo que a lógica estava para o pensamento, conhecimento superior. Já no primeiro parágrafo da *Aesthetica*, esta era tomada como a *scientia cognitionis sensitivae*, “teoria das artes liberais, gnoseologia inferior, arte de pensar belamente, arte da razão análoga”. O que ele queria investigar não era nem o mero gosto, nem as meras sensações — o sentimento que se registra num sujeito em resposta a um estímulo —, mas um modo de conhecimento.⁶⁶ (Santaella, 2017, p.23-24)

⁶⁴ Translation by the author : The term is so widely used today that it can be used to qualify both the philosophies of beauty, the elegance of a mathematical formula, artistic objects, or even a twilight, the vicinity of the sea, a face worked by time (as Borges would say).

⁶⁵ Translation by the author : “the science of perception in general”.

⁶⁶ Translation by the author : In 1735, in his philosophical reflections on poetry, Baumgarten (1954) saw aesthetics as the sensual equivalent of logic, that is, aesthetics was to sensoriality, inferior knowledge, in the same way that logic was to thought, superior knowledge. Already in the first paragraph of *Aesthetica*, this was

After Baumgarten in 1790, Immanuel Kant's (1724-1804) third critique, the Critique of Judgement, was the first major work to give form to the philosophical aesthetic (Santaella, 2017). A work that is described to be directed towards understanding problems related to the most sensitive regions of our thoughts, feelings, speech and action. Although the word "aesthetics", in a philosophical context, made its first appearance only in the 18th century, questions about such concept go way back (Santaella, 2017, p.8). Its first roots originated in the Greek world, more specifically in Plato's (428-348) work, where the first theory about art and beauty can be found.

De fato, foi Platão quem levantou os problemas relativos à criação, para os quais foram dadas as mais diversas interpretações através do tempo e com os quais nos debatemos até hoje, tais como a natureza da inspiração, a relação da criação com a emoção, o impacto e efeitos da arte sobre o receptor, as antinomias entre o conhecimento verdadeiro e a ilusão das paixões, as consequências do descomedimento e as virtudes da temperança.⁶⁷ (Santaella, 2017, p.8)

On a general overview, aesthetic problems are considered to be as old as philosophy itself. During the last centuries that passed, they received the most diverse intonations and interpretations since Plato (Santaella, 2017).

Moreover, from a semiotic perspective, there seems to be uncertainties regarding whether there is or not an aesthetic theory in Charles Sanders Peirce's work (Santaella, 2017). This is mentioned to be due to how Peirce's references about aesthetics are scattered and fragmented in his writings, gathered in the Collected Papers. Santaella (2017) tries to prove in her book, *Estética de Platão a Peirce*, that there is an aesthetic theory in Peirce's work, but also that it is coherent and relevant for the discussion of contemporary questions that are being debated. As explained in more depth, in the first chapter of this dissertation about semiotics, aesthetics is among the several disciplines within the classifying architecture of sciences presented by Peirce. Furthermore, Santaella goes deep into her research to

taken as the *scientia cognitionis sensitivae*, "theory of liberal arts, inferior gnoseology, art of thinking beautifully, art of analogous reason". What he wanted to investigate was neither mere taste nor mere sensations—the feeling that registers in a subject in response to a stimulus—but a mode of knowing.

⁶⁷ Translation by the author : In fact, it was Plato who raised problems related to creation, for which the most diverse interpretations have been given through time and with which we struggle until today, such as the nature of inspiration, the relationship between creation and emotion, the impact and effects of art on the receiver, the antinomies between true knowledge and the illusion of passions, the consequences of immoderateness and the virtues of temperance.

understand the role of aesthetics in Peirce, but the following excerpt sums up his conception of the term: “Nadando contra a corrente da tradição, Peirce não concebeu a estética como uma ciência do belo. Buscou uma qualidade mais elementar e menos dual do que o belo, encontrando-a em algo que pode ser aproximadamente traduzido na palavra “admirável”⁶⁸ (Santaella, 2017, p.64). Thus, he perceives as aesthetic the investigation behind the problem of analyzing what should or should not be admired per se, on itself, independently of its application on human conduct.

A lógica como o estudo do raciocínio correto é a ciência dos meios para se agir razoavelmente. A ética ajuda e guia a lógica através da análise dos fins aos quais esses meios devem ser dirigidos. [...] A questão da estética, portanto, é determinar o que pode preencher esse requisito de ser admirável, desejável, em e por si mesmo, sem qualquer razão ulterior (CP 2.199). É da estética que vem, assim, a determinação da direção para onde o empenho ético deve se dirigir, daquilo que deve ser buscado como ideal mais elevado. Os meios para atingir esse ideal, contudo, são uma função da lógica, pois dela depende o processo de raciocínio autocontrolado através do qual o ideal pode ser atingido.⁶⁹ (Santaella, 2017, p.57)

Going back to present days, Santaella quotes the term of technological aesthetics, which are present in television vignettes, documentary films, in fashion, special effects in cinema, advertisements, hypermedia designs, in the new hybrid forms of moving images and in the surrounding sonorities (Santaella, 2007). They are also present in the multiple portals, sites and blogs that fill the cyberspace. Santaella gives the following definition of technological aesthetics:

Portanto, a estética, nesse caso tecnológica, esta voltada para o potencial que os dispositivos tecnológicos apresentam para a criação de efeitos estéticos, quer dizer, efeitos capazes de acionar a rede de percepções sensíveis do receptor, regenerando e tornando mais subtil

⁶⁸ Translation by the author : Swimming against the current of tradition, Peirce did not conceive aesthetics as a science of the beautiful. He sought a more elementary and less dual quality than the beautiful, finding it in something that can roughly be translated into the word “admirable”.

⁶⁹ Translation by the author : Logic as the study of correct reasoning is the science of the means of acting reasonably. Ethics helps and guides logic through the analysis of the ends to which these means must be directed. [...] Finally, aesthetics guides ethics in defining what is the nature of an end in itself that is admirable and desirable in any circumstances independently of any other consideration of any kind whatsoever. Ethics and logic are thus specifications of aesthetics. Ethics proposes what ends we should reasonably choose in various circumstances, while logic proposes what means are available to pursue those ends.

seu poder de apreensão das qualidades daquilo que se apresenta aos sentidos.⁷⁰ (Santaella, 2007, p.255)

The relation between photography, cinema and video started to overlap and mix way before infographic images began to produce effects of hybridization on the photographic paradigm (Santaella, 2013). All these mixtures hinted at the emergence of a new aesthetic according to Santaella (2013), “configurada a partir da diversidade de dispositivos e de experiências que caracterizavam um lugar intermediário de instabilidade, multiplicidade e hibridismos”⁷¹ (p.155). This emerging aesthetic is described by Santaella to set the tone for the following era of the fourth paradigm of the images:

Quando o computador deixou de ser uma caixa fechada para produzir imagens, textos e guardar arquivos, mais ainda, quando as interfaces gráficas abriram as comportas para o envio, troca e compartilhamento de dados multimídia, as misturas entre mídias e linguagens tornaram-se regra. Não se trata mais de passagens, mas de genealogia das imagens, uma genealogia em que elas já se engendram nas misturas.⁷² (Santaella, 2013, p.155)

The computer has become an experimental laboratory where different medias can cross paths, combining technics and aesthetics from different medias and generating new species of signs (Santaella, 2013).

⁷⁰ Translation by the author : Therefore, aesthetics, in this case technological, is focused on the potential that technological devices present for the creation of aesthetic effects, that is, effects capable of triggering the receptor's network of sensitive perceptions, regenerating and making their apprehension power, of the qualities of that which is presented to the senses, more subtle.

⁷¹ Translation by the author : “configured from the diversity of devices and experiences that characterized an intermediate place of instability, multiplicity and hybridisms”.

⁷² Translation by the author : When the computer stopped being a closed box to produce images, texts and save files, even more, when graphical interfaces opened the floodgates for sending, exchanging and sharing multimedia data, the mixtures between media and languages became the rule. It is no longer a question of passages, but a genealogy of images, a genealogy in which they are already engendered in mixtures.

3. Concepts of Design

When trying to understand what Design is, a variety of theories and perspectives can be found. Therefore, even though a small overview of the different existing definitions will be made, the main focus of this research will revolve around two authors, Glenn Parsons (2016) and Mike Monteiro (2019). Their books, *The Philosophy of Design* written by Glenn Parsons and *Ruined by Design* written by Mike Monteiro, will mainly be guiding this research, since the fusion of both authors' ideas represent one of the most current and accepted approaches regarding what design is. They define design as the deliberate resolution of a problem within a set of limitations, through the development of plans for a novel type of thing, where a reasonable person wouldn't immediately consider such plans to be an inadequate solution.

Before having a deeper overview of the gathered research around the objective of defining design, an initial look at the place that design holds within our society will be made. Such is considered important as it will help the reader to have a quick historical overview on the role of design, as well as give a contextualization on design's impact within humankind.

3.1. Design's impact and role in our world

Looking back at the origin of design, Historians haven't come to an agreement on the date of its exact emergence but it is believed to be around the early industrial revolution, making it "a modern phenomenon" (Parsons, 2016, p.30). According to Ramírez et al. (2021), from the perspective of design as a segmented profession, it emerged in the late 18th century, while its philosophical roots go way back to the Renaissance.

During the eighteenth century, several schools were established to meet the educational demands of the rising profession of Design. Notable examples are the National Academy of Craft and Art Industry (Norway, 1818); the Government School of Design (London, 1837) and the Glasgow Government School of Design (1845); the Konstfack–University of Arts, Crafts, and Design (Stockholm, 1844); and RISD–the Rhode Island School of Design (USA, 1877). (Ramírez et al., 2021, p.261)

Nevertheless, in the 18th century design was regarded merely with embellishing manufactured products as explained by Ramírez et al. (2021). The apparition of the Staatliche Bauhaus and

its influential “Preliminary Course” “would revolutionize modern design education” (Ramírez et al., 2021, p.261) with its goal of “joining technical know-how and artistic vision by combining aesthetic research, industrial arts, craftsmanship, psychology, and humanistic principles” (Ramírez et al., 2021, p.339). It contributed to breaking design out of the belief about it being only about technical skills:

The Bauhaus contributed to legitimising Design as a genuine academic area (Meyer MW, Norman D, 2020) by focusing not just on the practice of designing but mainly on the role that a systematic method played in it. That is to say, the Bauhaus’ main contribution to the evolution of Design as a discipline was showing that designing had less to do with honing technical skills and knowing about materials and more with acquiring a consistent methodological strategy grounded on systematic principles and critical reflection. (Ramírez et al., 2021, p.261)

In the second half of the twentieth century, design academics intended to turn design into an area of knowledge, but there was little consensus on whether design could be considered as art or science (Ramírez et al., 2021a). Majority agreed that it belonged to a distinct “third area” held between the sciences and the humanities, as explained by Ramírez et al.. Findeli (2001, cited in Cope & Kalantzis, 2011), also states similarly how “design, in other words, was understood more as an object than as a form of action” (p.47), and the process of becoming a designer was also more directed into learning how to execute objects based on technical skillsets. According to him a possible trigger could have been the shift in how value is perceived among our society:

Seen in a larger social context, the locations and functions of design are changing. In an earlier industrial era, value was primarily located in fixed capital, tangible production inputs and the utility of consumable products. However, in recent times we have heard much talk of the increasingly important roles of innovation, creativity and design as sources of value (Peters et al., 2008; von Hippel, 2005). At the level of the enterprise, value is to a significant degree today also located in the ‘intangibles’ of branding, technological ingenuity, product aesthetics, intellectual property, product customizability and customer service relations (Benkler, 2006; Demarest, 1997; Martin, 2002). These intangibles are all contributions of one or other of the design professions. (Cope & Kalantzis, 2011, p.46)

Over the last decades, big changes within the design world can be observed, may it either be when talking about design as an activity, profession or discipline (Ramírez et al., 2021a). As the cyberspace keeps growing its roots inside our society, dramatical social and economic changes in the role of designers can also be observed. Parsons (2016) mentions how “in modern society, the Designer has an important and quite daunting role” (p.38). Cope & Kalantzis (2011) also emphasize how designers are acquiring an “even greater social significance than they ever did in the past” (p.45). This being said, the expectations from design are also described to be evolving.

The changes of our times are of such significance as to suggest that we should rethink the fundamentals of design, its basic principles as well as the dimensions and range of our everyday professional practices. Not only is design now of pivotal significance in newly emerging economic and social orders; what is demanded of design and designers is also changing. (Cope & Kalantzis, 2011, p.46)

Potter (2002) grouped design work into three simple categories: “product design (things), environmental design (places) and communication design (messages)” (p.11). He also emphasized how these categories would blur some further necessary distinctions. As technology evolves, the world becomes more complex and the need for new professions is required (Cope & Kalantzis, 2011). It is important to note that Cope & Kalantzis (2011) don’t only refer to change within the design professions, but to a shift in the semantics of design. They conceive design as a “foundational paradigm for representation and action” (Cope & Kalantzis, 2011, p.49):

Let us consider a young child making a model building from blocks. The available resources range from modelling a building in blocks to the built forms in the child’s surrounding environment, which are the cultural reference points for re-representation in the model. Yet no two models will ever be quite the same. They tell of a subtly nuanced experience, intention and interest on the part of the child. Kress calls such acts of making ‘motivated signs’: ‘It is the interest of the sign-maker at the moment of making the sign that leads to the selection of the criteria for represent[ation]’ (Kress, 2003). By recognizing this as a design process we grant agency to a young sign-maker undertaking a piece of work. Design is never simply an instantiation of received conventions, derived from what might at times seem to be the stable disciplinary rules of technology or aesthetics. It is always and

necessarily a process of transformation. As such, it is an engine of change. (Cope & Kalantzis, 2011, p.49)

Furthermore, it is interesting to understand where design sits amongst other sites of knowledge in the world. According to Nigel Cross (2007, cited in Cope & Kalantzis, 2011), there are three cultures of human knowledge and ability: “The Sciences study the natural world; the Humanities, human experience; and Design, the artificial world” (p.53). However, it is explained how nowadays those traditional delineations are becoming blurred since there’s a hybridisation in professions: there’s a crossing between the different areas of Sciences, Humanities and Design. That is due to the fact that “there are new imperatives in every area of Design, requiring ever stronger integration of Sciences and Humanities with Design” (Cope & Kalantzis, 2011, p.54). From a design perspective, some of the new aspects that are now part of the designer’s work relate for example to digital communication, information architecture, service design, design management or interface design. Thus, leads also to the multidisciplinary expectations from designers, as they are expected to “have more systematic and critical thinking, and integrate more relevant knowledge from other academic disciplines” (Ramírez et al., 2023, no prelo). Not only is it believed that designers more and more need to gain knowledge from diverse areas, such as technology, business, behavioural sciences, scientific methods, soft skills and more, but it is also expected that they be ready to adapt to the perpetual growing and changing complexity of the contemporary world. Ramírez et al. (2021) make an interesting observation about how compared to other fields who evolve with time, design seems to be in” a permanent beta state” (p.6):

The problem, however, is that being concerned with bringing new things into the world makes design a fundamentally unstable or, rather, multistable field. Unlike other disciplines (say, Medicine or Law), which have evolved and continue to evolve through accumulation and revision of their core principles and practices and specialisation, design, as a discipline, seems to be in a permanent beta state. A metaphor to illustrate this distinction would be to say that established disciplines could be seen as buildings that eventually were remodelled, upgraded, and expanded, but their foundations and cornerstones remain the same. Whereas design is composed of buildings whose foundations and cornerstones, although maintaining a certain cohesiveness, are constantly revised and modified. (Ramírez et al., 2021, p.6)

It is this multistability of design that allows it to “be decentralised, flexible and susceptible to change” (Ramírez et al., 2021, p.6), which enables it to be applied to so many areas as well.

As technological innovations lead to new ways of applying design, an important aspect to consider is how design also possesses the ability of shaping societies (Folkmann, 2011b). Design impacts and is embedded in culture, according to Folkmann (2011b) design objects “contribute to the construction of cultural meaning” (p.264). He explains how it can be a medium of culture in a material as well as in an immaterial dimension. In sum, he (2011b) describes how design and culture are intrinsically related and how “design objects are objects of cultural potentiality “with the power to form and transform culture (p.270). Julier (2008, cited in Folkmann, 2011b), also points out to the material and immaterial aspects of the cultural meaning of design objects, saying that on one end they are “articulated through images, words, forms and spaces”, but on another end they “engage discourses, actions, beliefs, structures and relationships” (p.264). According to John Heskett (2002, cited in Folkmann, 2011b) “cultural identity is not fixed, like a fly in amber, but is constantly evolving and mutating, and design is a primary element in stimulating the awareness of possibilities” (p.270). He (2002, cited in Folkmann, 2011b) conceived design as a natural extension of man, which dynamically responds to human nature and culture: “Design, stripped to its essence, can be defined as the human capacity to shape and make our environment in ways without precedent in nature, to serve our needs and give meaning to our lives” (p.270).

The immaterial side of design objects has always been present, such statement can be observed in how one of the most important functions in design is its ability to convey meaning in culture (Folkmann, 2011b).

Every design is simultaneously material and immaterial; because it always incorporates an idea in its process of signification, all design has a dimension of immateriality. Furthermore, regardless of how immaterial a design may be in its conception, it can only be conceived in its concrete manifestation. (Folkmann, 2010, cited in Folkmann, 2011a, p.58)

Looking at how design grew in importance throughout the twentieth century, Folkmann (2011b) describes how its materiality is being challenged as new design branches such as service design, design management or web design, for example, don't have direct physical appliances per say. Ramírez et al. (2021) talk about the new design fields who have emerged as “designers broadened their concerns from objects and symbols to new “orders” (Buchanan, 2001) such as interactions, services, systems, and environments” (p.259). They (2021) emphasize on how designer's responsibilities grew and diversified, and how their concerns expanded “beyond the mere form, function, and styling of tangible things to all aspects of sociotechnical systems” (p.260). Folkmann (2011a) points out how the material structure of design is always accompanied with an immaterial double in means to convey meaning that reflects or affects culture. The debate around the production of meaning as a main characteristic of the design object debuted in early 1973 as Gert Selle (1997, cited in Nygaard Folkmann, 2011a) stated that “design objects not only carry functions, but also always information” (p.52). Klaus Krippendorff (2006, cited in Folkmann, 2011a) also supported the idea that “meaning must be regarded as the central feature of design” (p.52). Folkmann (2011b), refutes how the dynamic dimensions of meaning present in design objects can carry spaces of possibility: “Design objects can contain traces of “spaces of possibility” and [...] the “imaginary” can function as a productive category to question how objects in their present materiality can contain a dimension of the possible” (p.263).

According to Pombo and Tschimmel (2005, p.65), since the 1980s “a psicologia cognitiva e a teoria construtivista têm desafiado a existência de uma realidade objetiva e têm reconhecido a pluralidade de percepções e perspectivas de realidade”⁷³ (p.65). They (Roth, 2000 cited in Pombo & Tschimmel, 2005) follow up by explaining how our process of thought is influenced by the fact that “o cérebro é um sistema auto-referencial”⁷⁴ (p.65).

Nós não estamos aparte do nosso ambiente, nosso mundo passa através de nós. Por conta da auto-organização do cérebro, todas as ideias emergem, crescem e amadurecem durante o processo criativo, em uma interação com o sistema situacional. Tendo isto em mente,

⁷³ Translation by the author : “cognitive psychology and constructivist theory have challenged the existence of an objective reality and have recognized the plurality of perceptions and perspectives on reality”.

⁷⁴ Translation by the author : “the brain is a self-referential system”.

nós nos encontramos no paradigma do design.⁷⁵ (Pombo & Tschimmel, 2005, p.65)

In sum, Pombo and Tschimmel's (2005) research revolves around how design “lida com a resposta para novas condições de vida, a descoberta de novas possibilidades, o desenvolvimento de novas soluções e a invenção de novas realidades”⁷⁶ (p.64). Therefore, Design is described to concern itself with “a criação do novo, ou com a mudança de uma situação insatisfatória para uma mais adequada”⁷⁷ (Pombo & Tschimmel, 2005, p.64).

Folkmann (2011a) emphasizes this intrinsic relation between design and reality as well, since “in its epistemological effect design provides models of how to perceive and filter reality” (p.62). The imaginary is stated to relate to the concept of human consciousness “as being able to freely produce images more or less related to reality” (Stolterman & Nelson, 2003, cited in Folkmann, 2011b, p.271). Imagination itself is a necessary ability within all fields of design, as it is primordial in order to create something:

The connection of imagination and creativity is historically linked to English Empiricism and European Romanticism, both of which investigate imagination as a matter of epistemology: whether human consciousness merely reflects reality, that is, the empiricist concept of re-productive imagination, or whether consciousness in its creations is capable of transcending reality, that is, the radicalized version of the Romantic notion of ‘productive imagination’, a concept originally devised by Kant (1990: B151). (Folkmann, 2011b, p.271)

Otl Aicher (cited in Folkmann, 2011a) also defends that design is part of a larger whole and part of a progressive phenomenology where design enables us to experience the world but also to create it.

In their physical and material intension, design objects are indeed actual entities that give character and structure to the world of phenomena. At the same time, design, in its different extensions as

⁷⁵ Translation by the author : We are not apart from our environment, our world passes through us. Due to the brain's self-organization, all ideas emerge, grow and mature during the creative process, in an interaction with the situational system. With this in mind, we find ourselves in the design paradigm.

⁷⁶ Translation by the author : “deals with the response to new conditions of life, the discovery of new possibilities, the development of new solutions and the invention of new realities”.

⁷⁷ Translation by the author : “the creation of the new, or with the change from an unsatisfactory situation to a more adequate one”.

products and systems, can be seen as concrete manifestations and expressions that designate new patterns of action and/or new ways of doing things. (Folkmann, 2011a, p.62)

Another final statement given by Folkmann (2011a) is how he portrays design to “function as an interface between us and the world, creating structures for our way of apprehending and comprehending the world” (p.55).

3.2. Defining Design

The word *design*, from an etymological point of view, has a Latin origin containing the term *signum*, which stands for the same as the German word “zeichnen”, meaning “sign” or “drawing” (Flusser, 2017). Glenn Parsons (2016) points out to how usually the most instinctive thing to do when researching for a definition, would be to look it up in a dictionary. The word “design” has existed for over 500 years in English, and it portrays a multiplicity of meanings, where the *The Oxford English Dictionary* lists 16 different definitions for the verb alone (Parsons, 2016). Parsons (2016) follows up by stating how these dictionary definitions “rarely measure up as definitions in the philosophical sense” (p.13). Additionally, to reinforce its definition, often a list of examples is also attached to it:

This list is meant to suggest the distinction that we need here [...] However, the list, and the definition more generally, offers us no basis for this distinction. Surely there is some reason why the imaginative productions of symphonic music are art, and those of accounting are not, but the dictionary definition fails to tell us what this could be. Thus, since it fails to specify a set of conditions that are individually necessary and jointly sufficient for being a work of art – that is, an essence – the dictionary definition does not allow us to fully understand the nature of art in the way a philosophical investigation of it would demand. (Parsons, 2016, p.13)

Another way often used when trying to answer what Design is, is the usage of examples of design products (Parsons, 2016). Parsons emphasizes how this still doesn’t answer the question satisfactorily enough:

When we ask “What is design?,” we want to understand what makes the production of these things, and others like them, instances of

design. We would like to discover, in other words, the nature of the concept rather than mere examples of it. (Parsons, 2016, p.12)

As mentioned before, regarding Mike Monteiro's point of view on what design is, it merges into the ideas of Parsons. In his book, *Ruined by Design How Designers Destroyed the World, and What We Can Do to Fix It*, his approach on writing about design is less philosophical than Parsons, since he focuses on the role and impact of design on our world rather than exploring in depth its definition (Monteiro, 2019). Therefore, most of his writing is about design creations and how these impacted negatively our society, demanding designers to be more conscious of their impact. Thus, he emphasizes the importance of the role of the designer, often disregarded even by designers themselves.

I intend to show you that design is a political act. What we choose to design and more importantly, what we choose not to design, and even more importantly, who we exclude from the design process—these are all political acts. Knowing this and ignoring it is also a political act, albeit a cowardly one. Understanding the power in our labor and how we choose to use it defines the type of people we are. (Monteiro, 2019, p.12)

Similarly to Parsons, Monteiro (2019) also refers to design theorist Victor Papanek's words regarding the designer's role: "You (designer) are responsible for what you put into the world. And you are responsible for the effects those things have upon the world" (p.12). Like Parsons, Monteiro believes that designers can change the world, therefore they are responsible for the work they put out there.

Design is a discipline of action. We make things! They go out into the world and they affect people. People don't look at our interfaces to appreciate them, they use them to get things done in their lives. The things we make have consequences. You are responsible for what you put into the world. (Monteiro, 2019, p.20)

In general, a plethora of design definitions can be found from many theorists who have studied this subject. Parsons (2016) goes through some of them who helped construct his idea on how to define design. An important group of definition that Parsons (2016) pinpoints is based "on the idea that everything we do is design" (p.14). He cites Victor Papanek (1971, 23) who wrote, "All men are designers. All that we do, almost all the time, is design" (p.14).

This theory encompasses Papanek's (1971, cited in Parsons, 2016) view on design as "the primary underlying matrix of life" (p.14) which includes from machine and building production to mundane actions like baking a pie. Parsons (2016) also references another similar perspective within the same definition from Henry Petroski (2006) who defends that "Designed things are the means by which we achieve desired ends" (p.14). Here, the focus lies in the use of things with little or no change with the goal to help achieve a certain aim. Even natural things, like a shell to scoop water for drinking, are seen as design objects according to Petroski's point of view. Norman Potter (2002) in his book, *What is a designer: things, places, messages*, also states that "every human being is a designer" (p.10). According to Parsons (2016), merely defining design by its ability to achieve our aims is not sufficient and rather problematic on a philosophical aspect:

Of course, there are some similarities between an everyday process like baking a pie and the process that produced the iPod, the Juicy Salif and the Eames chair. On the other hand, there are also differences, and we do distinguish between the two: it would be strange to call someone who baked a pie a "designer," for example. As a matter of fact, in our everyday thinking we distinguish design from all sorts of other activities in which we use things to achieve our aims: art, science, sports, war, as well as mundane activities such as cleaning and using sticks to draw in the sand. (Parsons, 2016, p.15)

This usage of the word "to design" as a reference to an intention is described by Parsons (2016) as a too broad of a definition, which is also outdated in today's usage of this term:

If, then, "design," as we typically use the term today, means more than merely using something to achieve a goal, what does it mean? One idea is that design is not merely action of any old sort, but a specific kind of action: action that changes the world. (Parsons, 2016, p.16)

This being said, Parsons (2016) firstly emphasizes the need to understand the meaning behind the phrase "changes the world" in a substantive way, since "...after all, any action at all changes the world in some way" (p.16). Therefore, he refers to it meaning to "bringing a new sort of thing into being" (Parsons, 2016, p.16).

On this view, baking a pie does not really change the world, because it doesn't bring a new sort of thing into being – it simply adds one more

of an existing type. On the other hand, when a new device, such as the iPod, or the Eames chair, is created, the world is altered in a substantial way – it is different than it was before. (Parsons, 2016, p.16)

Design theorist, Christopher Jones (1970, cited in Parsons, 2016) also suggested a definition of design within this perspective, defining it as “the intentional initiation of change” (p.16). With this suggestion in mind, Parsons (2016) adapts it to “(design is) the intentional creation of a new kind of thing” (p.16) as it would be closer to the contemporary concept of design. Yet, he described to not be fully satisfied with this definition since it is still too broad and allows for “change that is achieved without any creativity or invention” (Parsons, 2016, p.16). He clarifies his thought process with the following example:

Consider the members of a construction crew that builds an office tower: they create the structure, in a sense, but they do not design it. Designing a structure like an office tower is typically the job of someone else – the architect: workers assemble the required parts in the way the architect directs. That certainly involves skill, and may call for “on-the-spot” decisions about certain features not explicitly specified in the architect's plans. Nonetheless, it isn't the same as designing the structure. (Parsons, 2016, p.16)

Having this in consideration, Parsons corrects his definition of design into “the intentional creation of plans for a new kind of thing” (Love, 2002, cited in Parsons, 2016, p.16). Hereby, he is also able to highlight design as an “essentially conceptual or mental activity” (Parsons, 2016, p.16-17). Another aspect to be taken into consideration, is that even if there is no concretization of a person’s design idea, the person has still designed something. Also, even if the final design product results from an unintentional outcome or is an accidental discovery, Parsons (2016) mentions how in this case, someone invented or discovered something but didn’t design it.

The concept of design, it seems, entails a certain kind of rational connection between the final product and the creative process: if a person designs an X, then the creation of the plan for X is guided by the goal of producing something that can do what X does. To capture the concept of design, then, we will need to build this necessary condition into our definition somehow. (Parsons, 2016, p.17)

Parsons included this condition into his definition of design by regarding it as a necessarily problem-solving activity. According to him, “the design process is not merely the production of plans for something new; rather, it is the production of such plans via the working-out of a potential solution to some problem” (Parsons, 2016, p.17).

Philosopher Greg Bamford offered the following definition of the design activity composed by four necessary and sufficient conditions:

Someone designs thing X at time t if and only if: (1) She imagines or describes X at t; (2) while supposing that X at least partially satisfies some set of requirements R under conditions C and; (3) Satisfying R is a problem for which; (4) X is a novel or original solution. (Bamford, 1990, cited in Parsons, 2016, p.17)

Parsons (2016) offers a simplified version of Bamford’s definition of the verb design as “the intentional solution of a problem by the creation of plans for a new sort of thing” and he follows by defining the noun “design” as “the problem-solving plan generated by this activity” (p.17).

Another aspect to consider when defining design, is that it has to be plausible and reasonable (Parsons, 2016). Parsons points out to the example of designing a time machine, which is assumed as very unlikely to work and therefore this activity would fall within the spectrum of someone imagining something rather than designing. Surely there are designs who fail at solving a problem, which he refers to as being poorly designed rather than not working. In these cases, such as Philippe Starck’s famous lemon juicer for example, it fails as a solution but it wasn’t immediately obvious that it would fail like in the case of the time machine (Parsons, 2016).

Taking these considerations, Parsons (2016) refines his definition one last time as follows: “Design is the intentional solution of a problem, by the creation of plans for a new sort of thing, where the plans would not be immediately seen, by a reasonable person, as an inadequate solution” (p.18). Thus, leading us to the previously mentioned final definition of design, which is the fusion of both authors’ ideas representing one of the most current and accepted definitions. Therefore, defining design as the deliberate resolution of a problem

within a set of limitations, through the development of plans for a novel type of thing, where a reasonable person wouldn't immediately consider such plans to be an inadequate solution.

It is important to mention that various perspectives on what design is can be found, but the definition mentioned above was considered to be the most adequate and fitting for the purpose of this dissertation.

4. Concepts of reality

As previously mentioned by Santaella (2007), the omnipotence of the digital in our current society, is triggering changes in our perception of spaces, leading to a certain fading of the real. Kellner (cited in Santaella, 2007) also makes reference to how the current technological innovations, constituting the cyberspace, are rising deep philosophical questions about the nature of reality. The fact that we are able to move around other virtual worlds or other simulations of the world is proposing a questioning of what “reality” is. In essence, it can be perceived how the current age of hypermobility is making us rethink the concept of what is reality, as the borders of the physical world and the cyber world are becoming more and more blurry.

4.1. Different perspectives about reality

A plethora of researchers from different study areas have tried to demystify and define the concept of reality. According to Henri Bergson (cited in Joron, 2006), matter is undeniably just as it appears to us. In 1903, he defends in his *introduction à la métaphysique*⁷⁸ that reality comes down to a world of images:

Na sua *introduction à la métaphysique* (1903), ele reitera a tese da imediatidade dada da realidade exterior sobre o espírito, afirmando notadamente que o senso comum detém mais verdades que poderiam conter as teses idealistas e realistas dos filósofos e de outros homens de ciências. O real se resume assim para Henri Bergson, a um mundo de imagens. Deste ponto de vista ele defende um certo idealismo já que ele percebe o parentesco ou uma analogia entre realismo e consciência.⁷⁹ (Joron, 2006, p.291)

From a different point of view, in 1950, Husserl (cited in Joron, 2006) was the opinion that “não existe realidade absoluta, mesmo se as essências são realidades inteligíveis sem serem

⁷⁸ Translation by the author : “*introduction to metaphysics*”.

⁷⁹ Translation by the author : In his *introduction à la métaphysique* (1903), he reiterates the thesis of the given immediacy of external reality over the spirit, notably stating that common sense holds more truths than could contain the idealist and realist theses of philosophers and other men of science. The real is thus summarized for Henri Bergson, as a world of images. From this point of view he defends a certain idealism since he perceives the relation or an analogy between realism and consciousness.

produtos do pensamento”⁸⁰ (p.292). However, he agreed that consciousness plays an important role in the perception of reality, since according to him that is where reality gains form.

The Spanish painter, Salvador Dali (cited in Saperstein, 2012) pursued to understand the world as he tried to visualize his ideas on reality through his art. He would read and write about the discoveries in science and psychoanalysis, such as Einstein’s Theory of Relativity and Freud’s theories of psychoanalysis, which influenced his perception on reality. According to Saperstein, Dali believed that reality is a dichotomy and that there is an irrational and a rational dimension of experience who co-existed at the same time. Later on, after reading Lacan’s theories of psychoanalysis, he moved on to believing that multiple simultaneous realities existed in the world.

After absorbing Lacan’s theories of psychoanalysis, Dalí believed that the world is made up of several simultaneous realities; in which many ideas can and do exist at the same time. For that reason, from 1935 through 1938, Dalí’s artwork was no longer about representing a dichotomy; instead, he wanted to visualize reality as a paradox through multiple co-existing images. (Saperstein, 2012, p.10)

Silva (2006) stated that “a grande magia do real consiste em simular o que não é: uma verdade absolutamente externa ao observador, [...] toda realidade é uma construção social recortada pelo trajeto individual”⁸¹ (p.163). He continues on to reference Baudrillard, known to vindicate, shortly put, that we are living in simulations of reality:

Ou, como sustenta Jean Baudrillard, sem o menor constrangimento nem concessões ao moralista, “a realidade é uma cadela” (Baudrillard, 1994, P.21). Prostituta satisfeita com sua condição, entrega-se a todos com a mesma volúpia e com todos simula a mesma verdade, a mesma certeza, a mesma plenitude. Só que por trás da apetência nada existe tudo não se passa de um simulacro, uma entrega tão além do possível que se torna verosímil por falta de provas ou, ao contrário, tão aquém

⁸⁰ Translation by the author : “there is no absolute reality, even if essences are intelligible realities without being products of thought”.

⁸¹ Translation by the author : “the great magic of the real consists in simulating what it is not: a truth absolutely external to the observer, [...] all reality is a social construction cut by the individual path”.

do provável que se torna concreta por excesso de indícios negativos.⁸²
(Silva, 2006, p.164)

As previously mentioned, we have become ubiquitous beings while our modern society's current reality is being overflowed by intangible cyber realms constituting "replications" of reality (Scott, 2007). As a result, Baudrillard (cited in Silva, 2006) defends, from a sociological perspective, that we are living in what he denominates as "hyperreality". Reflecting on this argument, Silva (2006) proposes a radical hypothesis defending that reality might just be an illusion and it may be nothing more than a result of our imaginary.

Psychologist Philip Johnson-Laird (cited in Rotham, 2018) published a book called "Mental Models" in 1983, stating that when thinking, people often manipulate models of the world in their minds instead of applying logical rules. He follows up with a simple example of how when wanting to buy a rug to match our couch, we will proceed to imagine the same rug in our living room like a mental staged set. After reading Laird's book, the philosopher Thomas Metzinger (cited in Rotham, 2018) started to question whether if the reality, as we experience it, might just be a so said "mental stage set,— a representation of the world, rather than the world itself" (para. 4).

It isn't just that we live inside a model of the external world, Metzinger wrote. We also live inside models of our own bodies, minds, and selves. These "self-models" don't always reflect reality, and they can be adjusted in illogical ways. (cited in Rotham, 2018, para. 5).

Another philosopher from the 18th century, George Berkeley (cited in Rotham, 2018), also shared the same thesis defending that reality was all in our minds. Metzinger (cited in Rotham, 2018) goes further to argue in his book "*The Ego Tunnel*" that aspects of our experience which we perceive as real are actually "complex forms of virtual reality" (para. 30) created by our brains. An interesting aspect about Metzinger's (2011) research is that he's been collaborating with neuro-scientists for many years. Throughout his book, he focuses

⁸² Translation by the author : Or, as Jean Baudrillard sustains, without the slightest constraint or concessions to the moralist, "reality is a bitch" (Baudrillard, 1994, P.21). A prostitute satisfied with her condition, she gives herself to everyone with the same voluptuousness and with everyone she simulates the same truth, the same certainty, the same fullness. But behind the appetite there is nothing, everything is just a simulacrum, a submission so far beyond the possible that it becomes credible due to a lack of evidence or, on the contrary, so far below the probable that it becomes concrete due to an excess of negative evidence.

mainly on understanding the concept of the self, arguing how each of us live our lives in our own conscious “Ego Tunnel”, as we all have our own individual inward first-person perspective about reality (Metzinger, 2009). People are all unaware of the construction process or the medium through which information penetrates our minds. Therefore, Metzinger (2009) compares our conscious experience to “an invisible interface” (p.46) and depicts our brains as reality engines, virtual reality generating devices.

Cognitive scientist, Donald Hoffman (2015), has also directed his research on understanding if we perceive reality as it is, but also in understanding the relationship between our brain and our conscious experiences. In one of his TED talks, *Do we see reality as it is?*, Hoffman starts by stating how the fact that brain activity and conscious experiences are correlated isn't something new as it had been already exposed by Thomas Huxley in 1868. Hoffman questioned the nature of our perception and if we could possibly be misinterpreting its nature. He also points out at how it wouldn't be the first time in human history that such occurrence happened. He gives the examples of how humanity used to think that earth was flat because it did look that way until Pythagoras's discoveries proved it wrong. Galileo (cited in TED, 2015) also questioned himself whether we could be misinterpreting our experiences in other ways as well, by writing: “I think that tastes, odours, colours, and so on reside in consciousness. Hence if the living creatures were removed, all these qualities would be annihilated” (2:59).

Looking at modern science, Hoffman (TED, 2015) mentions how neuroscientists tell us that about a third of the brain's cortex is engaged in vision:

We think of vision as a camera, that just takes a picture of objective reality as it is. Now there is a part of vision that is like a camera, the eye has a lens that focuses an image on the back of the eye, where there are 130 million photoreceptors, an equivalent to a 310 megapixel camera. [...] What are these neurons up to? Well, neuroscientist tell us that they are creating a snapshot of all the shapes, objects, colours, and motions that we see. It feels like we are taking a snapshot of the rooms as it is, but in fact we are constructing everything that we see. We don't construct the whole world at once, only what we need at once. (TED, 2015, 3:43)

He follows by pointing at how optical illusions are a perfect example of how our brains reconstruct what meets our eyes. Looking at the principles of the gestalt theory for example, they are based on how our brains are programmed to reorganize what we perceive in a systematic way. Hoffman (TED, 2015) goes further by stating that neuroscientists believe that we actually reconstruct reality: “So when I have an experience as I describe as a red tomato, that experience is actually an accurate reconstruction of the properties of a real red tomato that would exist even if I weren’t looking” (5:47).

From an evolutionary point of view, it is also stated that vision is useful precisely because of its accuracy (Hoffman in TED, 2015). Hoffman emphasizes how on a first approach it could be believed that people with fitter perceptions would have a survival advantage. As an example to prove his point, the jewel beetle is referenced, an insect with a brown glossy appearance, to actually refute such statement. This specie’s survival depends on their males, who have the ability to fly, to look for females (who can’t fly) and mate. Unfortunately, their species became in danger of extinction because the males would confuse trashed beer bottles with the jewel beetle females, who had a similar glossy brown appearance. The males thought they had mated with plenty of females, but what they perceived to be real wasn’t real at all. Hoffman (TED, 2015) raises an important question with this simple example, “does natural selection really favours seeing reality as it is?” (9:00). His investigation team went on to create in his laboratory hundreds of thousands of evolution game simulations based on the equations of evolution to try and come up with some conclusions to that question. To simplify, the experiment consisted on simulating different and random worlds with various organisms that competed for resources. In some of the worlds, some organisms were able to see all of reality, others just part of it and others wouldn’t be able to see any of the reality. This last category of organisms would then only depend on natural selection, their so said fitness to survive (TED, 2015). Hoffman came to the result that as the different populations of the simulated worlds evolve, in almost every simulation the organisms who were able to perceive reality would go extinct. A final conclusion of this experiment taken by him is that evolution doesn’t favor accurate perception:

So the bottom line is, evolution does not favour veridical, or accurate perceptions. Those perceptions of reality go extinct. How can it be that not seeing the world accurately give us a survival advantage, that is a bit counterintuitive. But remember the jewel beetle survived for

thousand, perhaps millions of years, using simple tricks and hacks. What the equations of evolution are telling us is that all organism, including us, are in the same boat as the jewel beetle. We do not see reality as it is, we're shaped with tricks and hacks that keep us alive. (Hoffman in TED, 2015, 10:57)

Since it may be difficult to understand how not perceiving reality can be useful for living beings, Hoffman mentions a very helpful metaphor: the desktop interface on our computers.

Consider the blue icon for a TED Talk you're writing (text file icon on a computer screen). Now, the icon is blue and rectangular and in the lower right-hand corner of the desktop. Does that mean that the text file in the computer is blue, rectangular, and in the lower right-hand corner of the computer? Of course not. Anyone who thought that misinterprets the purpose of the interface. It's not there to show you the reality of the computer. In fact, it's there to hide that reality. You don't want to know about the diodes and resistors and all the megabytes of software. If you had to deal with that, you could never write your text file or edit your photo. (Hoffman in TED, 2015, 11:56)

The idea behind the metaphor portrayed by Hoffman (TED, 2015) is that in a similar way, evolution most likely has given human beings an interface that hides reality and guides our adaptive behavior. Space and time as we perceive them would be our desktop and physical objects would be simple icons occupying it. "Evolution has shaped us with perceptual symbols that are designed to keep us alive" (TED, 2015, 13:33). For a long time now, physicists have also proven that, for example, metals who appear to have a solid appearance, are actually mostly made out of empty space with microscopic particles surrounding it. In essence, Hoffman defends that our perceptual experiences don't represent reality in its pure essence, but they are interactions that our mind has with it.

4.2. The concept of reality according to Charles Sanders Peirce

Considering that there are many theorist who have explored and researched on the matter of reality, for the purpose to fulfil this dissertation's objectives, a focus on Charles Sanders Peirce's point of view through his semiotic sign theory will mainly be guiding the

following chapter. Considering the density of his Collected Papers⁸³, a need in analyzing Peirce's work through other authors, who have studied and explored it, is required. Therefore, two main works were chosen to be analyzed in more depth, since they provide knowledge on both Peirce's work and its research around the concept of the real and reality. One of them being Juliana Franco and Priscila Borges's (2015) research paper, *O real na filosofia de Charles S. Peirce*⁸⁴, and the other being Rosa Maria Perez-Teran Mayorga's book, *From Realism to "Realicism", The Metaphysics of Charles Sanders Peirce*.

Moreover, an initial distinction must firstly be clarified between the real and reality, since, respectively, one represents an external inaccessible truth and the other represents the mental representation of the perceived world that surrounds us (Silva, 2006):

A realidade é um imaginário. Sólida como um cubo de gelo. Dela, só existem imagens e aproximações sucessivas. Flagrantes de um eterno movimento em espiral. Evaporações constantes em nome da estabilidade. O real é um estado intermediário entre dois picos de entropia. A grande magia do real consiste em simular o que não é: uma verdade absolutamente externa ao observador.⁸⁵ (Silva, 2006, 163)

As referenced before, metaphysics is placed by Peirce in his sciences classification, as the third and last science to compose philosophy, along with phenomenology and normative sciences (CP 1.1864 cited in Franco & Borges, 2015). Sequentially, metaphysics are also subdivided into three sub-areas: (1) general metaphysics or ontology; (2) psychic or religious metaphysics, addressing mostly the questions of God, Liberty and Immortality; and (3) physical metaphysics, discussing the real nature of Time, Space, Laws of Nature, Matter and so on (CP 1.192 cited in Franco & Borges, 2015). Peirce stated that metaphysics is the science that deals with "com o ser enquanto ser"⁸⁶ (CP 6.214, CP 6.526 cited in Franco & Borges, 2015, p.69). This being said, Franco and Borges (1992) also emphasized Ibri's (1992) statement that for Peirce, metaphysics "é a ciência que busca explicar, de maneira positiva, ou seja, recorrendo aos fatos, como o mundo deve ser realmente para que ele possa aparecer da

⁸³ Collected Paper. Digital edition.

⁸⁴ Translation by the author : *The real in Charles S. Peirce' philosophy*.

⁸⁵ Translation by the author : "Reality is an imaginary. Solid as an ice cube. There are only successive images and approximations of it. Flagrants of an eternal spiral movement. Constant evaporations in the name of stability. The real is an intermediate state between two peaks of entropy. The great magic of the real consists in simulating what it is not: a truth that is absolutely external to the observer."

⁸⁶ Translation by the author : "the being as being".

maneira como aparece”⁸⁷ (p.69). According to Peirce’s philosophical architecture, metaphysics is dependent on all the sciences that precede it in classification (Franco & Borges, 2015). Thus, providing it with foundations from phenomenology and normative sciences. On one hand, Phenomenology “fornece o fundamento observacional para o resto da Filosofia, buscando determinar os elementos universais indecomponíveis de tudo aquilo que aparece à mente”⁸⁸ (Santaella, 1992 cited in Franco & Borges, 2015, p.70). On the other hand, Normative Sciences focus on the phenomenon according to how we can act on it and how it acts on us, that is, “o modo geral pelo qual a mente, se for agir deliberadamente e sob autocontrole, deve responder aos golpes da experiência”⁸⁹ (Santaella, 1992, cited in Franco & Borges, 2015, p.70).

According to Santaella (1992, cited in Franco & Borges, 2015), Peirce investigates what is real (and not fiction) through the use of logic principles, considering that this real can be ascertained in common experience.

Dessa forma, a metafísica de Peirce funda as suas hipóteses não sobre dados a priori, mas, sim, no mundo fenomênico e consiste no resultado da aceitação absoluta dos princípios lógicos, não meramente como regulativamente válidos, mas como verdades do ser.⁹⁰ (CP 1.487 cited in Franco & Borges, 2015, 70)

Peirce had the intention of creating a scientific metaphysics, which would investigate what is real by using logic principles, as far as that real can be investigated in common experience (Delaney, 2013; Nubiola, 2012 cited in Franco & Borges, 2015). Franco and Borges cite Santaella’s affirmation, explaining that this metaphysics would “une os estudos da Fenomenologia e Ciências Normativas para desenvolver uma Teoria da Realidade”⁹¹ (Santaella, 1992, cited in Franco & Borges, 2015, p.70). Thus, attributing to metaphysics the task to know “as características mais gerais da realidade e objetos reais com a ajuda da

⁸⁷ Translation by the author : “is the science that seeks to explain, in a positive way, that is, resorting to facts, how the world must really be so that it can appear the way it does”.

⁸⁸ Translation by the author : “provides the observational foundation for the rest of Philosophy, seeking to determine the indecomposable universal elements of everything that comes to the mind”.

⁸⁹ Translation by the author : “the general way in which the mind, if it is to act deliberately and under self-control, must respond to the strokes of experience”.

⁹⁰ Translation by the author : In this way, Peirce's metaphysics bases its hypotheses not on a priori data, but on the phenomenal world and consists in the result of the absolute acceptance of logical principles, not merely as regulatively valid, but as truths of the being.

⁹¹ Translation by the author : “unite the studies of Phenomenology and Normative Sciences to develop a Theory of Reality”.

fenomenologia e da lógica como a ciência da análise do pensamento”⁹² (Franco & Borges, 2015, p.70).

Franco and Borges (2015) emphasize how the term ontology isn't something evident in Peirce's texts, as opposed to metaphysics. The reason is most likely to lie in the fact that he lived and wrote through a time period where this term wasn't often used. In the meantime, Franco & Borges (2015) point out to some clue from Peirce's papers on what he understands by ontology. According to Peirce:

Existem certas perguntas commumente reconhecidas como metafísicas, e que certamente o são, se por metafísica nós queremos dizer ontologia [...]. Estas são, por exemplo, o que é realidade? Necessidade e contingência são modos de ser do real? As leis da natureza são reais? Elas podem ser consideradas imutáveis ou presumivelmente são resultados da evolução? Existe algum acaso real, ou desvio da lei real?⁹³ (CP 5.496, cited in Franco & Borges, 2015, p.71)

Franco & Borges follow by adding that it is possible to grasp an ontology as the theory of the real in Peirce, if we assume that “a ontologia de um filósofo é o conjunto de entidades que ele assume existir na realidade”⁹⁴ and that the “tipos de entidades que ele está pronto a asseverar como realmente existentes”⁹⁵ (DeLanda, 2002, cited in Franco & Borges, 2015, p.71).

Moreover, Mayorga (2007) dedicates a big part of her book, *From Realism to “Realicism”, The Metaphysics of Charles Sanders Peirce*, analyzing the roots of the problem of universals. She does so since the problem of universals is at the roots of the many discussions among philosophers about the topic of what is the real. Thus, by analyzing part of the history of philosophy guided her research towards better understanding Peirce's theory on the real. She (2007) explains how “the problem of determining what kind of ontological status universals have, has been a source of fascination and frustration for philosophers for more

⁹² Translation by the author : “the most general features of reality and the real objects with the help of phenomenology and logic as the science of thought analysis”.

⁹³ Translation by the author : There are certain questions commonly recognized as metaphysical, and they certainly are, if by metaphysics we mean to say ontology [...]. These are, for example, what is reality? Are necessity and contingency ways of being from the real? Are the laws of nature real? Can they be considered immutable or are they presumably the result of evolution ? Is there any real coincidence, or deviation from the law of the real?

⁹⁴ Translation by the author : “a philosopher's ontology is the set of entities he assumes to exist in reality”.

⁹⁵ Translation by the author : “types of entities he is ready to assert as actually existing”.

than two thousand years” (p.1). In order to better understand our world as it is, Mayorga emphasizes on the importance to better understand the things and concepts that compose it and their relation to each other. Thus, giving us the following definition of universals:

What are universals? Simply put, they are the general concepts (or ideas or words) we develop in order to make sense of the world around us. If we want to claim to have knowledge of the world as it truly is, we need to determine exactly what kinds of things our concepts are and the connection they have with the world at large. The problem of universals deals with trying to determine the nature of these concepts, and consequently, the nature of their connection with the world. (Mayorga, 2007, p.1)

To better understand this definition, Mayorga (2007) illustrates the problem of universals with a simple example: the word rose. As known, this word refers to a kind of flower with specific characteristics of its own, such as its smell and appearance for instance. Mayorga continues by explaining how on a general point of view, this is a commonly known word by everyone, used to refer to the examples of this kind of plant that people have seen or smelled in their lives, but also to refer to the roses people have not or might even never experience. When someone uses the word “rose”, they refer to every example of this flower in the world. Mayorga (2007) follows by stating that “if I ask, “I wonder if there are more rose gardens in Virginia than in Florida,” I have asked a meaningful question, and it has an answer, even if I in particular can’t find out” (p.6). She (2007) continues to explain how the word “rose” reaches out beyond all our “experience to every sample of a certain kind of thing” (p.6), even though it is just “a sound or some sort of a written symbol” (p.7). This raises certain problems according to Mayorga, as to how can a word be used in the same way by people who have never met and who have had different experiences. It is clear that behind the word, lies a concept, an idea or a thought, but the main problem being raised by Mayorga lies in better understanding what this concept actually is. Namely, if it is something in our mind or outside of it that we somehow “tie” into (Mayorga, 2007, p.7). Furthermore, she gives another example about how it would be if we named every rose differently and considered them all in their particularity only. Thus, leading to her concluding that we need to think in general terms, meaning universals, in order to be able to make any knowledge assertions about them:

Suppose I have a rose garden, and I decide to give a different name to each item. The sweetheart rose is Jonathan, the next one down the

stem is Jennifer, and the other two unopened buds are Harry and Sally. Let's say I not only do this for every flower, but for every leaf, every thorn, every snail, every bee, indeed, to every particular thing in my environment, I give a different name. Could I have knowledge of roses, leaves, snails, etc.? How could I? If every particular thing is considered in its "particularity" only, there can be no talk of roses, no science of horticulture, for there is no name "rose" that will represent all these instances, only a Harry, a Sally, a Jonathan, and so on, ad infinitum. So the problem of the meaning of words is tied to whether we can have any knowledge at all of the world. There is a metaphysical, or ontological concern, as well as an epistemological one, for it seems that even though the things we encounter in the world are all particular roses, chairs, cats, etc., in order to make any knowledge claims about them, we have to think in general terms, that is, in terms of universals. (Mayorga, 2007, p.8)

One of the main reasons why Mayorga (2007) brings up the problem of universals, is to understand the distinction between the doctrines of nominalism and realism, rival solutions to the mentioned problem regarding what reality is. For the purpose of this dissertation no deep exploration on these doctrines will be made since there's a lot to be explored on these two topics alone and we need to focus on the main goal of this work, which is exploring Peirce's theory on reality. Especially since both nominalism and realism have been present since early on in the history of philosophy and ever since have acquired different meanings since it has been used in multiple ways by many different people:

The term ("Realism") has at least two broad meanings, and several subcategories. In the older, or classical-medieval sense, it refers to a metaphysical theory regarding the ontological status of universals. In this sense, it is opposed to nominalism, the doctrine that claims that since only individuals exist and are real, therefore universals do not exist and are not real. In modern philosophy, it is usually associated with an epistemological-metaphysical theory having to do with the view that material objects exist independently of our knowledge or consciousness of them. In this sense, it is opposed to idealism, which claims that all things are dependent on the mind, or are, to a certain extent, mental. (Mayorga, 2007, p.8)

Mayorga (2007) argued how throughout the years Peirce seems to have different doctrines on what is the real. Leading him to being categorized as a nominalist, a realist, an idealist or a pragmatist within others:

Was he a nominalist? Or was he a realist? Or an idealist? A pragmatist? My answer to all these is: "yes, but no." Peirce was all of these in the sense that he extracted and incorporated features of these doctrines into his own. But at the same time, he was none of these in the sense that he gave these theories his own special twist and therefore changed their original meanings. Peirce wanted "[t]o erect a philosophical edifice that shall outlast the vicissitudes of time". (CP 8.12 cited in Mayorga, 2007, p.90)

Having this said, Mayorga (2007) makes a more intensive overview of Peirce's work evolution regarding his definition of the "real" throughout her book, but shortly put, her research led her to conclude the following excerpt encompassing his latest beliefs on this matter:

Are universals real? . . . Objects are divided into figments, dreams, etc., on the one hand, and realities on the other. The former are those which exist only inasmuch as you or I or some man imagines them; the latter are those which have an existence independent of your mind or mine or that of any number of persons. The real is that which is not whatever we happen to think it, but is unaffected by what we may think of it. (CP 8.12 cited in Mayorga, 2007, p.92)

Moreover, Franco & Borges (2015) emphasize how Peirce also makes a distinction between reality and existence, emphasizing the same definition of Peirce's theory on reality as proposed by Mayorga (2007):

Existência é um modo especial da realidade, que, independentemente de outras características que possui, tem que ser absolutamente determinada. A realidade, por sua vez, é um modo especial de ser, cuja característica é que as coisas que são reais são o que elas realmente são, independentemente de qualquer afirmação sobre elas.⁹⁶ (CP 6.349 cited in Franco & Borges, 2015, p.71)

Peirce states how "o real seria aquilo que não é o que eventualmente dele pensamos, mas que permanece não afetado pelo que dele possamos pensar"⁹⁷ (Peirce 1871, W 2:467 cited in

⁹⁶ Translation by the author : Existence is a special mode of reality, which, regardless of other characteristics it possesses, has to be absolutely determined. Reality, on the other hand, is a special way of being, whose the characteristic is that things that are real, are what they really are, independently of any statement about them.

⁹⁷ Translation by the author : "the real would be that which is not what we eventually think of it, but which remains unaffected by what we might think of it".

Franco & Borges, 2015, p.71). Thus, making the real ontologically independent of our epistemic processes (CP 5.405; 1878, W3:2716; 1871, EP 1:90 cited in Franco & Borges, 2015). Furthermore, Mayorga (2007) also emphasizes how in that line of thought for Peirce the real is “the opposite of the fictitious, of the figment, which is affected by or dependent on what others or I think about it” (p.93). She follows by sharing an example where Peirce describes the difference between the real and a figment:

The question whether Hamlet was insane is the question whether Shakespeare conceived him to be insane. Consequently, Hamlet is a figment and not a reality. But as to the inkstand being on my table, though I should succeed in persuading myself and all who have seen it that it is a mere optical illusion, yet there will be a limit to this... it will, at last... force its recognition upon the world...it has the characteristic which we call reality. (CP 8.153 cited in Mayorga, 2007, p.93)

It can be perceived how a product of imagination isn't considered as real according to Peirce, as it wouldn't actually exist (Mayorga, 2007). Additionally, Mayorga (2007) refers to how there are things in life we have no influence on and how there is “constraint, or influence, on (our) thoughts which is beyond (our) control” (p.93). This being said, she shares Peirce's following description about this constraint in question:

We have, it is true, nothing immediately present to us but thoughts. These thoughts, however, have been caused by sensations, and those sensations have been constrained by something out of the mind. This thing out of the mind, which directly influences sensation, and through sensation thought, because it is out of the mind, is independent of how we think it, and is, in short, the real. (CP 8.12 cited in Mayorga, 2007, p.93)

Following that line of thought, Franco & Borges (2015) also discuss on the matter of where the real would be, that which is independent of how we think. Considering that there must be something “que influencia nossos pensamentos e que não foi produzido por eles”⁹⁸, (Franco & Borges, 2015, p.72). Besides thoughts, nothing else is immediately presented to us according to them. On another note, those thoughts are said to be caused by feelings which in

⁹⁸ Translation by the author : “that influences our thoughts and was not produced by them”.

turn are compelled by something outside of the mind. Mayorga (2007) also emphasizes this line of thought from her analysis on Peirce's work:

What we have direct contact with is our mind, or our thoughts. But we have access to the world outside our mind through our senses, which filter the information the world provides us and in turn cause sensations in us, which are then translated into thoughts. That which is "out there" and is therefore external to my mind (my mind does not make it up) is the real, according to this account. The kind of permanency that which is "out there" has is not influenced by my thoughts about it. (Mayorga, 2007, p.93)

Additionally, Mayorga (2007) also acknowledges how Peirce was well aware that as humans we can only describe what the real is, because "we are not omniscient and do not have immediate knowledge of the external world but rather have mediate knowledge of it through sensations which create thoughts and have to communicate these thoughts with each other through language" (p.101). So, it is acknowledged that external objects can only be experienced and only known through concepts.

Moreover, as explained, it can be understood how for Peirce the "real" is independent from thought, more specifically from any particular thought or mind (Mayorga, 2007). Meanwhile, Mayorga (2007) points out to how at the same time the "real" is "nothing more than what would be the result of the consensus of all thought, the "catholic consent", or as he [Peirce] also calls it, the "final opinion"" (p.105). She explains her point more deeply in the following excerpt:

But if the real is of the nature of an opinion, and since an opinion is of the nature of a conception, or "cognition," as he calls it above, the "real" also has a certain kind of dependence on thought! Peirce is not contradicting himself, as some have claimed. Again, a careful reading reveals the subtlety in what he says. Peirce uses "thought" in two senses, as he explains elsewhere. It can mean a particular thought in one person's mind (as he does when he speaks of the real's independence from that), but it can also mean "thought in general". (Mayorga, 2007, p.105)

On another note, Mayorga (2007) makes an important reference to how Peirce actually believes that the internal can be real. Before further exploring such statement, it is important

to quickly clarify the difference between the terms “internal” and “external”: “The internal is dependent on "what I think of something." In contrast, the external, since it is real it is therefore independent of what I think about but also of what I think about anything” (Mayorga, 2007, p.112). Going back, Peirce gives the example of dreams to explain his argument regarding how the internal can be real (Mayorga, 2007). Even though dreams are mind-dependent and therefore depend on an internal mental process for their existence, the occurrence of dreams is independent of what any mind may think about it. Therefore according to Peirce, the dream’s occurrence is a reality “even though the content of the dream is a product of one mind” (Mayorga, 2007, p.113). Nonetheless, it shouldn’t be confused that the content of dreams is indeed not real, as it is also a figment as previously explained (Mayorga, 2007). Therefore, Peirce makes the following conclusion regarding the existence of reality within internal processes:

Thus an emotion of the mind is real, in the sense that it exists in the mind whether we are distinctly conscious of it or not. But it is not external because although it does not depend upon what we think about it, it does depend upon the state of our thoughts about something. (CP 7.339 cited in Mayorga, 2007, p.113)

As seen previously, Mayorga (2007) also emphasized Peirce’s view on how thoughts are the only thing immediately presented to us, since we don’t have immediate access to the external world, to the real. She (2007) explains how the world outside our mind is accessed to us through our senses, “which filter the information the world provides us and in turn cause sensations in us, which are then translated into thoughts” (p.93).

Lastly, Peirce’s idea of fallibilism actually defends that “our knowledge is never absolute but always swims, as it were, in a continuum of uncertainty and of indeterminacy” (CP 1.171 cited in Mayorga, 2007, p.143-144). In other words, Peirce believed that we can never be absolutely sure of anything, or “in any way reach perfect certitude nor exactitude” (CP 1.147 cited in Mayorga, 2007, p.142). Therefore, we may never really reach immediate truth about what the real or reality really is. Mayorga (2007) mentions how Peirce claims that fallibilism is allied to synechism, “the metaphysical claim that things also are in a continuum of indeterminacy” (p.144):

If all things are continuous, the universe must be undergoing a continuous growth from non-existence to existence. There is no difficulty in conceiving existence as a matter of degree. The reality of things consists in their persistent forcing themselves upon our recognition. If a thing has no such persistence, it is a mere dream. Reality, then, is persistence, is regularity. In the original chaos, where there was no regularity, there was no existence. It was all a confused dream. This we may suppose was in the infinitely distant past. But as things are getting more regular, more persistent, they are getting less dreamy and more real. (CP 1.175 cited in Mayorga, 2007, p.144)

Peirce believes that there is a tendency for humankind to navigate towards a consensus about things, to be “driven in the direction of truth, so given enough time, we would very likely arrive at it” (Mayorga, 2007, p.145). As mentioned by Mayorga (2007), it would then be synechism “what propels us towards the final opinion, the object of which is the real, and this is what comprises reality” (p.147).

Additionally and as referred previously, ontology “pretende descrever a estrutura da realidade”⁹⁹ (Franco & Borges, 2015, p.76). Franco & Borges (2015) explain how Peirce would do so by using the same categories from his phenomenology attributing to them “um estatuto ontológico de acaso, existência e lei, como modos de ser ontologicamente (e, portanto, logicamente, de serem predicados)”¹⁰⁰ (p.76). Mayorga (2007) also brings up Peirce’s “three categories of being”, also referenced by him as the “three universes of experience”, and “three modes of reality” (p.115). As explored previously in the first chapter of this dissertation in more detail, these three fundamental categories are known as Firstness, Secondness and Thirdness, and represent the three possible modes of apprehension of any and all phenomena (Santaella, 1983). In other words as described by Mayorga (2007), they permeate all of experience of the phenomenal world, meaning also of the reality presented to us. Considering how Peirce’s semiotic is described to involve the ideal of truth as the end in the infinite process of semiosis, Parker (1994, cited in Franco & Borges, 2015) considers that semiotics can be taken as the basis for ontology. Reality’s metaphysical concept is suggested

⁹⁹ Translation by the author : “intends to describe the structure of reality”.

¹⁰⁰ Translation by the author : “an ontological status of chance, existence, and law, as ways of ontologically being (and therefore logically, of being predicated)”.

by Peirce (W3.273 cited in Franco & Borges, 2015) as “o objeto hipotético que deverá ser representado em uma opinião verdadeira”¹⁰¹ (p.77).

The concept of the dynamic and immediate object in semiotics is described to play an important role in the arguments defending Peirce’s realism (Hausman, 1991, 2002; Parker, 1994 cited in Franco & Borges, 2015). Previously in the first chapter of this dissertation, it is explored how semiotics is “uma ciência que estuda os signos e suas condições para transmissão de significado de uma mente para outra”¹⁰² (Peirce, c. 1896, CP 1.444 cited in Franco & Borges, 2015, p.78). Those conditions are given by at least three elements that compose the signs and their relation, known as the sign’s object, the sign and the sign’s interpretant, composing the simplest definition of the sign in Peirce.

O signo serve para transmitir conhecimento sobre alguma outra coisa que ele substitui, da qual ele está no lugar e que, portanto, ele representa, [...], chamada de objeto do signo e a ideia que o signo gera na mente é um signo mental desse mesmo objeto, chamado de interpretante.¹⁰³ (Peirce, EP 2:13 cited in Franco & Borges, 2015, p.78)

Franco & Borges (2015) reference Houser (2000), who explains that when defining the “real” for the Century Dictionary, Peirce distinguished “objetos reais [...] externos à mente, que são totalmente independentes de nosso pensamento, dos objetos internos que dependem do pensamento, mas não de pensamentos sobre eles”¹⁰⁴ (p.79). Later on, this distinction became a basic characteristic of Peirce’s semiotic, known as the dynamic and immediate object duo (Houser, 2000 cited in Franco & Borges, 2015). The idea that an object affects the sign but is not affected by the sign becomes prominent in the definitions of signs in general from 1903 onwards (CP 1.538 cited in Franco & Borges, 2015). Franco & Borges (2015) emphasize that such definition of the sign’s object can be associated to the definition of the real given by Peirce (CP 5.405) as “aquilo que possui características que são independentes de como você

¹⁰¹ Translation by the author : “the hypothetical object which has to be represented in a true opinion”.

¹⁰² Translation by the author : “is a science that studies signs and their conditions for transmitting meaning from one mind to another”.

¹⁰³ Translation by the author : The sign serves to convey knowledge about something else which it replaces, which it is in the place of, and which, therefore, it represents, [...], called the object of the sign and the idea that the sign generates in the mind is a mental sign of that same object, called the interpretant.

¹⁰⁴ Translation by the author : “real objects [...] external to the mind, which are entirely independent of our thought, of the internal objects that depend on thought, but not on thoughts about them”.

ou eu pensamos”¹⁰⁵ (p.79). According to Peirce (CP 4.536 cited in Franco & Borges, 2015), “o objeto imediato do signo é o objeto representado pelo signo, enquanto o objeto dinâmico é o objeto independente do modo como pensamos sobre ele”¹⁰⁶ (p.79-80). Hausman (1991 cited in Franco & Borges, 2015) emphasizes a passage of Peirce’s manuscript demonstrating how questions about the real are related to the object of the sign:

Se o objeto imediatamente anterior à mente é o objeto real ou não parece ser uma questão sobre a qual é difícil extrair qualquer significado claro. No entanto, é quase certo que nenhum pensamento sobre ele irá de qualquer modo modificar o objeto Real, uma vez que isso é precisamente o que significa chamá-lo de Real, embora algumas vezes objetos sejam modelados pelo pensamento.¹⁰⁷ (MS 6.34.00010 apud HAUSMAN, 1991, cited in Franco & Borges, 2015, p.80)

Peirce (cited in Franco & Borges, 2015) stated in a letter to Lady Welby in 1906, that there’s a need in having a distinction between immediate and dynamic objects in order to resolve an apparent conflict of truths.

Se por um lado o objeto do signo corresponde à forma que é comunicada pelo signo e que independe do signo e o determina, por outro lado, o objeto do signo não pode ser nada além do que o signo representa que ele é.¹⁰⁸ (Peirce, 1906, EP 2.477, SS:196 cited in Franco & Borges, 2015, p.84)

Thus, Franco & Borges (2015) conclude that the dynamic object “passa a definir essa forma que determina o signo e que independe dele”¹⁰⁹ (p.84) and the immediate object “define o modo como o signo representa o objeto dinâmico”¹¹⁰ (p.84). Still in the same letter, Peirce is said to have introduced the concept *commens* with the intent of referring to a common mind. Thus, uniting the mind of the sender and the interpreter, allowing the sign in question to fulfil its

¹⁰⁵ Translation by the author : “that which has characteristics that are independent of how you or I think”.

¹⁰⁶ Translation by the author : “the immediate object of the sign is the object represented by the sign, while the dynamic object is the object independent of the way we think about it”.

¹⁰⁷ Translation by the author : If the object immediately preceding the mind is the real object or doesn’t seem to be a question on which it is difficult to extract any clear meaning. However, it is almost certain that no thought about it will in any way modify the Real object, since that is precisely what it means to call it Real, although sometimes objects are shaped by thought.

¹⁰⁸ Translation by the author : If, on the one hand, the object of the sign corresponds to the form that is communicated by the sign and that is independent of the sign and determines it, on the other hand, the object of the sign cannot be anything other than what the sign represents it to be.

¹⁰⁹ Translation by the author : “moves on to define this form that determines the sign and that is independent of it”.

¹¹⁰ Translation by the author : “defines the way in which the sign represents the dynamic object”.

function (Peirce, 1906, EP 2.478, SS:1978 cited in Franco & Borges, 2015). Franco & Borges (2015) emphasize how a common shared experience is needed in order for meaning to be conveyed. Such statement led Peirce (1906, EP 2.478, SS:197 cited in Franco & Borges, 2015) to affirm that “a forma transmitida é sempre uma determinação do objeto dinâmico dessa mente comum, *commind*”¹¹¹ (p.85). Moreover, it shouldn’t be considered that the dynamic object implies something that is outside of the mind, rather that it is something forced upon the mind by perception, which includes more than what perception reveals. As Franco & Borges (2015) explain, he is the “objeto de experiência atual”¹¹² (Franco & Borges, 2015, p.85). Therefore, the dynamic object shouldn’t be understood as an external reality to which we have no access, neither is it just reality as we perceive it (Franco & Borges, 2015). Only what is known about the dynamic object can be described, as explained by Franco & Borges. Nonetheless, they (2015) point out to how the statement that “o objeto dinâmico independe do que pensamos sobre ele”¹¹³ (p.85), brings with it a certain degree of uncertainty in the knowledge process, which is essential regarding the continuity of investigations about reality.

Furthermore, it is important also to refer the concepts of the percept and the percipuum when talking about the dynamic and immediate object of a sign. Peirce (cited in Santaella, 2012) affirmed that “o que está lá, fora de nós, e que nos chega, que é apreendido num ato de percepção, chama-se percepto”¹¹⁴ (p.89). Santaella emphasizes how at times, when defining the percept, Peirce will allude to it as being a mental product, while on other occasions also separating it from any interpretative mind.

De um lado, [...] os perceptos não são apresentados como tendo uma natureza mental, não são construções mentais. São ao contrário, iniciadores compulsivos do pensamento, insistentes e exigentes, incontroláveis e precognitivos. De outro lado, há passagens em que Peirce dá ao percepto um caráter mental.¹¹⁵ (Santaella, 2012, p.92)

¹¹¹ Translation by the author : “the transmitted form is always a determination of the dynamic object of that common mind, *commind*”.

¹¹² Translation by the author : “object of current experience”.

¹¹³ Translation by the author : “the dynamic object does not depend on what we think about it”.

¹¹⁴ Translation by the author : “what is there, outside of us, and what comes to us, which is apprehended in an act of perception, is called the percept”.

¹¹⁵ Translation by the author : On the one hand, [...] percepts are not presented as having a mental nature, they are not mental constructions. On the contrary, they are compulsive initiators of thought, insistent and demanding,

Having that in mind, Santaella (2012) proposes Richard Bernstein's statement defending how Peirce created a new term, the percipuum, as a solution for the existing ambiguity of the two proposed senses of the percept. From there, the following definition of these two terms can be concluded:

Com isso, o percepto se mantém independente e externo à mente, enquanto o percipuum se encontra no julgamento da percepção, em outras palavras, o percepto pode ser tido como qualquer estímulo que ainda não teve contato com qualquer receptor sensorial, ao passo que o percipuum é o percepto no momento metafísico em que é processado por um organismo.¹¹⁶ (Morais, 2013, p.32)

Therefore, the dynamic object, being outside of the sign, is considered as a percept, a stimulus that hasn't yet been perceived by any interpretative mind. As referenced before, the immediate object defines the way in which the sign will represent the dynamic object. For that reason, as the percipuum also represents the percept when apprehended by an organism, consequently the percipuum is also the dynamic object of a sign, a stimulus perceived and processed by an interpretative mind. Another important detail about perception to consider, which James Gibson (1954) mentions as well, is how "our percepts are specific to the various features of the physical environment surrounding us" (p.4).

In order to understand the way Peirce conceives reality, some information on that matter can be taken out from the description of the dynamic object's modes of being (Franco & Borges, 2015). Meanwhile, the immediate object's modes of being give out the ways to access parts of that reality. Franco & Borges point to how the relation between semiotics and reality can be further more explored when analyzing the different kinds of dynamic objects and immediate objects, present in its system of 66 classes of signs. Here, Peirce (1908, EP 2:480 cited in Franco & Borges, 2015) talks about the abstractive, concrete and collective dynamic object, and about the descriptive, designative and copulating immediate object. These three groups of dynamic objects "reforçam a ideia de que a realidade em Peirce envolve

uncontrollable and precognitive. On the other hand, there are passages in which Peirce gives the percept a mental character.

¹¹⁶ Translation by the author : With this, the percept remains independent and external to the mind, while the percipuum is in the judgment of perception, in other words, the percept can be considered as any stimulus that has not yet had contact with any sensory receptor, while the percipuum it is the percept in the metaphysical moment when it is processed by an organism.

tanto gerais quando suas manifestações”¹¹⁷ (Franco & Borges, 2015, p.86). Franco & Borges (2015) emphasize how the incompleteness of the dynamic object opens the possibility to the idea of a reality that changes. As stated by them: “as leis estão em evolução no universo”¹¹⁸ (p.87). Hausman (2002, cited in Franco & Borges, 2015) defends the idea of a processual and evolutive reality, where the stability of reality lies in the relation between events.

Moreover, Franco & Borges (2015) also point out that considering reality as a changing and evolving process, the correspondence between interpretant and object becomes even more difficult to conceive. This due to the fact that the particular interpretant wouldn't be sufficient to account for a reality in process.

Enquanto o objeto apresenta características de uma realidade que se torna manifesta por meio de signos (Santaella, 2000, p. 29-30) que ela mesma impulsiona, o interpretante final nos leva à ideia de verdade que se relaciona com a realidade (Peirce, 1909, SS, p. 111), pois diz respeito a possibilidade de uma forma final ou invariante no modo de significação do objeto que independe de interpretantes particulares. Desse modo, nenhum interpretante tomado isoladamente pode ser um interpretante verdadeiro, isto é, aquele que corresponde em todos os aspectos à realidade.¹¹⁹ (Franco & Borges, 2015, p.87)

Furthermore, Franco & Borges (2015) explain how we can only hypothesize about the real in hope to maybe find a correlation between the sign and the object in the inference process:

A crença numa realidade que não pode ser concebida completamente possibilita estar mais atento aos signos da realidade que se apresentam e poderiam ser negados caso sejam entendidos como fruto de uma interpretação errônea dos outros. O fato da realidade ser processual, independente de um número finito de opiniões, mas parcialmente cognoscível, pode nos fazer pensar em como nossas ações alteram e

¹¹⁷ Translation by the author : “reinforce the idea that reality in Peirce involves both generals and its manifestations”.

¹¹⁸ Translation by the author : “The laws are evolving in the universe”.

¹¹⁹ Translation by the author : While the object presents characteristics of a reality that manifests through signs (Santaella, 2000, p. 29-30) driven by itself, the final interpretant leads us to the idea of truth that is related to reality (Peirce, 1909, SS, p. 111), as it concerns the possibility of a final or invariant form in the mode of signification of the object that is independent of particular interpretants. In this way, no interpretant taken in isolation can be a true interpretant, that is, one that corresponds in all aspects to reality.

contribuem para o processo evolutivo.¹²⁰ (Franco & Borges, 2015, p.88)

Altogether, it can be concluded how the belief in a reality we can't fathom generates uncertainty about knowledge itself (Franco & Borges, 2015). Thus, generating doubt in turn, which is considered to be a main drive of investigation.

¹²⁰ Translation by the author : The belief in a reality that cannot be fully conceived, allows the possibility to be more attentive to the signs of reality that present themselves and could be denied if they are understood as the result of an erroneous interpretation by others. The fact that reality is procedural, independent of a finite number of opinions, but partially knowable, can make us think about how our actions alter and contribute to the evolutionary process.

II. RESEARCH METHODOLOGY

This research paper started by focusing on an initial theoretical contextualization on the current hypermobile era and its various implications on a broader sociocultural level, followed by the exploration of the concepts of design and reality in more depth. As explained, an initial overview about semiotics was also made, namely Charles S. Peirce's sign theory, which will now serve as the main scientific analysis methodology to guide the following chapters of this dissertation.

In the current chapter, the research question will be discussed in more detail, followed by the objectives and hypothesis that sustain it. As referred, a semiotic methodological approach will be guiding the following scientific analysis of a selected case study. Such methodology is deemed as more adequate for the proposed study, as well as to verify the proposed hypothesis. It is important to recall that many topics and theories that are referred in the following chapter are explored in more depth in the literature review of this dissertation.

1. Research problem

Moving on to the research problem, three main objectives were delineated. An initial objective was oriented towards trying to understand the current fast moving era human kind is experiencing. As previously explored, we know that it is marked by the constant complexification and evolution of technology, which brings with it various repercussions in the way people interact and perceive spaces of reality. In a relatively short period of time, our society was able to shift into this “hypermobility era”, as Santaella (2013) denominates it, allowing humans to not only navigate through physical spaces but also through cyber realms. Nowadays, this omnipotence of the cyber technologies, as referenced before, bring a new perspective into how we perceive and experience our world. Santaella (2007) intriguingly stated how this may be leading to a “desvanecimento do real”¹²¹ (p.184), as the borders of the physical and cyber world become more and more blurry. Kellner (2001, cited in Santaella, 2007) also states how current technological innovations, that constitute the cyberspace, are rising deep philosophical questions around the nature of reality. The new ways in which people are able to communicate from long distances and move around in non-physical worlds, may lead to the need to rethink the old notions around the concept of reality.

Bauman and Sloterdijk (cited in Santaella, 2007) with their respective liquid and foam theories, represent metaphorically and shortly put, society’s current incapacity of maintaining its form, as it is characterized as being highly sensitive to change. This fragility and instability is taking over our society in a multitude of ways. Namely in the way people navigate and communicate through digital spaces, unblocking new sign fluxes and new ways of information exchange. As mentioned by Duarte and Marchi (2006), the existent language patterns are being altered by technological innovations on a social, cultural and physical context.

Let’s be reminded as well about how Peirce (cited in Duarte & Marchi, 2006) defended that the highest degree of reality is only reached by the signs. Moreover, Duarte and Marchi (2006) within other authors, also explain how languages are dialectical approximations of phenomena. It is explained how phenomena can trigger perceptive and intellectual strangeness, stimulating new articulations of existent languages as well as

¹²¹ Translation by the author : “fading of the real”.

stimulate the exploration of new language possibilities to account for those so called “strange” phenomena. According to Duarte and Marchi, technological innovations unveiling new spatiality, and therefore new “strange” phenomena, will consequently demand new language innovation. For example, the construction of images in this new cyber reality is so new in its essence, that they describe how it’s easy to interpretate them as unreal, but they point at the possibility of images constructing realities yet to be codified at a time that is inaugural for both reality and language.

Considerando-se que todo fenômeno de cultura só funciona culturalmente porque é também um fenômeno de comunicação, e considerando-se que esses fenômenos só comunicam porque se estruturam como linguagem, pode-se concluir que todo e qualquer fato cultural, toda e qualquer atividade ou prática social constituem-se como práticas significantes, isto é, práticas de produção de linguagem e de sentido.¹²² (Santaella, 1983, p.2)

Grau (cited in Santaella, 2007) also mentions the great amount of diverse imagery worlds expanding into new domains that are surrounding us like never before. Santaella (2006) makes an interesting statement about how with each new image technology, images change their nature and therefore change the way they make reality known to us as well. Cyberspace environments and the mediation of telerobotic systems from the internet, not only do they represent reality in new ways but they also allow the possibility to act on it (Santaella, 2007).

Another interesting aspect that Santaella (1983) emphasizes is the importance of the human mind, as it is capable of generating concrete products able to affect and transform the universe while being affected by it at the same time. As seen with Santaella (1983), the base of Peirce’s thinking lies in his theory that there is a continuous growth in the universe and in the human mind. Peirce’s correct words were that “O universo está em expansão, onde mais poderia ele crescer senão na cabeça dos homens?”¹²³ (cited in Santaella, 1983, p.5). Let’s also not forget that he also conceives science and philosophy as gradually maturing processes:

¹²² Translation by the author : Considering that every phenomenon of culture only works culturally because it is also a phenomenon of communication, and considering that these phenomena only communicate because they are structured as language, it can be concluded that each and every cultural fact, each and every activity or social practices are constituted as significant practices, that is, practices of language and meaning production.

¹²³ Translation by the author : “The universe is expanding, where else could it grow if not in the heads of men?”.

Isso nos dá uma ideia de sua concepção da ciência e Filosofia como processos que amadurecem gradualmente, produtos da mente coletiva que obedecem a leis de desenvolvimento interno, ao mesmo tempo que respondem a eventos externos (novas ideias, novas experiências, novas observações), e que dependem, inclusive, do modo de vida, lugar e tempo nos quais o investigador vive.¹²⁴ (Santaella, 1983, p.5)

Having concluded this short overview on our current hypermobile era and its repercussions on our society, a second objective and direction within this investigation was oriented towards understanding the concept of design and its role in our society. More concretely, it is intended to relate the mentioned theory, pointed by Peirce about the expansion of our universe within our minds, to the design prospect as it is a field which makes great use of the mind for its execution. As the cyberspace brings changes on a social and cultural level as previously mentioned, changes within the role of design can also be perceived. Cope & Kalantzi (2011) refer to how designers are acquiring an even greater social significance than they ever did before, and refer as well to how the design expectations are also evolving.

The changes of our times are of such significance as to suggest that we should rethink the fundamentals of design, its basic principles as well as the dimensions and range of our everyday professional practices. Not only is design now of pivotal significance in newly emerging economic and social orders; what is demanded of design and designers is also changing. (Cope & Kalantzis, 2011, p.46)

Parsons (2016, p.38) also points out to how “in modern society, the designer has an important and quite daunting role” (p.38). Many authors seem to defend that design can have strong implications on our society and the way we live in it. Victor Papanek (cited in Monteiro, 2019) used the following words to describe the designer’s role: “You are responsible for what you put into the world [...] And you are responsible for the effects those things have upon the world” (p.12). Both Parsons and Monteiro also believed in the changing potentiality that design has on our world:

¹²⁴ Translation by the author : This gives us an idea of his conception of science and philosophy as processes that gradually mature, products of the collective mind that obey to laws of internal development, while responding to external events (new ideas, new experiences, new observations), and which depend, inclusive, on the lifestyle, place and time in which the researcher lives.

Design is a discipline of action. We make things! They go out into the world and they affect people. People don't look at our interfaces to appreciate them, they use them to get things done in their lives. The things we make have consequences. You are responsible for what you put into the world. (Monteiro, 2019, p.20)

As previously mentioned Ramírez et al. (2021) also point out to how design is “decentralised, flexible and susceptible to change” (Ramírez et al., 2021, p.6), which enables it to be applied through many mediums and areas. Moreover, we have seen how this multistability of design enabled it to become a big factor in the way society is shaped (Folkmann, 2011b). Furthermore, Pombo & Tschimmel's (2005, p.64) defend that design “lida com a resposta para novas condições de vida, a descoberta de novas possibilidades, o desenvolvimento de novas soluções e a invenção de novas realidades”¹²⁵. Folkmann (2011b) also argues how traces of “spaces of possibility” can be found within design objects. He (2011b) describes the “imaginary” to function as a “productive category to question how objects in their present materiality can contain a dimension of the possible” (p.263).

Another common agreement that can be taken from this research is the importance of the role and implication of design in human life, both in the way humans perceive the world but also in the way they navigate it. Thus, there seems to be an intrinsic relation between design and reality, which brings us to our third and main objective focused on exploring such statement. Folkmann (2011a) believes that “design functions as an interface between us and the world, creating structures for our way of apprehending and comprehending the world” (p.55). He also stated that “in its epistemological effect design provides models of how to perceive and filter reality” (p.62). He continues by emphasizing also the importance of the imaginary for the creation of something, as it is a necessary ability within all fields of design. According to Otl Aicher (1991, cited in Folkmann, 2011a), Design enables us to experience the world but also to create it, as it is part of a larger whole and of a progressive phenomenology.

In their physical and material intension, design objects are indeed actual entities that give character and structure to the world of phenomena. At the same time, design, in its different extensions as products and systems, can be seen as concrete manifestations and

¹²⁵ Translation by the author : “deals with the response to new conditions of life, the discovery of new possibilities, the development of new solutions and the invention of new realities”.

expressions that designate new patterns of action and/or new ways of doing things. (Folkmann, 2011a, p.62)

To summarize, our first objective consisted in exploring the implication that the cyberspace has on our society, but more concretely how it challenges our notions and perception of reality. A second objective, was oriented towards understanding design's impact on society, especially during this hypermobile era. Now, a third and main objective is to analyze if there's an intrinsic relation between design and reality. Namely, to what extent can we consider design to be a creator of reality? The first two objectives were explored in the first phase of this research paper, the literature review, while the third objective representing the main research problem will be explored in the chapter dedicated to the scientific analysis of a case study. Before moving on to that part, the chosen methodology to be applied during the scientific analysis will be justified and explained.

2. Methodology

Having clearly defined the research problem, we can now define the methodology that will be applied during this dissertation's scientific analysis to verify the proposed hypotheses. Being aware of how this research's problem revolves around abstract concepts containing philosophical roots, such as the understanding of the relation between design and reality, the use of a qualitative research methodology is required. It is considered important to make use of a qualitative approach rather than a quantitative one, as it allows a better and more in-depth understanding of problems that fall into more complex matters that can't be put into data as easily. Therefore, the use of case studies is the chosen methodological approach, since it was deemed as the most resourceful direction to be taken for this investigation. Considering the important role semiotic plays throughout this whole paper, it is important to propose it as a scientific analysis methodology as well.

2.1. Semiotic as a scientific analysis methodology

As previously explained, semiotics' philosophical nature is characterized by its abstract study that can be extended to several scientific branches. Having the ability of being an applied philosophy, this allows it to be used as a methodological tool. Thus, allowing the possibility of extracting various frameworks as analysis methods for the proposed case study analysis. Even though, various frameworks from C. S. Peirce's sign theory could be used and each would be enriching in their own way for the proposed study, one particular is considered to be able to provide us with more specific and in-depth conclusions for our research problem. We are talking about Peirce's table on the dynamic and immediate object, which is the main methodological tool to be used as a scientific analysis methodology.

The chosen research modality, allows to apply the theoretical scope of the scientific knowledge of Peirce's semiotic within the context of a design case study, while aiming to demystify the intrinsic relation between design and reality. Before moving on to the case study analysis, two things need to be further explained. Firstly, it is important to understand how semiotic can be applied within the design field and how it helps us better understand the relation between design and reality. Then a thorough analysis about Peirce's table on the dynamic and immediate object duo has to be made, as it is important to understand its role in the manifestation of reality and how it will be applied as a methodological analysis tool.

2.2. *Design as language*

The main object of study being to understand the intrinsic influence of design in the creation of reality, it is therefore primordial to understand the relation between both concepts of *design* and *reality*. That being said, it is important to recapitulate parts of the initial gathered research that constitutes the literature review, in order to clearly frame and connect the dots between the two concepts in question.

First of all, let's recall Peirce's (1977, cited in Duarte & Marchi, 2006) affirmation stating that "o mais elevado grau de realidade só é alcançado pelos signos"¹²⁶ (p.134). Additionally and as previously explained, we perceive our world through phenomena, which are translated by a critical subject into signs, and in turn will constitute mastered languages (Duarte & Marchi, 2006). The synthesis of this process can be found in Charles S. Peirce's triad of phenomenology. It can be recalled how Santaella (1983) emphasizes how there is nothing more open to observation as phenomena which she defined as:

Qualquer coisa que esteja de algum modo e em qualquer sentido presente à mente, isto é, qualquer coisa que apareça, seja ela externa (uma batida na porta, um raio de luz, um cheiro de jasmim), seja ela interna ou visceral (uma dor no estômago, uma lembrança ou reminiscência, uma expectativa ou desejo), quer pertença a um sonho, ou uma ideia geral e abstrata da ciência, a fenomenologia seria, segundo Peirce, a descrição e análise das experiências que estão em aberto para todo homem, cada dia e hora, em cada canto e esquina de nosso cotidiano.¹²⁷ (Santaella, 1983, p.7)

Duarte and Marchi (2006) also defend this two way construction between reality and languages. They go further by arguing how phenomena can trigger perceptive and intellectual strangeness, leading to the stimulation of new language articulations or even to the exploration of new language possibilities as well. For instance, the current new spatialities that the new technological innovations of the cyberspace unveil, are described to demand new

¹²⁶ Translation by the author : "the highest degree of reality is only reached by the signs".

¹²⁷ Translation by the author : Anything that is somehow and in any sense present to the mind, that is, anything that appears, whether it be external (a knock on the door, a ray of light, a scent of jasmine), whether it is internal or visceral (a stomach pain, a memory or reminiscence, an expectation or desire), whether it belongs to a dream, or a general and abstract idea of science, phenomenology would be, according to Peirce, the description and analysis of experiences that are open to every man , every day and hour, in every nook and cranny of our daily lives.

language innovations. It is possible to conclude how reality is manifested to us through the perception of its phenomena, which we interpretate and translate into signs.

As previously referred, when trying to understand what design is, there seems to be a general agreement on the importance and impact that it has in the world we live in. Besides the old fashioned idea of design, portrayed more of a physical object with mainly materialistic applications, there seems to be a shift towards its non-material applications. As stated by Julier (2008, cited in Folkmann, 2011b), even though design artifacts are often “articulated through images, words, forms and spaces”, they also “engage discourses, actions, beliefs, structures and relationships” (p.264). Pombo and Tschimmel’s (2005) also defend that design “lida com a resposta para novas condições de vida, a descoberta de novas possibilidades, o desenvolvimento de novas soluções e a invenção de novas realidades”¹²⁸ (p.64).

In their physical and material intension, design objects are indeed actual entities that give character and structure to the world of phenomena. At the same time, design, in its different extensions as products and systems, can be seen as concrete manifestations and expressions that designate new patterns of action and/or new ways of doing things. (Folkmann, 2011a, p.62)

Moreover, an interesting metaphor that has been previously mentioned, is how Folkmann (2011a) compares design as “an interface between us and the world, creating structures for our way of apprehending and comprehending the world” (p.55).

It is hard to find a consensus on what design is and a variety of definitions of design can be found. Meanwhile, the current most accepted one is Glenn Parsons (2016) and Mike Monteiro’s (2019) definition. As previously refered they define design as the deliberate resolution of a problem within a set of limitations, through the development of plans for a novel type of thing, where a reasonable person wouldn’t immediately consider such plans to be an inadequate solution. An initial aspect to be taken from Parsons and Monteiro’s definition, is how design has strong foundations within the mental realm. Not only does it originate within the thought process but a design artifact also requires to be interpreted by

¹²⁸ Translation by the author : “deals with the response to new conditions of life, the discovery of new possibilities, the development of new solutions and the invention of new realities”.

another mind in order to exist. Therefore, we can retain the following conclusion about how design is thought, and its execution is an action defined by thought.

It is also important to recall how for Peirce all thought is given by signs. Therefore we can extend the term “thought” to the term of the “sign”, which Peirce defines as follows:

Algo que “representa alguma coisa, o seu objeto” (CP 2.228, c.1897) e assim produz um efeito na mente de um interprete ou usuário, efeito que Peirce chama de interpretante do signo (CP 8.343, 1908).¹²⁹
(cited in Nöth & Santaella, 2017, p.39)

Moreover, considering the symbiotic and inseparable relationship between the sign, thought and perception, we can also conclude that design manifests through signs. Thus, we can perceive design as language and requiring processes to manifest itself into artefacts. These artefacts, which represent materializations of design, require to firstly be interpreted by a cognitive mind in order to be part of the fundamental nature of reality (CP 1.186).

2.3. Peirce’s dynamic and immediate object duo

Before moving on to examine what the dynamic object and the immediate object is, let’s recapitulate some important concepts about C. S. Peirce’s semiotic. We know that we perceive our world through the phenomena that occur in it (Duarte & Marchi, 2006). This experiential entity is defined as to be “tudo aquilo que aparece à mente, seja ela meramente sonhada, imaginada, concebida, vislumbrada, alucinada. Um devaneio, um cheiro, uma idéia geral e abstrata da ciência... Enfim, qualquer coisa”¹³⁰ (Santaella, 1995, p.16). Phenomena are translated into signs by a critical subject, which are semiotics main object of investigation. It is important to remember how semiotics is therefore grounded on phenomenology (Santaella, 2005). It is also through signs that all thought is processed, since “qualquer pensamento é a continuação de um outro, para continuar em outro, [...] pensamento é diálogo”¹³¹ (Santaella,

¹²⁹ Translation by the author : Something that “represents something, its object” (CP 2.228, c.1897) and thus produces an effect in the mind of an interpreter or user, an effect that Peirce calls the interpretant of the sign (CP 8.343, 1908).

¹³⁰ Translation by the author : “everything that appears to the mind, be it merely dreamed, imagined, conceived, glimpsed, hallucinated. A daydream, a smell, a general and abstract idea of science... Anyway, anything”.

¹³¹ Translation by the author : “any thought is the continuation of another, to continue in another, [...] thought is dialogue”.

1995, p.19), making it a sign theory of knowledge. Santaella gives the following example on what a sign can be:

Vem daí por que Peirce levou a noção de signo tão longe, que ele mesmo não precisa ter a natureza plena de uma linguagem (palavras, desenhos, diagramas, fotos etc.), mas pode ser uma mera ação ou reação (por exemplo, correr para pegar um ônibus ou abrir uma janela etc.). O signo pode ainda ser uma mera emoção ou qualquer sentimento ainda mais indefinido do que uma emoção, por exemplo, a qualidade vaga de sentir ternura, desejo, raiva etc. [...] Qualquer coisa que esteja presente à mente tem a natureza de um signo. Signo é aquilo que dá corpo ao pensamento, às emoções, reações etc. Por isso mesmo, pensamentos, emoções e reações podem ser externalizados. Essas externalizações são traduções mais ou menos fiéis de signos internos para signos externos.¹³² (Santaella, 2005, p.10)

Furthermore, Santaella (2005) emphasizes how new signs keep appearing and populating our world. This growth is said to be happening as a parallel consequence of the evolution of human species. She points out to how the appearance of the semiotic science in the 19th century also overlaps with the fast expansion of the technologies of languages. Another interesting statement is made about how “a própria realidade está exigindo de nós uma ciência que dê conta dessa realidade dos signos em evolução contínua”¹³³ (Santaella, 2005, p.XIV). It seems that as our society complexifies so does the signs that populate our world. As we translate internal signs into the exterior, as evoked by Santaella, we are affecting the evolution of the world we live in. We can go so far to talk about a direct link between what happens within the mind and how it impacts what happens outside of it.

Going back to understanding Peirce’s sign theory, there are three components that constitute the sign, denominated by Peirce as the *sign* or *representamen*, who is the first to relate to a second, entitled as the *object*, capable of determining a third, known as the

¹³² Translation by the author : This is why Peirce took the notion of sign so far, such that it does not need to have the full nature of a language (words, drawings, diagrams, photos, etc.), but it can be a mere action or reaction (for example, running to catch a bus or open a window, etc.). The sign can still be a mere emotion or any feeling even more undefined than an emotion, for example, the vague quality of feeling tenderness, desire, anger, etc. [...] Anything that is present to the mind has the nature of a sign. A sign is what gives body to thought, emotions, reactions, etc. Therefore, thoughts, emotions and reactions can be externalized. These externalizations are more or less faithful translations of internal signs into external signs.

¹³³ Translation by the author : “reality itself is demanding from us a science that takes care of this reality of signs in continuous evolution”.

interpretant (Nöth & Santaella, 2017, p.38). A more developed explanation on these triadic relations of the sign are given by Peirce as followed:

A sign, or representamen, is something which stands to somebody for something in some respect or capacity. It addresses somebody, that is, creates in the mind of that person an equivalent sign, or perhaps a more developed sign. That sign which it creates I call the interpretant of the first sign. The sign stands for something, its object. It stands for that object, not in all respects, but in reference to a sort of idea, which I have sometimes called the ground of the representamen. (CP 2.228, c.1897)

Moreover, in Peirce's sign theory we have three possible triadic relations, known as that of signification or representation, of objectivation and of interpretation (Santaella, 2005). These triadic relations represent the elementary analytical scheme of a process of continuity, described by Santaella (1995) to both regress and extend into infinity:

Um *Signo* é qualquer coisa que está relacionada a uma Segunda coisa, seu *Objeto*, com respeito a uma Qualidade, de tal modo a trazer uma Terceira coisa, seu *Interpretante*, para uma relação com o mesmo Objeto, e isso de maneira tal a trazer uma Quarta para uma relação com aquele Objeto da mesma forma *ad infinitum*. Se a série é rompida, o Signo, nesse ponto, perde seu caráter significante perfeito.¹³⁴ (Santaella, 1995, p.29)

Such statement comes to conclude that no interpretant of any sign can ever be taken as absolute or definitive, since the logical way of how a sign is generated itself is an uninterrupted process with no finite limits (Santaella, 1995). The ability of an interpretant to continuously being able to generate another interpretant and so on indefinitely, is part of the sign's nature. Santaella (1995) provides an example given by Ransdell (1966) to help us understand the perfect signifying character of the sign:

Consideremos, por exemplo, o signo complexo constituído pelos dados de Brahe sobre as posições relativas dos planetas no sistema solar. A teoria de Kepler, como interpretante desses dados, é apenas uma pequena parte da interpretação que, hoje em dia, lhe dá

¹³⁴ Translation by the author : A *Sign* is anything that is related to a Second thing, its *Object*, with respect to a Quality, in such a way as to bring a Third thing, its *Interpretant*, into a relation with the same Object, and that in such a way as to bring a Fourth into a relation with that Object in the same way *ad infinitum*. If the series is broken, the Sign, at that point, loses its perfect signifying character.

significância (e a dados similares que, desde então, foram juntados a ela). Se toda a especulação astronômica tivesse sido interrompida com Kepler, então esse signo complexo (ou qualquer parte dele) teria perdido seu caráter significante perfeito. Isto é, aquilo que esses dados significam teria sido apenas parcialmente realizado.¹³⁵ (Ransdell, 1966, cited in Santaella, 1995, p.30)

The reason behind emphasizing this elementary form of the sign is to point out to how the sign has its own growing capability (Santaella, 1995). The triadic relation of the sign is an elementary form of a process that grows into infinity on the side of the interpretants, as well as it regresses to infinity from the objects side. We can observe in figure 3 this triadic relationship of the sign with all its components, including the different types of objects and interpretants of the sign itself.

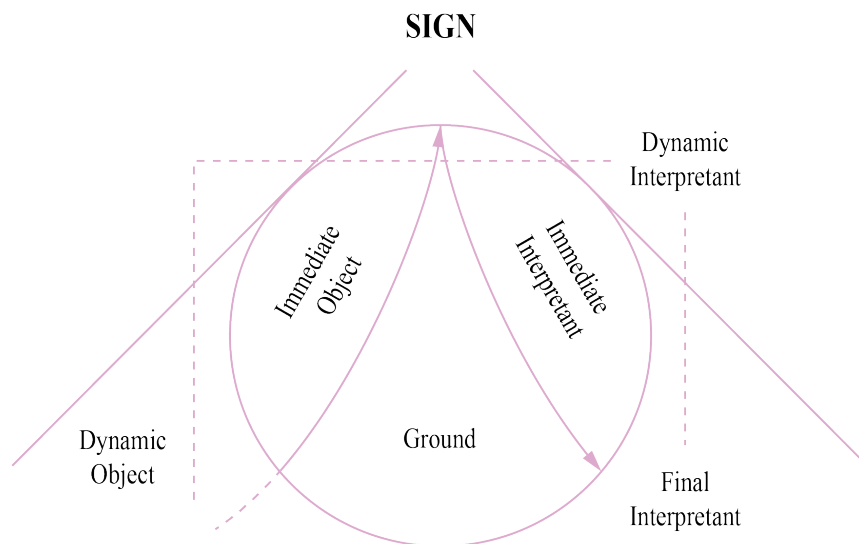


Figure 3 : The sign's triadic relationship (Translated by the author)
 Source: Santaella, L. (1995). *A teoria geral dos signos. Semiose e autogeração.* editora ática s.a.

Focusing now on the sign's object, the term, "object", itself was firstly used as a term of psychology in the 13th century (Santaella, 1995):

Ele significa primariamente aquela criação da mente na sua reação com algo mais ou menos real, criação esta que se toma aquilo para o qual a cognição se dirige; e secundariamente um objeto é aquilo sobre

¹³⁵ Translation by the author : Consider, for example, the complex sign constituted by Brahe's data on the relative positions of the planets in the solar system. Kepler's theory, as an interpreter of these data, is only a small part of the interpretation that today gives it significance (and similar data that have since been added to it). If all astronomical speculation had been interrupted with Kepler, then this complex sign (or any part of it) would have lost its perfect signifying character. That is, what these data represent would have been only partially realized.

o qual um esforço é desempenhado; também aquilo que está acoplado a algo numa relação e mais especialmente está representado como estando assim acoplado; também aquilo a que qualquer signo corresponde.¹³⁶ (Peirce, MS 693., cited in Santaella, 1995, p.47)

Santaella (1995) makes references to the immense complexity and huge range the notion of the object can cover. Therefore, she (1995) advises to retain that the object is “algo diverso do signo e que este “algo diverso” determina o signo [...], porém aquilo que está representado no signo não corresponde ao todo do objeto, mas apenas a uma parte ou aspeto dele”¹³⁷ (p.49).

Peirce also divided the sign’s object into two types, known as the dynamic object, and the immediate object:

Isto é, temos de distinguir o Objeto Imediato, que é o Objeto tal como o próprio Signo o representa, e cujo Ser depende assim de sua representação no Signo, e o Objeto Dinâmico, que é a Realidade que, de alguma forma, realiza a atribuição do Signo à sua Representação.¹³⁸ (CP 4.536 cited in Santaella, 1995, p.53)

According to Peirce (CP 4.536 cited in Franco & Borges, 2015), “o objeto imediato do signo é o objeto representado pelo signo, enquanto o objeto dinâmico é o objeto independente do modo como pensamos sobre ele”¹³⁹ (p.80). This being said, the dynamic object is contained outside of the sign, meaning it is independent of the sign itself (Chiachiri, 2010). The immediate object, being the object as the sign represents it, is therefore contained within the sign itself (Santaella, 1995). It is an allusion or suggestion, which tries to indicate in some way an aspect from the dynamic object. Moreover, the immediate object, holds its name since it is the object in its immediately available form. On the contrary, it is impossible to directly access the dynamic object. Santaella synthesizes the triadic relation of the sign, including now the different types of objects as follows:

¹³⁶ Translation by the author : It signifies primarily that creation of the mind in its reaction to something more or less real, such creation becomes that towards which cognition is directed; and secondarily an object is that on which an effort is performed; also that which is coupled with something in a relationship and more specifically is represented as being so coupled; also that to which any sign corresponds.

¹³⁷ Translation by the author : “something different from the sign and that this “something different” determines the sign (...), but what is represented in the sign does not correspond to the whole of the object, but only to a part or aspect of it”.

¹³⁸ Translation by the author : That is, we have to distinguish the Immediate Object, which is the Object as the Sign itself represents it, and whose Being therefore depends on its representation in the Sign, and the Dynamic Object, which is the Reality which somehow realizes the attribution of the Sign to its Representation.

¹³⁹ Translation by the author : “the immediate object of the sign is the object represented by the sign, while the dynamic object is the object independent of the way we think about it.

Reverendo: aquilo que provoca o signo é chamado de “objeto” (para sermos agora mais precisos: objeto dinâmico). O signo é determinado por alguma espécie de correspondência com esse objeto. Ora, a primeira representação mental (e, portanto, já signo) dessa correspondência, ou seja, a primeira representação mental daquilo que o signo indica é denominada “objeto imediato”. Esse objeto (representação mental) produz triadicamente o efeito pretendido do signo (isto é, seu interpretante) através de um outro signo mental. Essa natureza triádica da ação é essencial para que o signo funcione como tal.¹⁴⁰ (Santaella, 1995, p.55)

Some other concepts important to know as well, when evoking the topic of the sign’s object, are namely the *percept*, the *percipuum*, and the *perceptive judgment*, which have been previously mentioned as well. They are, so to say, the ingredients of any and all perception (Santaella, 1995). Santaella explains how when perceiving something, there’s an external stimulus presenting itself to us, which we can apprehend only through the mediation of a perceptive judgment. That something that is external is defined by Peirce as the percept, while the perceptive judgment is that which tells us what it is that we are perceiving. The percipuum is nothing more than the percept when immediately interpreted by the perceptive judgement. When applying the semiosis process to these ingredients of perception, Santaella (1995) states how “o percepto desempenha o papel lógico do objeto dinâmico, enquanto o percipuum desempenha o papel do objeto imediato e o julgamento de percepção está no papel do signo-interpretante”¹⁴¹ (p.69). Moreover, the percept is characterized by its insisting trait, as it represents external impulses that we can’t avoid (Santaella, 1995). As it reaches our senses it is translated into a percipuum according to the limits imposed by each individual’s sensorial limits. As stated by Peirce (Santaella, 1995) “só percebemos aquilo que estamos equipados para interpretar”¹⁴² (p.70).

Furthermore, Franco and Borges (2015) emphasize how questions about the real and reality are related to the sign’s object. They also make reference to how Peirce’s (1878)

¹⁴⁰ Translation by the author : To review: what provokes the sign is called “object” (to be more precise now: dynamic object). The sign is determined by some kind of correspondence with this object. Now, the first mental representation (and therefore already a sign) of this correspondence, that is, the first mental representation of what the sign indicates is called “immediate object”. This object (mental representation) triadically produces the intended effect of the sign (that is, its interpretant) through another mental sign. This triadic nature of action is essential for the sign to function as such.

¹⁴¹ Translation by the author : “the percept plays the logical role of the dynamic object, while the percipuum plays the role of the immediate object, and the perceptual judgment plays the role of the sign-interpretant”.

¹⁴² Translation by the author : “we only perceive what we are equipped to interpretate”.

definition of the sign's object, namely the dynamic object, can be linked to the definition of the real as being "aquilo que possui características que são independentes de como você ou eu pensamos" ¹⁴³ (CP 5.405 cited in Franco & Borges, 2015, p.79). Hausman (1991, cited in Franco & Borges, 2015) also emphasizes a reference to a passage in Peirce's manuscript, reinforcing such statement on the relation between the sign's object and the real:

Se o objeto imediatamente anterior à mente é o objeto real ou não parece ser uma questão sobre a qual é difícil extrair qualquer significado claro. No entanto, é quase certo que nenhum pensamento sobre ele irá de qualquer modo modificar o objeto Real, uma vez que isso é precisamente o que significa chamá-lo de Real, embora algumas vezes objetos sejam modelados pelo pensamento. ¹⁴⁴ (MS 6.34.00010 apud HAUSMAN, 1991, cited in Franco & Borges, 2015, p.79)

Having clarified the relation between the real and the dynamic object, it is important to understand how they don't represent an external reality to which we have no access, nor reality as we perceive it (Franco & Borges, 2015). As explained it is through the interpretation process of percepts by our perceptive judgement that percipiuous are formed. Therefore, it is through percipiuous (immediate objects) that the real tries to be represented into what is known as reality, which in turn manifests through phenomena, and consequently through signs. Furthermore, Peirce also subdivides the interpretant, which represents the different possible interpretations of the sign, into three segments as well (Santaella, 1995). Firstly, the immediate interpretant, represents the whole universe of signification possibilities that the sign can produce in the mind of the interpretant. Then, the dynamic interpretant, to which we have no direct access similarly to the dynamic object, is the actual effect that the sign produces in the mind of the interpretant. At last, the final interpretant represents the final goal of any sign, which is to be able to transmit its dynamic object fully.

Peirce (CP 4.62 cited in Franco & Borges, 2015), believes that we can only reach perfect knowledge when "nossa opinião sobre alguma coisa está resolvida e não importa quão longe formos numa investigação, ela não trará nenhuma novidade"¹⁴⁵ (p.80). However, it

¹⁴³ Translation by the author : "that which has characteristics that are independent of how you or I think".

¹⁴⁴ Translation by the author : Whether the object immediately preceding the mind is the real object or not seems to be a question on which it is difficult to extract any clear meaning. However, it is almost certain that no thought about it will in any way modify the Real object, since that is precisely what it means to call it Real, although sometimes objects are shaped by thought.

¹⁴⁵ Translation by the author : "our opinion about something is settled and no matter how far we go in an investigation, it won't bring anything new".

doesn't mean that this knowledge is complete as Peirce (cited in Franco & Borges, 2015) further explains in view of fallibilism. Eventually, someone else will reach such perfect knowledge and consequently enter into conflict with ours, meaning that the same object can generate two different ideas as interpretant. Franco and Borges give the following example to better understand how the sign's object isn't an isolated existent but a universe to which it belongs:

Um brasileiro de pele clara bronzeada, cabelos pretos cacheados pode no Brasil ser considerado branco pelos brasileiros. Viverá no país com a certeza de ser branco e se declarará branco, pois todas as experiências em sua vida apontarão para a consolidação dessa ideia. Temos, então, um ser humano existente que se torna signo de homem branco no Brasil. Imagine que esse mesmo brasileiro um dia viaje para os Estados Unidos. Lá chegando terá experiências diferentes que surpreenderão a certeza que ele próprio tinha, a de que era branco. Ele será identificado pelos americanos como não branco, a depender de algumas variáveis poderá ser identificado como latino ou afrodescendente. Isto é, o homem que era signo de branco no Brasil passa a ser signo de latino nos Estados Unidos.¹⁴⁶ (Franco & Borges, 2015, p.81)

In this example, Franco and Borges (2015) explain how when comparing these two signs we understand how each situation's object is *the universe of the existing people*. While in the first situation the sign is *the Brazilian people in Brazil*, in the second situation the sign is *the Brazilian people in the United States*. When comparing both of these signs, it is understood that *the universe of the existing people* is larger and more diverse than what was initially perceived. Such example shows how we have no access to all of *the universe of the existent people* as explained by Franco and Borges. Therefore we must be open to the possibility of the existence of other people in this universe of reality, even when they aren't part of our lived experience yet. When amplifying our universe, such as when the Brazilian person travels to the United States, we move on to include, within our reality, the American people

¹⁴⁶ Translation by the author : A Brazilian with light tanned skin, curly black hair can be considered white by Brazilians in Brazil. He will live in the country with the certainty of being white and will declare himself white, as all the experiences in his life will point to the consolidation of this idea. We have, then, an existing human being who becomes a sign of a white person in Brazil. Imagine that this same Brazilian one day travels to the United States. Arriving there, he will have different experiences that will surprise the certainty that he himself had, that he was white. He will be identified by Americans as non-white, depending on some variables, he may be identified as Latino or Afro-descendant. That is, the person who was a white sign in Brazil becomes a Latin sign in the United States.

but also new characteristics acquired from their universe of existent people. Franco and Borges also emphasize how the concepts of the dynamic object and immediate object can be associated within this difference between a sign's broader object and more restrictive object:

Identificamos como objeto dinâmico de ambos os signos o universo dos homens existentes na realidade que inclui os homens existentes de qualquer nacionalidade e em qualquer tempo passado e futuro. [...] Nosso conhecimento é sempre parcial e a consciência dessa condição inerente ao nosso processo de conhecimento parece ser um fator importante para nos deixar atentos aos signos existentes que representam outros aspectos dessa realidade. Enquanto o objeto dinâmico de ambos os signos analisados se refere a um universo amplo, o objeto imediato se refere a um universo mais restrito. No primeiro caso o universo de homens brasileiros existentes funciona como objeto imediato. [...] No segundo caso, o signo requer um pouco mais de atenção. O universo de homens existentes, na função de objeto dinâmico, determina um signo que é o homem brasileiro existente no contexto da sociedade americana. Esse signo pode ter como objeto imediato tanto o universo de homens existentes brasileiros quanto o universo de homens existentes americanos.¹⁴⁷ (Franco & Borges, 2015, p.83)

Franco and Borges (2015) affirm that it is through the dynamic object that it's possible to understand the way Peirce conceived reality. However, it is the immediate object which indicates ways of accessing parts of that reality. It is important to recall the insisting trait of the dynamic object, as it forces itself on our mind when being perceived, but we can never have a direct access to it. Franco and Borges (2015) propose how this "incompletude do objeto dinâmico dá margem à ideia de uma realidade que se modifica"¹⁴⁸ (p.87).

Having better clarified Peirce's study on the dynamic and immediate object and their relation to the abstract concept of reality, we can make the following conclusions. Looking at

¹⁴⁷ Translation by the author : We identify as the dynamic object of both signs the universe of people existing in reality, which includes existing people of any nationality and in any past and future time. [...] Our knowledge is always partial and the awareness of this condition inherent to our knowledge process seems to be an important factor to make us aware of the existing signs that represent other aspects of this reality. While the dynamic object of both analyzed signs refers to a wide universe, the immediate object refers to a more restricted universe. In the first case, the universe of existing Brazilian people works as an immediate object. [...] In the second case, the sign requires a little more attention. The universe of existing people, in the role of the dynamic object, determines a sign that is the Brazilian person existing in the context of American society. This sign can have as its immediate object both the universe of Brazilian existing people and the universe of American existing people.

¹⁴⁸ Translation by the author : "incompleteness of the dynamic object gives rise to the idea of a reality that changes".

the triadic relation of the sign, presented previously in figure 2, we know now that on a general overview, it is through the immediate object that we can have access to what is known as reality, while it is in the dynamic object that the real is found. As previously explored, design is thought, making it a language that manifests itself through signs into artefacts, which are materializations of design. By using Peirce's table on the sign's triadic relationship as a methodological analysis tool, it is possible to have a deeper look at the materializations of design signs and consequently their relation with the real and reality. More specifically, analyze their immediate and dynamic objects, as it is through the sign that reality tries to be represented. Therefore it can be concluded that the conceptual aspect of design, such as its essence or the idea transmitted, represents the dynamic object, while the manifestation of design, such as its multiple representation possibilities, represents the immediate object. Thus, it can be understood that the conceptual aspect of design is contained within the real, and the manifestations of design, such as its artefacts, are its representations within reality.

3. Problem hypotheses

Having developed a theoretical framework and familiarized with the topics that surround the research question, three hypotheses are proposed as possible conclusions to be obtained:

Hypothesis 1: Design is a creator of reality.

Hypothesis 2: Design isn't a creator of reality, but it can affect and change reality.

Hypothesis 3: Design isn't a creator of reality, but it affects the way we perceive reality.

Before analyzing each one of them, it is important to recall the main objective of this dissertation, which is concerned about understanding if there is an intrinsic relation between design and reality. Therefore, we started by proposing that design contributes to the creation of reality, but as we dived deeper into our research, documented in the literature review, two more hypotheses emerged. Let's review the key points of our investigation and recapitulate its main conclusions that led us to our three hypotheses.

As previously explored, the real represents an external truth that we can't access, while reality is the mental representation of the perceived world that surrounds us. Reality manifests to us through the perception of its phenomena, which we, as cognitive subjects, interpretate and translate into signs that constitute mastered languages (Duarte & Marchi, 2006). According to Peirce's (1977, cited in Duarte & Marchi, 2006) sign theory, the highest degree of reality can only be reached by the signs. As furthermore explored, it is concretely within the sign's immediate object that reality can be accessed, while it is through its dynamic object that the real is found even though it can never be directly accessed. Additionally, we also know now that design, originating in thought processes, manifests itself through language and consequently through signs as well. Having this in mind, it allowed us to make the following conclusion which was explored in the previous chapter in more detail: the conceptual aspect of design, such as its essence or the idea to be conveyed, represents the dynamic object of its sign, while its multiple manifestation possibilities represent the immediate object. Thus, it can be understood that the conceptual aspect of design is contained within the real, and the manifestations of design, such as its artefacts, are its representations

within reality. This raises the question about what role or influence does the creation of design artifacts have on reality?

As previously referred, Duarte and Marchi (2006) contemplated how there is a two way construction between reality and languages. They defended how phenomena can trigger perceptive and intellectual strangeness and consequently stimulate new language articulations and possibilities. As explained, this two way construction between reality and languages, is at the root of humankind's constant language innovations. For instance, the current technologies of the cyberspace are described by Duarte and Marchi (2006) to have given rise to new language innovations. They go as far as to describe them to be composing realities yet to be codified. Similar accusations have been made by Santaella (2007), who also points out to the parallel relation between the evolution and complexification of technology with the growth and complexification of signs in the biosphere. Having all that in mind, one of the main conclusions that can be taken is that indeed there is constant growth and innovation within the signs, languages and phenomena that constitute our world, which consequently will affect reality as well. The question now is how it affects it.

We know that to access reality, the phenomena that compose our world have to firstly be interpreted by a cognitive mind. Therefore, after being ideated and executed, any design artefact in order to be part of the fundamental nature of reality, needs to be interpreted by a cognitive mind as well. As previously discussed, Santaella (1983) also emphasizes how Peirce defends that there is a continuous growth in the universe and in the human mind. He believes that human thought is capable of generating concrete products that have the ability of affecting and transforming materially the universe, while being affected by it at the same time. Therefore, it is possible to assume that as designers create new design artefacts, they also generate growth of new phenomena and new signs within reality. Additionally, Otl Aicher (cited in Folkmann, 2011a) also reinforced his belief that design is part of a larger whole and of a progressive phenomenology. Design objects are described by him as actual entities to not only enable us to experience the world, but also to create it. Consequently, it is possible to form a first hypothesis about how designers contribute to the creation of reality as we know of.

On another hand, if we focus on how what is perceived from reality is based on our perception and on a translation of percepts into percipuum, it is hard to affirm if we can

directly talk about the creation of something. Perhaps it might be about generating change or of an evolutive reality in new ways unknown to us before. This idea surfaces on many occasions throughout the literature review. Namely, when analyzing in depth the dynamic object, Franco & Borges (2015) actually refer to how its incompleteness opens the possibility for a reality that changes. Moreover, Hausman (2002, cited in Franco & Borges, 2015) also defends the idea of a processual and evolutive reality as discussed before. From a design perspective, Parsons (2016) within many other thinkers, may they be designers or not, also believes that the action of design itself is an action that has the power to change the world. Cope & Kalantzis (2011) actually described design to be an engine of change, a process of transformation. Taking all this into consideration, we can form our second hypothesis about how it might not be about how design creates reality, but about how design affects and changes the way reality makes itself known to us.

If we think even further, knowing how we only have access to our world (the spaces of reality that we inhabit) through mental translations of its phenomena by our senses into apprehensible languages, then perhaps it is wrong to conceive that we have any power over reality at all, since we only interact with its phenomena. So when talking about how design artefacts generate some sort of creation or change within reality itself, maybe design (or anything else that contributes to the production of signs for that matter) actually only affects the way reality makes itself known to us. Perhaps, it is not reality that is affected by the creation of new design artefacts, but what is affected or changed is our perception of reality. Silva (2006) actually refers to how he sees reality as a social construct that can be shaped depending on everyone's individual path. He goes on to reference Baudrillard who vindicates the idea that we are living in simulations of reality: a reality that our society replaced with symbols and signs, turning human experience into a simulation of reality. Moreover, Berkeley and Metzinger (cited in Rotham, 2018) also shared a similar thesis about how they believed reality to be products of our minds. Metzinger specifically referred to reality being rather a "mental stage set,— a representation of the world, rather than the world itself" (para. 4). Additionally, Husserl (cited in Joron, 2006) agreed that it is within our consciousness that reality would gain form. From the perspective of cognitive scientist Donald Hoffman (2015), as explained more in depth in the literature review, he also is the opinion that human beings reconstruct reality within their brains. According to him our perceptual experiences are interactions that our mind has with reality without representing it in its pure essence. Let's also recall a second time Peirce's (cited in Santaella, 1983) statement about how "O universo

está em expansão, onde mais poderia ele crescer senão na cabeça dos homens?”¹⁴⁹ (p.5). Here, it can also be understood how he conceived reality to grow inside of our cognitive minds, and not the other way around. This being said, we conclude this chapter with our third and last hypothesis about how design doesn't have any influence on reality itself but rather on how reality makes itself known to us.

¹⁴⁹ Translation by the author : “The universe is expanding, where else could it grow if not in the heads of men?”.

III. CASE STUDY ANALYSIS

1. Case study - *Threaded thresholds: the fabric of civic teleportation*

As previously explored, the chosen research approach to be used for our investigation is the analysis of a case study. More specifically to analyze Lara Lesmes and Fredrik Hellberg's design project, denominated *Threaded thresholds*, through the use of an analysis methodology based on Charles S. Peirce sign theory.

The reason behind the choice of opting to analyze only one case study lies in the fact that the chosen design case is deemed as sufficient on its own for the obtention of rich and in-depth conclusions about the research question of this investigation. Let's recall how our objective is to understand the intrinsic relation between design and reality, more precisely the role of design in the creation of reality. Moreover, this project allows for an exploration of all the concepts that were discussed throughout this dissertation, such as design and reality but also concepts about technology, spatiality and human experience. Additionally, this project was created around the awareness of the fast technological evolutions that characterize our hypermobile era, marked by constant streams of change that push nowadays designers into thinking and tackling not only present issues but also those to come in a near future. In this case, the consequences that the dissipation of the borders between the physical and cyber world may bring regarding human experience when navigating mixed spatialities. For all these reasons, it is possible to assume with confidence that the analysis of this case study will be fruitful enough on its own to obtain a panoply of insightful and in-depth conclusions for this investigation, while at the same time framing all the theories, concepts and ideas explored throughout the literature review.

Having clarified the reasoning behind the choice of this case study, we can move on to a more detail introduction of this design project, followed by its semiotic analysis in more detail. Lastly, a discussion about the obtained results will be conducted, where we try to verify the hypotheses and finally answer the question problem of this investigation.

1.1. Introducing the design project

As mentioned, the design project *Threaded thresholds* was developed by Lara Lesmes and Fredrik Hellberg (figure 4), the directors of Space Popular, a multidisciplinary design and research studio (Lesmes & Hellberg, 2021). As more explicitly described in their official website, they are a “research driven architecture, design, and media studio that explores the future of spatial experience through virtual reality, film, exhibitions, speculative writing, as well as buildings and objects” (Space Popular, 2022, para. 1). Moreover, both being alumni of the Architectural Association in London, Lara Lesmes and Fredrik Hellberg first founded their practice in Bangkok in 2013. Meanwhile, they have been based in London and Spain since 2016. The Space Popular studio is known to be driven towards creating for both physical and virtual spaces with the aim to understand how both realms can blend together. Thus, they design spaces, objects as well as events, giving rise to “buildings, exhibitions, public artworks, furniture collections, and interiors across Asia and Europe, as well as virtual architecture for the immersive internet” (Space Popular, 2022, para. 1). Not only are they concerned with the emergence of virtual environments, but also with the implications they will engender on culture, design and human experience (Dezeen, 2021).



Figure 4 : Space Popular photographed by Anna Huix
Source : <https://www.dezeen.com/2021/11/08/space-popular-manifesto-dezeen-15/>

As we live in a so called hypermobile era, where cyberspaces start to gain a third dimension through immersive technology, Lesmes and Hellberg (2021) explain that “our cultural, political and experiential understanding of how we access and navigate spaces is challenged” (para. 9). They predict that within the coming 15 years, physical and virtual environments will interlace progressively as “our scrolls turn into strolls, and our cursor grows into our full-body avatar” (Lesmes & Hellberg, 2021, para. 9). Thus, creating a three dimensional version of the internet as we know it today, where all the media will become spatial as explained by them:

We believe and we work with the assumption that by the middle of the 21st century, so by 2050, all media will be spatial. So, we will no longer have smartphones or laptops and monitors and screens. All media, even watching a sitcom will be done in an immersive environment [...] that’s already happening of course through VR devices and things like that, but it is slowly happening, and increasingly we will stop buying smartphones and stop buying monitors etc., and literally be inside the medium. (Lesmes & Hellberg in Dezeen, 2021, 3:44)

Having this in mind, the duo started to reflect on the issues and the challenges that the merge between the physical and virtual spaces will give rise to eventually. One of them namely being concerned about how people would navigate through such environments where the cyber world overlaps the physical one (Lesmes & Hellberg, 2021). As well as how such virtual environments, also often referred as metaverse, would affect human culture and experience.

In our view all representation media, like painting or photography can create a virtual environment, whether it is digital or not. However, most of these media are experienced with only one or two senses and are removed from the body. As digital media gains a third dimension through immersive technology and we actually step inside the medium, our cultural, political and experiential understanding of how we access and navigate spaces is challenged. (Dezeen, 2021, 10:33)

We know that since the beginning of time, humankind would make use of doors or any equivalent openings to separate its different areas, allowing them to move from one place to another (Lesmes & Hellberg, 2021). In the digital realms, the spatial rules have changed, they don’t work in the same way as the ones from the physical realm. Thus, with time the

design of digital interfaces evolved to accommodate those digital spatialities with more adequate solutions that focused on providing a better navigation experience for humans. For example, when navigating the internet, we don't go through doors to go from one point to another, but we navigate by clicking links and switching tabs. The creation of cyber spaces made the usage of doors unpractical and irrelevant to replicate, what is actually replicated from these objects is their essence. In this case, the door's characteristic of opening the possibility for someone to go from one place to another. Moreover, Lesmes and Hellberg neglected the idea to use doors as an inspiration for a solution, since they carry connotations of rather negative nature. Their rigid and locked nature transpire ideas that refer to exclusion and enclosed spaces, in opposition to more pleasant feelings such as openness and inclusion (Dezeen, 2021).

Now, with the emergence of the virtual spaces, that as previously mentioned are predicted to blend with our physical reality in a near future, the ways we interact with our environments will complexify even more. Therefore, Lesmes and Hellberg (2021) worked on designing a solution that would tackle such issue. As the virtual world contained within our technological devices, externalizes and becomes one with our physical environment, the Space Popular duo saw a need in creating a new and more adequate navigation system for humans to navigate new hybrid spaces. Having this in mind, they designed their *Threaded thresholds*, a proposal which consists on transforming the experience of passing from one digital world to another through the creation of portals made of virtual textile.

Their idea consists on creating a “civic infrastructure for virtual teleportation” with the means to improve the human experience when moving between virtual environments (Lesmes & Hellberg, 2021). This infrastructure is founded on the idea of creating sort of a portal that would represent a three-dimensional version of a hyperlink, which can grant access to both another environment and all the necessary information about it. To do so, they propose to use the properties of fabrics to their advantage and apply them to the characteristics of portals. They propose the creation of a threaded network of virtual textiles, where the user would be able to pull aside those virtual textiles, which would only become apparent once triggered by our intention and after we aim to touch them. After that, the virtual textile would pull the current environment apart in mid-air, granting us access to another environment. Examples of how the *Threaded thresholds* would look like and work within a virtual environment can be seen in figure 5, 6 and 7. Moreover, during an interview for the Dezeen 15 festival, Lesmes

and Hellberg also exemplify the application of such virtual fabrics through the use of a green screen to facilitate the understanding of how such a project could look like a near future where physical and cyber worlds merge (Dezeen, 2021). Figure 8 is a screenshot of the interview in question, which also holds the link to the video with the mentioned demonstration of their project.



Figure 5: Virtual reality portals designed by Space Popular
Source : <https://www.dezeen.com/2021/11/08/space-popular-manifesto-dezeen-15/>



Figure 6 : Virtual reality portals designed by Space Popular
Source : <https://www.dezeen.com/2021/11/08/space-popular-manifesto-dezeen-15/>

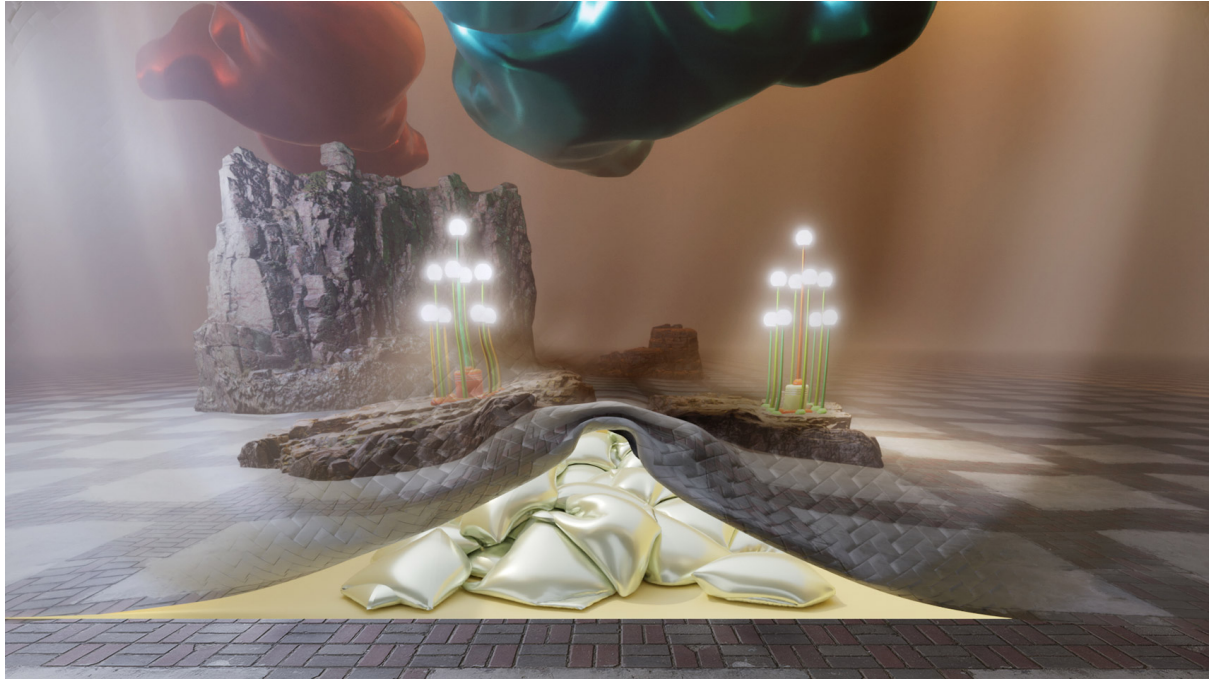


Figure 7 : Virtual reality portals designed by Space Popular
Source : <https://www.dezeen.com/2021/11/08/space-popular-manifesto-dezeen-15/>



Figure 8 : Live interview with Lara Lesmes and Fredrik Hellberg as part of Dezeen 15
Source : <https://www.youtube.com/watch?v=YffjMIOPYjg&t=593s>

Before deciding to use fabrics, Lesmes and Hellberg (Dezeen, 2021) considered other options as possible solutions, such as gas or steam, liquids or other forms of transitions, such as the disappearance of one environment into another. The duo explains how all these other potential solutions would make users go through a “strange moment of being in nothingness”, which they describe as being cognitively challenging as it transmits a constant impression that your surroundings could disappear at any time (Dezeen, 2021, 26:58). There are multiple qualities associated to fabrics that led Lesmes and Hellberg (2021) to consider them as their main inspiration for their *threaded thresholds*. Firstly, fabrics remind us of curtains, which represent an inviting metaphor since they also demarcate spaces but without locking them, like doors do for instance. By doing so, they are able to provide a welcoming invite for any user to cross them. Moreover, fabrics are easily manageable as they can take many shapes and sizes without appearing unrealistic. Thus, making them the ideal object of representation for the creation of portals within hybrid environments, while also providing a versatile affordance. Lastly, Lesmes and Hellberg emphasize how their virtual portal made of weaved and interlinked fabrics would also be able to hold information on the environment it opens to. For instance, they make use of the concepts of knitting and embroidery that composes textiles, as ways to stock figurative and abstract information within that same portal. Allowing so, the reading of its information before accessing the new environment behind these *threaded thresholds*.

1.2. What makes it a design artefact

Having properly been introduced to Space Popular and been familiarized with their design project, *threaded thresholds*, we can move on to its semiotic analysis. Considering the complexity of Lesmes and Hellberg’s design project, partly due to the fact that it was created to tackle future issues, it is considered important to quickly verify the key points that make it a piece of design. Firstly, let’s recapitulate Glenn Parsons (2016) and Mike Monteiro’s (2019) joined definition about what design is. As mentioned, they define design as the deliberate resolution of a problem within a set of limitations, through the development of plans for a novel type of thing, where a reasonable person wouldn’t immediately consider such plans to be an inadequate solution.

When considering this definition, we need to confirm that Lesmes and Hellberg’s project checks the following requirements in order to be considered a design artefact:

1. It has to be an intentional solution of a problem within a set of constraints;
2. It has to involve the creation of a plan for a new sort of thing;
3. It has to propose a solution that wouldn't be immediately considered as inadequate.

As explained by Lesmes and Hellberg (2021), digital media is gaining a third dimension through the evolution of immersive technology, which challenges our “our cultural, political and experiential understanding of how we access and navigate spaces” (para. 9). *Threaded thresholds* were intentionally created to tackle problems regarding the experience that people will have when passing between digital worlds. The duo sought to find a solution that would provide the best human experience when navigating between different environments once cyber realms merge with our physical world. The proposed solution for this problem, does involve a thorough investigation and planification from the part of its creators. Leading to them designing a new sort of virtual portal based on the properties of textiles. As previously clarified, their proposed solution is well sustained. Therefore, we allow ourselves to make the assumption that it wouldn't be considered as an inadequate solution. Not to mention that Lesmes and Hellberg are the directors of a renowned a multidisciplinary design and research studio, who were invited to present this project at the *Dezeen 15* online festival. *Dezeen* being “the world's most popular and influential architecture, interiors and design magazine” (Dezeen, 2022, para. 1). Having all these points in consideration, we can conclude that the *threaded thresholds* checks with all of the three requirements needed for it to be considered a design artefact, according to Glenn Parsons and Mike Monteiro definition of design.

1.3. Applying the semiotic analysis methodology

Having confirmed the design nature of our chosen case study, we can now proceed with the semiotic analysis of the same. The aim of this analysis is to demystify the intrinsic relation between design and reality in hope to be able to verify at least one of our proposed hypotheses. Therefore, let's shortly recapitulate some of the key concepts regarding our chosen methodological framework focused on the analysis of Peirce's dynamic and immediate object.

As formerly seen, according to Peirce the real represents an external truth that we can't access. On another hand, reality represents the manifestations of that real from which we are only able to perceive its phenomena. Those phenomena constitute the reality we live in, which are apprehended by our senses and translated into signs, which in turn will constitute mastered languages (Duarte & Marchi, 2006). Moreover, let's also be reminded how in Peirce's sign theory the sign is constituted by three main components denominated as the *sign* or *representamen*, the *object*, and the *interpretant*.

A sign, or *representamen*, is something which stands to somebody for something in some respect or capacity. It addresses somebody, that is, creates in the mind of that person an equivalent sign, or perhaps a more developed sign. That sign which it creates I call the *interpretant* of the first sign. The sign stands for something, its *object*. It stands for that object, not in all respects, but in reference to a sort of idea. (CP 2.228)

Furthermore, as referenced many times, Peirce (1977, cited in Duarte & Marchi, 2006) argues about how the highest level of reality can only be accessed through the signs. More concretely, it is within the study of the sign's immediate object that we can access reality, while it is in the dynamic object that the real is found, even though it can't be reached. It should be noted that this division of the sign's object represents two different stages of the same thing and not two types of objects. Santaella (1995) also explains how as we perceive something, an external stimulus presents itself to us, which, as explained, is apprehended by the perceptive judgement. This external stimulus is known as the percept, which after being interpreted by the perceptive judgment becomes known as the percipuum. After applying the semiosis process to these three ingredients of any and all perception, we understand that the percept performs the role of the dynamic object, while the percipuum performs the role of the immediate object.

Besides that, it was also concluded that design is language, meaning it manifests through signs as well. In turn, it was determined how the conceptual aspect of design, such as its essence or the idea it wants to convey, represents the dynamic object of its sign, while its multiple manifestation possibilities represent the immediate object. Such is concluded, since the concept of design itself stands as a percept (dynamic object), since it requires the perceptive judgement to be translated into its manifestations, known as its percipuum (immediate object). Thus, leading to our understanding of how the conceptual aspect of

design (the dynamic object) is contained within the spectrum of the real, while the manifestations of design (the immediate object) are its representations within reality. Therefore, as design manifests itself into the realm of existence and after it is interpreted by a cognitive mind, it becomes part of the fundamental nature of reality. Having completed this quick review we can proceed to the semiotic analysis of Lara Lesmes and Fredrik Hellberg's project *Threaded thresholds*.

First of all, it is important to understand how this design project doesn't represent only one sign, since on itself it is formed by a multitude of signs. Meaning, we are studying a whole sign system, which encompasses all signs that compose the *Threaded thresholds* project. Therefore, it encompasses all kinds of signs, going from the ones involved in the software creation of these virtual portals, up to the ones regarding aesthetics for instance.

May we also quickly recall the three different elements that compose the sign's triadic relationship (figure 9), which are the *sign* or *representamen*, its *object*, and its *interpretant*. Moreover, we also know that the sign's object is segmented into its immediate object and its dynamic object, while the interpretant is segmented into its immediate interpretant, its dynamic interpretant and its final interpretant as well. Going back to our object of study, we understand that by being a signic system and by applying the knowledge that we gathered along this whole investigation, that this object tries to represent "something" and that "something" is known as the dynamic object, which when manifested creates what we know as reality. The quest to finding and indicating what exactly the dynamic object is, is very ethereal, since it can only be reached through its representation and is only accessible through the sign. In figure 9, we can observe how the dynamic object is placed outside of the sign, as it represents an inaccessible truth, a possibility yet to be represented. It is only through its multiple representation possibilities by the immediate object, contained inside the sign, that the dynamic object is materially represented to us. Actually, it is not materially represented but sensorially, since as previously explained, it is through our different senses that we apprehend and translate phenomena into known languages that compose our world. Thus, it can be understood that the closest knowledge we can reach from the dynamic object, are its possible represented realities (immediate objects), may they be physical, digital or mixed. Therefore, signic systems will always represent to any subject, the interpretants, the possible universes of realities. Additionally, since our investigation is focused on studying the relation of the sign's dynamic and immediate object, a deeper analysis on the other elements

composing the sign, such as the three types of interpretants and the ground, won't be made. The only important thing to emphasize is that apart from the sign carrying multiple representation possibilities (immediate object), it also always carries multiple interpretative possibilities (immediate interpretant), which are also contained inside of the sign.

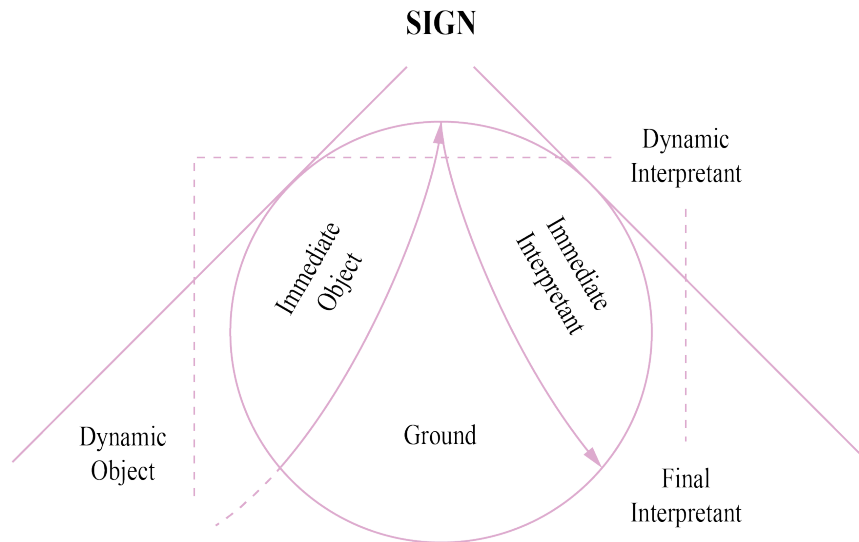


Figure 9: The sign's triadic relationship (Translated by the author)
 Source: Santaella, L. (1995). *A teoria geral dos signos. Semiose e autogeração*. editora ática s.a.

Analysing our object of study, Lesmes and Hellberg's *Threaded thresholds* project, it is possible to determine that this civic infrastructure created for virtual teleportation attempts to create a blend between signic systems by representing sensorially the experience of different overlapping possibilities of reality. Thus, allowing the users (interpreters) to be able to experience both physical and virtual experiences at the same time. In other words, this sign system carries with it the different representation possibilities of the realities that compose the whole signic universe of these *Threaded thresholds*, through its immediate objects. May they be the colours, the textures, the various fabrics of the portal, the different interactive features or even the surrounding scenarios for instance. To be included are also all the various essences and ideas from all the design fields involved in the creation of these virtual portals, such as product design, space design, interior design, visual design, interface design to only name a few. They all represent possibilities to materialize the essential and ethereal idea of this object of the *Threaded thresholds* project, which is contained within the real (dynamic object), so that once they reach an interpretative mind, they will be manifested through multiple representation possibilities (immediate objects) contributing to the creation of the interpretant's reality.

To finalize our semiotic analysis of the dynamic and immediate object of Lesmes and Hellberg's *Threaded thresholds* project, we can gather the following conclusions about its signic system:

- The essential and ethereal idea of this design objects, which can't be directly accessed, fall into the domain of the real, making them part of the dynamic object of this signic system.
- The different representation possibilities of this dynamic object, the essential and ethereal ideas from the *Threaded thresholds* project, represent the various immediate objects contained within the signs of this signic system.
- These representations of the dynamic object, can only be manifested through sensorial representations when they are interpreted by a cognitive mind, known as an interpretant.
- As the dynamic object (design) manifests through its immediate objects (design artefacts), all the possible representations contribute to the creation of this project's signic system, which creates the reality surrounding its interpretants in turn. Allowing them, in this case, to experience mixed realities, composed of both physical and virtual experiences at the same time.

Having concluded the semiotic analysis of Lara Lesmes and Fredrik Hellberg's project *Threaded thresholds*, we can apply the obtained conclusions to our proposed hypotheses.

2. Discussion of results

2.1. Verification of the hypotheses

As previously defined, the following three hypotheses to this research problem were proposed:

Hypothesis 1: Design is a creator of reality.

Hypothesis 2: Design isn't a creator of reality, but it can affect and change reality.

Hypothesis 3: Design isn't a creator of reality, but it affects the way we perceive reality.

If according to the theory that is being followed by this investigation, we conceive the relation of the dynamic object as the real and the immediate object contained within the sign as the potentiator of reality, since it tries to manifest parts of the real by creating sensorially realities, then we can assume that design is indeed a creator of reality. Therefore we can perceive how design is the attempt at materializing sensorially a certain dynamic object into an immediate object, which contribute to the creation of signs that compose the fundamental nature of the reality that presents to us. In the case of Lara Lesmes and Fredrik Hellberg's project *Threaded thresholds*, design functions as a creator of realities, since it manifests the possibility of intersecting both physical reality and virtual reality. Therefore, **hypothesis 1 can be verified** within the context of the presented theories about the relation of Peirce's dynamic and immediate objects with the concepts of the real and reality.

According to the conclusions made about the first hypothesis, when analysing the second hypothesis, we can make an initial statement about how its first part affirming that "design isn't a creator of reality" isn't verified. On another hand, from the moment on it is assumed that design is a creator of realities, by consequence will also signify that design can affect and change realities. In the presented case study, we perceived how it is possible through the use of design tools to affect and change the separate environments of the physical and virtual realities by blending and overlapping them together into the creation of a hybrid reality. Therefore, **hypothesis 2 is partially verified**, since besides design enabling creation, it can also affect and change previous realities.

Analysing now the third proposed hypothesis, we can conclude for the same reasons presented in the second hypothesis, that its first part affirming that “design isn’t a creator of reality”, can’t be verified. On another hand, according to Peirce’s sign theory which directs this investigation, it is possible to understand the importance of the relation of the interpretant as a sign. The focus of this study has been towards the ways design manifests through its dynamic and immediate objects into possible realities, but it was also referenced at times the importance of needing an interpretant in order for those representations to become existent. However, this dissertation doesn’t make enough emphasis on the relation about how design materializes signs and how they affect an interpretative mind. Therefore, we can assert that **hypothesis 3 is partially but not totally verified**, since we can make the assumption about its verification but the analysis of our case study and overall this investigation doesn’t provide enough valid information about the role of the interpretant on our perception of reality. However, this opens up a future investigation possibility that can be furthermore explored.

Having verified the proposed hypothesis of our investigation, we can finally answer our research question.

2.2. Answering our research problem

As stated at the beginning of this dissertation, the main objective of this investigation was to try and demystify the intrinsic relation between design and reality, more concretely if design is a creator of reality. Therefore, the following research question was formed:

Can design be considered a creator of reality?

According to the theoretical content that fueled and guided this whole investigation, we were able to execute the semiotic analysis of a case study based on Peirce’s principles about the relation of the dynamic and immediate object with the real and reality. Thus, providing us with conclusions that allowed us to make interesting statements about our initial proposed hypotheses. As presented, we were able to partially verify one of our hypotheses and to partially but not totally verify another one. Mainly, it was possible for us to verify our main proposed hypothesis, which defended that indeed design is a creator of reality. Therefore, we can conclude that thanks to our initial research gathered throughout the

literature review, which allowed the obtention of promising hypotheses assumptions, and thanks to the proposed semiotic analysis methodology, which allowed the obtention of interesting results that helped verify our hypotheses, it is possible to propose the following answer to our research question:

According to the theory that is being followed by this investigation, involving Peirce's semiotic philosophy, we can assume that design is a creator of realities.

FINAL CONSIDERATIONS

This dissertation started by making an observation about how humankind has walked around the spaces of earth since the beginning of times and accommodated to them naturally. Then, followed a statement about how our current notions of spaces are being defied with the emergence of new technological innovations as they extend through more dimensions. Now, as we conclude this investigation, we can confirm that this fast moving era we find ourselves into is indeed marked by the emergence of digital technologies, but especially marked by the cognitive minds who created them in the first place, who have the ability to create and shape reality. As humanity evolves and improves its environment through technological innovations such as the cyberspace, new kind of spaces are created for them to navigate and experience beyond the physical barriers of reality.

Furthermore, an initial assumption about the role of design was also made by noticing how it plays an important role in the creation of these new virtual and digital spaces. Moreover, it is perceived how designers contribute to the resolution of problems regarding the improvement of human experience in general. Consequently, questions were raised about how design has an intrinsic relation to the creation of our environments, but also about how it impacts the ways we navigate and experience them. Thus, an initial assumption was made about how design might actually affect the fundamental nature of our reality as we perceive it. Leading to the main interest of this investigation, which revolves around the exploration of the relation between design and reality within the context of our current hypermobile era. In order to do that, three main objectives were firstly delineated to guide the whole investigation, the two first of them being explored throughout the literature review, while the third and main objective was explored in the scientific analysis of this investigation's case study.

We shall recall how the first objective consisted on exploring how our current fast moving era impacts humanity on a societal level, leaving repercussions in the way people interact and perceive spaces of reality. As explored throughout the literature review, our current "hypermobility era", as Sanatella (2013) denominates it, is marked by the constant complexification and evolution of technology, which is described to now spread not only through physical spaces but also into cyber realms. Bauman and Sloterdijk (cited in Santaella, 2007) also referred to the current fragile state of our society, which is highly instable and sensitive to change. Partly due to how people now communicate and navigate through

cyberspaces, as these new digital spaces also challenge the existent language patterns, which are being altered on a social, cultural and physical context (Duarte and Marchi, 2006). This omnipotence of the cyber technologies, which transcend dimensions, changes not only the way we perceive our world but also how we experience it as physical reality and virtual reality blend into each other. Overall, great paradigmatic changes within human condition can be perceived as we become ubiquitous beings, whose consciousnesses are now able to materialize and expand outside of the physical realms (Anders, 1999, cited in Santaella, 2007). It was also perceived how often an emphasis on the importance of the human mind is hinted, as well as its capacity to generate the creation of concrete products, which in turn can affect and transform its surrounding environment while at the same time being affected by it as well (Santaella, 1983).

Talking about creation, the second objective of this investigation focused more on exploring the field of design and its role within our society, since design affects human life, both in the way our world is perceived as well as in the way it is created. At the start of our literature review, an interesting statement from Peirce (cited in Santaella, 1983) was taken as he believed that the expansion of our universe would happen within our minds. In a certain way, he was already hinting us at the importance of the designer, whose creations originate within the cognitive mind before being externalized. On a general overview, the role of the designer is also depicted to be evolving and gaining a quite daunting role as designers gain greater social significance (Cope & Kalantzi, 2011; Parsons, 2016). Moreover, the changing potentiality that design can have on the world is also widely discussed, since they have gained more responsibility over the effects they have on the world (Parsons, 2016; Victor Papanek cited in Monteiro, 2019; Ramírez et al., 2021). Overall, it was concluded how the characteristics of our current era marked by the fast moving innovations and their high prone to change, is also reflected into the field of design. Design's multistability and susceptibility to change has enabled it to become a big factor in the way society is shaped.

Consequently, we can perceive how design plays an important part in designing human life, both in the conception of our world as well as in the way we navigate its spaces of reality. Therefore, the third and main objective of this investigation consists on exploring this intrinsic relation between design and the creation of reality, which englobes all the spaces we inhabit, experience and navigate. Having this said, we were able to also form our research question, which is concerned about understanding if design can be considered to be a creator

of reality. In order to answer this dissertation's research problem, the semiotic analysis of a case study based on Peirce's principles about the relation of the dynamic and immediate object with the real and reality, was conducted.

For the conduct of our case study, Lara Lesmes and Fredrik Hellberg's project *Threaded thresholds* was chosen to be analysed, providing the obtention of interesting results, which in turn allowed the review and verification of the proposed hypotheses of this investigation. In essence, we were able to verify our first and main hypothesis, which stated that design is a creator of reality. According to Peirce's sign theory, we were able to conclude that by conceiving the relationship of the dynamic object as the real, and the immediate object as a potentiator of reality, which attempts to represent the real through the creation of realities, that design is capable of creating realities. Therefore, Design attempts to enable the sensorial materialization and representation of dynamic objects into immediate objects, creating multiple possible representations of reality. Regarding our case study, it was concluded how design is a creator of reality, since it enables to manifest the multiple possible representations of its dynamic object. Allowing, the creation of both physical and virtual realities which are able to blend together within the same environment.

Regarding the two other hypothesis, it was concluded how both were partially verified. Considering how both start by stating that design isn't a creator of reality and that we were able to verify through the first hypothesis that design is indeed a creator of reality, we can directly affirm that they can only be partially verified. Furthermore, the second hypothesis which stated that "design isn't a creator of reality, but that it can affect and change reality", was partially verified, since when concluding that design is a creator of reality, by consequence it will also affect and change reality. Additionally, the second hypothesis which stated that "design isn't a creator of reality, but it affects the way we perceive reality" was concluded as being partially not totally verified. As the focus of this investigation was directed mainly towards the study of the sign's object, namely the immediate and dynamic object, and not towards exploring the role of the interpretant, which plays an important role in our perception of reality, we don't have enough investigation to support and verify this hypothesis fully. However, it is possible to understand the importance about how design materializes signs and how it is through an interpretative mind (interpretant) that they are able to exist within reality. Thus, this opens the opportunity for a future potential study to be

conducted, focusing now on exploring the role of the interpretant and how it affect cognitive minds into perceiving reality.

To conclude this investigation, it can be perceived how the philosophical nature of reality makes it a complex object of study. Considering, the extensive field that encompasses all the existent theories and overall studies about reality, it is also impossible to encompasses all of that information within a master dissertation. Thus, requiring the further continuation of this study but also exploring its application within other fields of study, which as partially seen in the presented literature review, many different conclusions and theories can be gathered. On another note, if we consider Peirce's idea of fallibilism, which defends that we can never reach perfect certitude or exactitude, then we have to consider the idea that no matter the conclusions made in this investigation, we still can't be absolutely sure of their veracity (CP 1.147, 1897 cited in Mayorga, 2007, p.142).

Nonetheless, according to the research and results gathered throughout this whole investigation, it was possible to come to the conclusion that considering Peirce's semiotic philosophy, we can affirm that design is a creator of realities.

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