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## **Agrootics. A semiotic cubic model description for meaning interpretation**

Semiotics has meaning models that constitute forms of observation of reality's phenomenology. At current perspective of human reasoning, those models are insufficient reality interpreters before society and to the technology that accompanies it. In terms of meaning models of analysis in semiotics, it can be resumed as so: Saussure's dichotomy (a binary model), Peirce, Ogden-Richards and Morris' trichotomies (a triadic model) and Greimas' square (a tetradic model). As we inhabit a three-dimensional reality, we assume that everything can be measured and observed in terms of distance and extension relativities, as to an emotion, a phenomenon, a social medium or an object. Thus, we propose an alternative meaning production and interpretation, through a conceptual cubic model rooted on Peirce's trichotomy. This cubic perspective, represented by the development of a perception emulator in form of a cube, will be grounded through sensibility of social and physical space notions.

**Palavras-chave**

Agrootics, semiotics, cubic model, simulacrum, space perception, meaning.

## 1. Introduction

Semiotics has meaning models that constitute forms of observation of reality's phenomenology. By the presented perspective of human reasoning, those models are insufficient reality interpreters before society and the technology that accompanies it. In terms of meaning models of analysis in semiotics, it can be resumed as so: Saussure's dichotomy (a binary model), Peirce, Ogden-Richards and Morris' trichotomies (a triadic model) and the Greimas' square (a tetradic model). This study will introduce the basis for an alternative meaning production and interpretation, through a conceptual cubic model rooted on Peirce's trichotomy. This cubic perspective, represented by the development of a perception emulator in the form of a cube, will be grounded in the sensibility of space social and physical notions. As we inhabit a three-dimensional reality, we assume that everything can be measured and observed in terms of distance and extension relativities, as to an emotion, a phenomenon, a social medium or an object. In any case, there always will be implicit an idea of spatial relationship of something to something. With the objective of researching another process of the meaning interpretation, we provide an imagetic reasoning conveyor relating philosophical, physical and digital reality construction in its augmented or simple form.

## 2. Dimensions sensibilities

For being part of a three-dimensional environment, three variables, which define three axes, are implied. And those we indicate has the event, space and time. Because their accountability it's required, we will develop and justify their aspects of importance, namely time and space. Time can be considered the mental perception outcome from the perceived change between each object relative references. By Kant's perspective and his transcendental idealism, the way we perceive depends on the intuition we apprehend from objects, considering time a sensitivity, not an object, but a change of relationship perception between objects. In Kant's own words, "sensations are the products of our sensibility, and space and time are the forms of our sensibility." (Carus, 1892) Time, due to its relation with a space variable, may assume an inherent perception of its spatial nature, reflecting itself through in a dimension that occupies a type of space. Internal relational relativity movement between its dimension's components and its binding continuous overlapping transformations will produce a mental perception of a transformative continuity which translates into the designation of 'time'. For Kant, time is a "subjective condition of our intuition, and the individual itself is not outside." (Kant, 2001, p. 74) Mind's activity time dependence, in the building blocks of its imaginary, is a precursor to its physical neuronal activity added by its lag or its reality effectiveness apparent perception.

Cognitive scientist Mario Bonato in his article, "When time is space: Evidence for a mental timeline" (2012), states that "recently, several lines of evidence have suggested that the mental representation of time might be spatial in nature." Ultimately all phenomenon is nonetheless a locality or a non-locality. David Hume, as also Émile Durkheim, from their perspective assumed that "ideas of space and time are therefore not separate or distinct ideas; are only ideas of the manner or order in which objects exist; or, in other words, a vacuum or extension without matter is impossible to conceive of, or a time where no succession or change exist in any real existence." (Hume, 2001, p. 72)

Edward T. Hall, in the chapter "Space Speaks" of his work "The Silent Language" (Hall, 1990b), tells us that "literally thousands of experiments teach us unconsciously that space communicates," (Hall, 1990b, p. 161) and through personal experience that "we visualize the relationship between places we know," (id., p. 163) where possibly the relationship with space it's the "guarantee of particular identities." (Silvano, 2010, p. 71) Object 'space' communicates itself penetrating into the environment through which it passes. Elliot Gaines, president of the Semiotic Society of America (in 2014), wrote in his article, "Communication and the Semiotics of Space" (Gaines, 2006), that the "study of space as a semiotic phenomenon suggests that the meaning of space, as a sign, is generally understood in relation to other concerns. Communication draws attention to the content of messages while space contributes to the meanings of those messages without being obvious about its role in constructing meaning." (Gaines, 2006) Gaines also argued that when "we observe space as a sign, new ways of understanding are possible, and the meanings of things can be discussed as they pertain to our everyday lives." (id.) From now on, we also start to look to the emptiness as an object, which retains a shape and assumes a sign of what is not there, or what we do not perceive.

Different societies have an ecological heritage concept of space, on one hand the West generally builds space defining characteristics of extremes (external, as lines, or internal, as points), on other hand, they do not have the same reference or give more importance to central or internal area of what they consider the place of "space." Hall, writing about space standards in "The Silent Language", pointed out that from the point of view of society, to which we belong, the "concept of space makes use of the edges of things. If there aren't any edges, we make them by creating artificial lines (five miles west and two miles north)." (Hall, 1990b, p. 174) Later sociologist de Kerckhove (1997) mentioned the significance of Hall's work referencing certain 'space' cultures to an "area or empty places" (id.), for others refers to "complex network of relationships between people and objects." (id.) Individual and social structure of space are constituted by the relation of objects central points that populate it, but more distant the relationship between these points are, wider the territory reaches, thus defined into to its space.

In terms of social morphology, it can be considered the existence of "a relationship between human communities, the space they inhabit and their individual communities." (Silvano, 2010, p. 52) In this sense, to accept space as an understanding, that does not has expression beyond people's behavior, sociologist Raymond Ledrut (id.), discussing urban semiotics in "Espace et sociétés" (1980), ponders that space is a produced form and concluded that is "impossible to consider spaces separately, their representations and social personalities. They are in constant interaction." (Silvano, 2010, p. 54)

Le Corbusier, in its 1945's "L'Espace Indicible", expressed his notion's view of space in such manner: "Taking possession of space is the first gesture of living things, men and animals, plants and clouds, a fundamental manifestation of balance and permanence. First evidence of an entity is the occupation of space." (Le Corbusier, 2010, p. 48) We are the ones who occupy space, who create it, who use it, but is our choice to see it and so perceive it as an entity in which we transcend and extend as far and freely as possible. Individual and personal interpretation of how

a person sees space, or how she feels and relates to it, is influenced by social and mental spaces that experienced throughout her life. Reading stories, that put us into imaginary creation, and scenarios visualization or other worlds on television or in a movie theater, momentarily extend our vision and therefore our image space. In an article on social morphology and its collective representations, Jean Rémy around 1991, rambling about the thought of Durkheim, summarized space problem construction and interpretation as follows: "Space's notion, in Durkheim, puts the relationship problem between spatial morphology - that is, objective or material plan - and symbolic social - that is, subjective or cultural plan - implemented in collective representations or in societies holiness. Thus, social space it's at the interface between materials causalities on one hand, and functional relations, on the other." (Silvano, 2010, p. 18)

Space's notion is produced by interpreting an a priori state presented to us and transmitted throughout life by proprioceptive bodily sentience, where its mental construct materially depends on limited visual and auditory borders, resuming and delimiting into a volume perceived and embraced as a limited whole. Our relationship with space is what defines us, on our relativity to it and how we use it, whatever its dimension. To Raymond Ledrut, as mentioned in his work "L'homme et l'espace" (published in 1990), "space is for us the expression of our collective possibilities: symbolizes the power of man, is at the same time the sign and the instrument of an infinite capacity." (Silvano, 2010, p. 55) Space is quite possibly our last frontier. Bearing this statement in mind, giving the words of John F. Kennedy an adapted intention in applying the concept of 'space', we can say that "exploration of space will go ahead, whether we join in it or not, and it is one of the great adventures of all time." (Moon Speech, 12th September 1962)

### 3. Mind's space assimilation

We have, as a guarantee, space perception and the presence of it, nevertheless, we do not have a concrete sensation. Perhaps this could be the sensory sense that is lacking us to develop, to whom we have been unconsciously building through "material devices that allow the interaction between the world of digital information and ordinary world." (Lévy, 1999) In that direction, technology also invites the mind to absorb spaces, virtual or not, in digitally social simulations. Mind flows and adapts, adjusting to the demands of the various environments, to which it's submitted, finding in each of them its own identity, or the empathic part which reflects it, thus simulating the convenience of its existence in the universe in which it materializes. Without really knowing we live in many worlds within the same dimension where we simulate various ways of living and being, reserving our inner original state, our thing-in-itself to spaces and people that are closest, and especially for ourselves. Inclusively, to whom participates nowadays in a technological society, the penetration of information is such that the mind unconsciously is forced to respond to a multitude of scenarios with which it confronts. In its "Doors of Perception" (1<sup>st</sup> edition in 1954), Aldous Huxley noted that "the mind perceives things in terms of intensity's existence, depth of meaning, of relationships within a pattern." (Huxley, 2008, p. 41) In overall, Walter Jackson Freeman, biologist and theoretical neuroscientist, in his study of the neurobiological explanation of meaning production (Freeman, 2000, 2004), said that regarding the stipulation of mental sense "brains obtain

information about the world through the consequences of their own embodied actions. Information thus obtained is used in constructing meaning and is then discarded." (Freeman, 2000) Mind can not be an independent substance of the brain, at least mind becomes inherent to it, but also it may not be a physicality of the brain. Interpretation of the object 'information' is constructed and made available by the mind, leaving us the responsibility to observe it and give it the meaning that we understand or comprehend to use. Understanding an information, or a person's reasoning with whom we communicate, passes primarily by the understanding of the sign that expresses and mediates the use to establish reason or information. These cognition extenders or world mediators, signs, are the bridges that set comprehensions. But the mind doesn't act alone, it expresses in dimension using the respective body as an adaptation to the surrounding environment.

### 4. Body's space adaptation

Body. According to Lorna Marshall, a professor of body expression at the Royal Academy of Dramatic Art, body presents itself as "the sole mediator of human experience," (Marshall, 2001, p. xii) the one that remains at the center of a constant exchange between the mind and the object, becoming it a channel, the "core of all communication from the human world-real." (id.) Besides this direct connection we have, through technological devices at the body-space border, a connection by the intrusion, which implies a material connection to a device or "prosthesis", and also a connection by mediation, overtaken by mobile and other smart devices. These objects provide our body affordances that combine, extend and increase the possible affordances to us. Concept of affordance came by the hand of psychologist James Gibson's work of 1979 (Gibson, 1986). According to Joel Norman (2002), psychologist L.S. Mark in a 1987 article defined the 'affordance' concept as "the functional utility of certain environmental objects or object complexes taken with reference to individuals and their action capabilities." (Norman, 2002) For anthropologist Paul Kockelman an affordance is observed as a "semiotic process whose sign is a natural feature, whose object is a purchase, and whose key interpretant is an action that heeds that feature, or an instrument that incorporates that feature." (Kockelman, 2013)

With a bodily organic concept in mind, following Aristotle, Leibniz and Kierkegaard, Bártolo observed that the "body appears to us as an interface, an interface between me and the world, as my place in the world." (Bártolo, 2007, pp. 184-185) On the threshold of the interface's space, of the body with the biosphere, we consider that smart technology (smartphones, ipads, tablets, multi-touch screens, laptops) will produce the extension of communication to information located in other realities, or through other realities, having in mind that "our technologies are today a frontier where its played the possibility of delimiting the humane." (Martins, 2011) Ponders Bártolo that "one could consider the technology that affects the body it's, essentially, a technological semiotics that transforms and extends the body senses, the body meanings, at the same time that reverses and intensifies, onto the body, the signifier and signified statutes." (Bártolo, 2007, p. 218) Kerckhove goes further stating that "it is not the interface that invades the body, it's the spirit that turns into its own interface." (de Kerckhove, 1998, p. 67)

According to Bártolo, Roy Ellen in his "Anatomical classi-

fication and the semiotics of the body” (written in 1977) presented some impressions of ‘semiotics of the body’. In his opinion the body is not only the interpreter’s cocoon but also that which gives meaning where this semiotics “seeks to describe ‘the different forms whose bodily continuum is segmented and organized in part by the different languages of the world,’” (Bártolo, 2007, p. 171) this way the “body would form a semiotic continuum hardly interruptible, because the body itself is a ‘driver’ of meaning, making the meaning slippery.” (id.) Having support on Jacques Fontanille, “in his interpretation of his own body as *enveloppe sensible*” (Bártolo, 2007, p. 94), Bártolo argues that the body “is neither the casing (*l’enveloppe*) nor the air is its content” (id.), but both. Latter Fontanille (2011), in its “*Corps et Sens*”, would write about the “*enveloppe corporelle*”. While “*l’enveloppe*” indicates a representation of a frontier, Bourdieu’s *habitus* would represent an experience accumulation of its memories. As stated in Bourdieu, “*habitus* is a set of dispositions that lead agents to act and to react in certain ways. The provisions generate practices, perceptions and attitudes that are “regular” without being consciously coordinated or governed by any ‘rule.’” (Bourdieu, 1996, p. 13, note 43) *Habitus* contributes to action of the acting body and to “determining what transforms it.” (Bourdieu, 1998) We are the extension of what we want to be, we are the limit of what we see, we are our own frontier. At a time when technology was not so evolved, de Kerckhove saw for a fact that it was “happening something like a reversal of the relationship between man and machine. Previously it was very easy to say that technology was an extension of the body, but it became less comfortable to say that the body has transformed into an extension of technology. However, we can not ignore what is happening, and that is because the body is increasingly distributed in space, reaching a point where the balance between what is “out there” and what is “in here” bursts itself.” (de Kerckhove, 1998, p. 93)

Sensations are experiences, that belong to the Embodied Mind’s philosophical space, representing human mind’s nature relation with the human body’s shape, in which aspects of cognition are recreated by the body. This concept comes from Kant extending itself into Merleau-Ponty (in “*Phenomenology of Perception*”, 1945) and Francisco Varela (in “*The Embodied Mind*”, 1991). As addressed by psychologist Margaret L. Wilson, the “emerging viewpoint of embodied cognition holds that cognitive processes are deeply rooted in the body’s interactions with the world.” (Wilson, 2002) Psychologist Anna M. Borghi adds that “Embodied Cognition underlines that cognition is constrained by the kind of body we possess, (...) the body is always considered as an acting body.” (Borghi & Cimatti, 2010) Borghi and Cimatti proposed to extend this philosophy of mind from direct involvement of the body in actions directed to objectives, considering the internal language, having, on one hand, a contribution “to form a unitary sense of our body” (id.), and another remodeling on how “we implicitly perceive our own body.” (id.)

Is of importance the body’s own perception in the context of an understanding of what the mind is, and its relation to the body and subsequently with the object, namely its relationship with space. Today what is done in this direction? In agreement with Ken Robinson, who in 1998 led the advisory committee of the British government in creativity, culture and education (“*All Our Futures: Creativity, Culture and Education*”), there is almost no “education system on the planet that teaches dance everyday to children the way we teach them mathematics. Why? Why not? I think

this is rather important.” (Robinson, 2006) This is important because it generates plasticity to the brain structure and processing, strengthening the synaptic connections, giving the mind the sense and notion of space, and also the limbs presence as body trunk extension. (Caroni, Donato, & Muller, 2012; Giguere, 2011; Lövdén, Wenger, Mårtensson, Lindenberger, & Bäckman, 2013; Phillips-Silver, 2009; Sevdalis & Keller, 2011) In the end, our body extends the expression of ourselves and our minds interpretations.

## 5. Frontier transcendence

Transitions, such as the mind/body or body/object frontier, are places of transformation, evolution or revolution, of the threshold between parallel and different realities, between real and simulated spaces, between a priori universes simulacra. At this place, technology enters to assume an intermediary role objective, as in the opinion of Edward Hall, “technology is an inevitable result of mankind’s propensity to evolve outside his body.” (Hall, 1989, p. 9) Through this interface, humanity transcends beyond the limitations of its body shape and extends its own experience. Thus we agree with Aldous Huxley’s statement, in its “*The Doors of Perception*”, in which the author expressed its feelings that “the urge to transcend the self-conscious of itself is one of the appetites of the soul.” (Huxley, 2008, p. 74) Something that is transcendent we will take as what the reason still did not create a sense, or which is at the boundaries of personal space concept, outside the physical environment, which transcends us, which extends us.

Philosopher Zoe Drayson, who was part of a broad European project on awareness, describes that in the hypothesis of extended cognition (HEC) “cognitive processes can and extend to the outside of the head, and that the elements of the world around us can really become part of our cognitive systems.” (Drayson, 2010) Following this line of thought philosopher and cognitivist Michele Merritt also wrote about this confrontation with the concept of extended cognition observing that “cognitive processes are not entirely organism-bound and can extend into the world.” (Merritt, 2011) Extended Mind’s concept was developed in an article authored by philosophers Andy Clark and David Chalmers (1998) where they presented the idea of active externalism. This concept, related to the field of philosophy of mind, is based on the idea that the scope of the mind do not need to end within the limits of the skin and skull, promoting the view that objects in extracorporeal space are used by mind, in a way objects can be viewed as extensions of its own mind. As in the case argued by David Ludwig in “*Extended Cognition and the explosion of knowledge*” (Ludwig, 2014), which states that “active externalism has to accept that the information resources such as Wikipedia and Google constitute extended cognitive processes.” (id.)

With transcendence, being a state beyond the reach of physical perception, an a priori state is considered. Kant remarked the ‘transcendent’ term as all that “goes beyond” (Kant, 2001), and “transcendental to all knowledge which generally occupies less of objects (...) to the extent that it should be possible a priori.” (Kant, 2001, p. 53) A transitional place will always be premonitory of an overcoming process of something a priori out of range or beyond normality. Interpretation and significance of this fine line between mind and body is supported by Semiotics, as one can be seen in the thought of Magariños (2008), as well as by an observation of Juri Lotman in which he stated that



one of the “fundamental concepts of semiotic delimitation lies in the notion of boundary” (Lotman & Clark, 2005) as the “border of semiotic space is the most important functional and structural position, giving substance to its semiotic mechanism.” (id.) In summary, according to Kerckhove, “the most important psychologic change can be the externalization of our common personal conscience, even if we start to explore the outer tactile perceptions through long processes from thought. The outside world will become an extension of consciousness, as used to happen with “primitive” cultures.” (de Kerckhove, 1997, pp. 85-86) We manifest our own inside border of mind/body on projections into the outside world, firstly locally on the transition from body to space.

## 6. Semiotic continuum space

Lotman claims, to describe the conceptual representation of semiosphere, that the whole culture is “immersed in a semiotic space” (Lotman & Uspensky, 1978) and that individuals within a given culture “can only function by interaction with that space” (id.) through signs. As Vyacheslav Ivanov, a prominent philologist and one of the founders of the Semiotics of Culture in the School Tartu-Moscow, said in 1998: “the task of Semiotics is the description of the semiosphere without which the noosphere is inconceivable.” (Torop, 2005) For Peeter Torop, “Ivanov’s statement clearly is based on interdisciplinary logic with the term “semiosphere” placed between biosphere and noosphere.” (id.) Juri Lotman created the concept of semiosphere in 1982 as the semiotic space in which the signic processes operate in the set of all *umwelten*. The use of the term *umwelt* in Semiotics began with the reading of the linguist and semiotician Thomas Sebeok of Jakob von Uexküll’s work, a biologist who studied the areas of muscle physiology, animal behavior and cybernetic life. *Umwelt* is a concept close to semiosphere, which unites all semiotic processes of an organism as a whole. Thus in a biological perspective, there is an *umwelt* body and *umwelten* of cells, where we can also observe their relations. Therefore, the semiosphere is considered an ensemble of all interconnected *umwelten*.

States Kaie Kotov, researcher of Semiotics ecology and multimedia communication, that was Lotman who formulated the “definition of a semiosphere as a “semiotic continuum”, a heterogeneous space, enclosed in itself, that is in constant interaction with other similar structures” (Kotov, 2002), where the “contact points between different systems enable the emergence of new meaning” (id.), which is “characterized by a specific structure of space and time, whose organization is established through the workings of semiosphere itself.” (id.) A concept of semiosphere, inspired by the terms ‘biosphere’ and ‘noosphere’ by means of Vladimir Vernadsky, was discussed in detail in the book “Universe of the Mind: A Semiotic Theory of Culture”, written by Juri Lotman (1990), with an introduction done by Umberto Eco.

Donald Favareau (2002), philosopher and linguist, in his article on the neurosemiotic emergence of intersubjectivity, argues that apart from the outside world, the interior, as “properly seen, body, brain, mind and cells, are but levels of the same one endlessly interacting complex system - and if we can view them or treat them as distinct, it is more a testament to our own particular species-specific *Lebenswelt*, whereby we conceptually carve out of the sensory plenum of experience, elements of quality or iconicity (firstness), elements of relation or indexicality (second-

ness), and elements of *synthesis* or mediation (thirdness).” (Favareau, 2002) Favareau endorses a trichotomic set of categories defined by the philosopher Charles Peirce – firstness (I), secondness (II) and thirdness (III) –, appointing thus a pragmatic body’s observation. These phenomenological sign categories in Peirce depend of, respectively, (I) a sign of itself, the thing-in-itself, without reference to any other, (II) a sign representing its object that indicates, a relative nature of the sign to a second object, whether a law or a third party, and (III) a sign that represents its object in relation to its interpretant. After analyzing the concepts of biosphere and semiosphere, in how different spheres can constitute a “triadically flowing biosemiosphere” (Merrell, 2001), to this statement of Merrell it would be added the noosphere, foreseeing this way these three levels, i.e., biosphere (the naturality of life, the lived aspect), semiosphere (of relations, the perceived aspect) and noosphere (the construct mind, the conceived aspect), in line with the categories Peirce (firstness, secondness, thirdness) and thus establishing a space of continuum semiotics, real or virtual.

## 7. Sign’s trichotomy

Criticism of the sign definition, existing in all Latin generations since St. Augustine, becomes explicit in John Poinot, i.e., Friar John of St. Thomas (originally, João de São Tomás), considered by the semioticians John Deely (Deely, 1995; Deely, Powell, & Thomas, 1985), and Anabela Gradim (Gradim, 1998), as the author of Semiotics’ first treaty, designating it as “Tractatus de Signis” (in 1632). Poinot described that the sign brings “something else beyond itself even onto the perception of an organism, which is exactly how ideas work within the mind – they bring to perception something more than themselves.” (Deely, 1995, p. 77) Signs are seen as interfaces that are emitted through the transmission of what happens, in a contemplative time’s interpretation of the world, carrying the expression’s envelope of a rationality. As Peirce described it: sign “it is a vehicle conveying into the mind something from without. That for which it stands is called object; that which it conveys, its meaning; and the idea to which it gives rise, its interpretant. The object of representation can be nothing but a representation of which the first representation is the interpretant.” (Peirce, 1978, CP, I:339)

Describes Deely (2004) that a sign consists of a triadic relation which parts (or elements) are determined by their position and role in the relationship, i.e.: “the one in the foreground of representing another than itself is determined to be the representamen or sign-vehicle; the one in the position or role of being the represented other is determined to be the object signified; and the one in the background of that object for or to which the other representation is made is determined to be the interpretant.” (Deely, 2004) In short, a sign-vehicle, or *representamen* (seen as a thirdness, which mediate), is the first that is an original triadic relationship with a second, called object (seen as a secondness, which relates), to the point of being able to determine a third, called *interpretant* (seen as a firstness, which assumes quality), to assume the same triadic relationship with the object which stands to another object. With this in mind, we will start to unfold the cubic model construction, starting by describing the first axis, related to the event, and intersect two trichotomies: a) representamen + object + interpretant; b) firstness + secondness + thirdness. This combination will characterize a trichotomy of three aspects: the element as representamen, the body-space as an object, and the mind as

an interpretant. Each aspect will be defined by corresponding sciences or areas of investigation underlined by researched and appointed philosophies.

## 8. Element's trichotomy as representamen

Representation acquisition of a quasi-real version of an element's thing-in-itself depends on the quality of the transmission process, so the representamen will assume its dependence on the quality of communication. Given it through the "Foundations of the Theory of Signs" (in 1938) work, philosopher and semiotician Charles William Morris, set Semiotics grouping it into syntactic, semantic and pragmatic. That trichotomic structure became a basis for "Communication Theory" by the hand of sociologist and philosopher Jürgen Habermas, and with Morris it became clear that this trichotomy defined the representation of this aspect as representamen, as a deliverance of a thing-in-itself. Where the *syntactic* studies the interrelationship of signs, without regard to the meaning (an extension of firstness), the *semantic* studies the relationship between signs and objects to which they apply (an extension of secondness) and the *pragmatic* studies the relationship between the sign system and its interpretant – animal or human or other agent – (an extension of thirdness).

## 9. Representamen's trichotomies denominations

Following the theme of communication (due to being a mediation element), with Peirce's trichotomy influence in mind, anthropologist Paul Kockelman compares the outlined work of mathematician Claude Shannon ("A Mathematical Theory of Communication", 1948), founder of Information Theory, where he established "three levels of communication: the technical level (qua reproduction of signs); the semantic level (qua signification of objects); and the effectiveness level (qua creation of interpretants)." (Kockelman, 2013) Thus connoting the three aspects with the semiotic distinction of Charles Morris in syntactic, semantic and pragmatic. Based on its analysis, Shannon (1948) defined the following communication characteristics:

- a) An information *source*, which produces a message;
- b) A *transmitter*, which operates on the message in some way to produce a signal suitable for transmission over the channel;
- c) A *channel*, as the medium on which the signal, carrying the information which composes the message, is sent;
- d) A *receiver*, which transforms the signal back to the message to be delivered;
- e) A *destination*, for who or which the message was intended.

In his 2013 article "Information is the enclosure of meaning," Kockelman observed that "before Shannon's mathematical theory of information, Peirce had developed a complementary theory of information, which itself was a small part of a broader theory of meaning." (Kockelman, 2013) Through the description of Shannon's basis, and given credit to Mihai Nadin (Nadin, 1986) interesting essay, we established a communication process by a signic line related to the *representamen* event, which is composed by a communicative pair of elements, thus being semiotically characterized as follows:

- a) *Source and destination*, assuming each a quality characteristic, reflects a firstness (of each *umwelt*), where the message is the sign of itself, the thing-in-itself, without reference to any other. The introduction to Kant's (2001,

p. XV) book argued that the "thing-in-itself", the *noumenon*, the original element, can not be known, it will be something a priori. What will happen will be that the understanding mind will think of it, designating it as a "the thing-in-itself thought," a construct expressed by the mind. A *noumenon* is not directly accessible to observation, nor to itself;

- b) *Transmitter and receiver*, assuming each a relation characteristic, reflects a secondness, considered as a sign that represent its own object which indicates, of a sign's relative nature to a second object in the relationship. The idea which these aspects assume are of an adapter, an envelope, which involves the *representamen*;

- c) Finally, *channel*, assuming a mediation characteristic, reflects a thirdness, regarded as a sign that represents its object in relation to its interpretant in its mediation, as the mean by which the *representamen* communication is laid.

As described as such, we will designate syntactic as 'noumenon', semantic as 'envelope' and pragmatic as 'channel' (See Table 1).

Table 1. Representamen's trichotomy

(Peirce)	thirdness	secondness	firstness	
representamen	pragmatic	semantic	syntactic	(Morris)
	channel	envelope	noumenon	(Shannon)

## 9. Space's trichotomy as object

A relationship (an object reflects a relation element) with a sign depends on the relativity to that element, whether that would be a body, or, particularly, a space. Thus such object will assume its dependence on the expression of this relationship, an expression of the sense of its referred distance, from the individual element to whom a relationship is established. Anthropologist Edward Hall, who by noticing into phenomenological perspective and by observing that "people from different cultures not only speak different languages but, what is possibly more important, inhabit different sensory worlds," (Hall, 1990a, p. 2) proposed a neologism – *proxemics* –, designating it as "a work project that describes and compares the different types of use that man makes of space." (Silvano, 2010, p. 67) Proxemic system classification is expressed in 4 parts, or 'distances', based on observations of the interaction of both people and animals. Designation of the physical distances come as follows:

- a) "Intimate distance" (from the center body extending equidistantly around 40 cm - values considered for the American population in the 60's): At this particular distance, the presence of the other is imposed and may even become invasive by its impact on the perceptual system. (Hall, 1990a, p. 116)

- b) "Personal distance" (between 0.4 and 1.2 meters): where the term 'personal distance' means the distance between limbs (arm's length) expressing a space, or "protective sphere or bubble that an organism maintains between itself and others". (Hall, 1990a, p. 119)

c) "Social distance" (between 1.2 and 3.6 meters): where the "intimate visual detail in the face is not perceived, and nobody touches or expects to touch each other unless there is special effort." (Hall, 1990a, p. 121)

d) "Public Distance" (more than 3.6 meters): where "several important sensory shifts occur in the transition from personal and social distances to public distance, which is well outside the circle of involvement." (Hall, 1990a, p. 123)

In terms of distance between the *interpretant* (namely the mind) and *representamen* it was assumed to consider "intimate distance" as a thirdness, representing a determined place; "personal" and "social" distances were considered as a secondness, to represent a place in perceptive work; and "public distance" was considered as a firstness, being the object's territory not yet perceived by the mind's construct in its sensitive format.

### 9.1 Object's trichotomies denominations

Philosopher and sociologist Henri Lefebvre (1991), known for introducing the concept of Production of Space as an object of study, developed a triple dialectics of social space, described in his book "La production de l'espace" (1st edition in 1974), consisting of the "space of representation", the "spatial practice" and the "representation of space." Where:

a) "Spaces of representation are associated with everyday life and to the lived, the clandestine and underground side of social life." (Silvano, 2010, p. 49)

Describes Filomena Silvano (2010), citing Lefebvre, that space of representation, the "space lived through images and symbols that go with it," (Lefebvre, 1991, p. 39) are the "inhabitants" and the "users" space, of those who simply inhabit it, so this would be the space in expression of himself. As Silvano stated, "space to Lefebvre is lived before being perceived." (Silvano, 2010, p. 49) To this space Lefebvre called "lived" (Lefebvre, 1991, p. 40), and will remain in this denomination, assuming to be as a firstness.

b) "Spatial practice, which embraces production and reproduction, and the particular locations and spatial sets characteristic of each social formation." (Lefebvre, 1991, p. 33)

Silvano points equally that spatial practice would be "each member of a given society's relationship" (Lefebvre, 1991, p. 33), reflecting the relation characteristic of secondness. To this space we will designate as "perceived." (Lefebvre, 1991, p. 40)

c) Representations of space "are tied to the relations of production and to the 'order' which those relations impose." (Lefebvre, 1991, p. 33)

Silvano argues that representation of space would imply "the existence of knowledge, signs and specific codes. Accordingly, the theory reproduces the generative process of space," (Silvano, 2010, p. 48) of space's meaning construction where signs are under interpretation – thus this will be understood as a thirdness. To this space we will designate as "conceived." (Lefebvre, 1991, p. 40)

Therefore, define public distance as 'lived', the paired set of social and personal distance as 'perceived' and the intimate distance as 'conceived' (See Table 2).

Table 2. Object's trichotomy

	(Peirce)	thirdness	secondness	firstness	
object		intimate	personal + social	public	(Hall)
		conceived	perceived	lived	(Lefebvre)

### 10. Mind's trichotomy as interpretant

Sign's process of interpretation by the mind, which represents its object in relation to its interpretant, depends on the state of perception by which the mind assimilates the information of that sign. Thus, the interpretant (which reflects a quality element) will depend on the perceptual development of the acquired information synthesis. As done before, by trying to establish a grounded relation, we will combine the interpretant with the mind, unfolding such aspect relating to the mind's perception expression, revealing a "distance" of such expression development or space's interpretant expression.

So, assuming that awareness production of something will go through various states, or levels, of perception, that can densify gradually until an aware perception of a real object simulacrum, we researched such premises. Experimental results of neuroscientist Philip Merikle about perception without awareness, indicated that "stimuli are perceived even when observers are unaware of stimuli", (Merikle, Smilek, & Eastwood, 2001) thus exposing the existence of a previous perception state before this gradually develop into a certain level of consciousness. Koivisto, according to his experience, describing the relationship between attention and consciousness, stated that we "should distinguish between different types of attention and different forms of consciousness." (Koivisto, Kainulainen, & Revonsuo, 2009) Neuropsychologist Marie Vandekerckhove (2009), in a project on consciousness as a continuum of states, said that the distinction between different states of consciousness becomes gradually relating it to a perception's development levels, identity and memory. Three years anticipating the same dynamic of thought, Overgaard concluded that "reported findings relates to the hypothesis that there is more than one perceptual threshold," (Overgaard, Rote, Mouridsen, & Ramsøy, 2006) but goes further by arguing that there are different "levels" of awareness, thus intending, as in a earlier article, "Is consciousness a gradual phenomenon", by neuroscientist Claire Sergent (Sergent & Dehaene, 2004), to "give experimental support to the thesis that there is a clear transition between conscious and unconscious perception." (Overgaard et al., 2006) A few years before, Petra Stoerig conducted a research on the functional vision system and levels of perception, in which she already suggested "a concept of dissociable levels of perception." (Stoerig & Brandt, 1993) And in a survey about intuitive perception, Phan Luu (Luu et al., 2010) and his team agreed that the "process of perception requires not only the brain's receipt of sensory data but also the meaningful organization of that data in relation to the perceptual experience held in memory," bearing in mind that although it results in a "conscious perception, the perception process is not fully conscious" before the perception culminates "the initial representation of gist may support intuitive judgments about the ongoing perceptual process." (id.)

As argued, there's a probable existence of a degree of

densification and completion of perception. Following this perspective, we present a semiotic theoretical unfolding of perception, between the situation of thing-in-itself (an a priori condition) and an object's awareness idea given by the sign.

a) *A priori* (apperception, consciousness threshold, traces of information presence);

*A priori* is identified as the most distant perception phase, a place of the thing-in-itself of the object presence, a firstness territory, when it assumes as a transcendent knowledge (Kant, 2001) or something incorporeal without a substantial physical definition. Space beyond the a priori degree would turn out to be a territory of mental unconsciousness – will be a place of transcendence. As stated by Kant (2001, p. 79), the “nature of the objects themselves is completely unknown to us.”

b) Intuition (first indications of information perception, information appearance);

‘Intuition’ is identified as the “representation that can be given before any thought” (Kant, 2001, p. 131), as a feeling that carries the appearance of a substance, that is hidden and escapes to the consciousness. According to Susi Ferrarello, in her article “Intuition and perception in the sixth logical investigation of Edmund Husserl,” “intuition seems to be posed on an higher state than perception, since it seems to translate its *Reinheit* in perceived datum” (Ferrarello, 2010) One could define intuition as a premonition of perception to where sensitivity intervenes becoming perception into a premonition of understanding, and this into an understanding draft, thus embodying cognitive awareness substance.

Philosopher Paul Carus published about and followed very closely the work of Charles Peirce, his contemporary and also philosopher. Carus as the first editor of “The Monist” took upon himself the task of creating a new term that, in his view, should take the meaning of *Anschauung* (translated nowadays as ‘intuition’), expressed by Kant, “as an act of “atlooking” [in German “schauen”, to look], and the word “atsight” readily suggested itself. The word “atsight” is an exact English equivalent of the German *Anschauung*. It describes the looking at an object in its immediate presence.” (Carus, 1892) In Kant’s perspective “space and time (...) are immediately given, they also are *Anschauungen*.” (id.) Kant always tried to be “very careful to show that they are not ideas, not thoughts, not abstractions, not generalizations, but that they are as direct data as are sense-impressions and he calls the knowledge which man has by directly facing the object of knowledge “*Anschauung*.”” (id.) Kant though *anschauung* should mean just that, “*anschauung*”, what is apparently the very perception of view. As ‘intuition’, the translation still lingers, and Kant “is still misunderstood by his opponents no less than by those who profess to be his disciples.” (id.) In short, having settled this explanation, what results in the sense of sensitivity, in the Kantian concept, is expressed by more or less captivation of what’s perceived by a certain contemplative degree nominated by the term “*anschauung*”, “atsight”, or rather something that’s a visible imprint but has not yet set a concrete perception, it only presents itself present. Thus, we will opt, lacking a better translation, for the designation ‘atsight’.

c) Perception (an idea of information, form (*morphē*));

That said, ‘perception’ itself would come following, seen as the action by which one captures (*percipere: per* (“through”) + *capere* (“capture”)). The one who clings to the sensation of the intuited. As Husserl said: “perception, the perceived thing should be immediately given. Here’s the thing before my eyes that they perceive; I see it and I grab it. But perception is simply the living of my subject, the subject that perceives it.” (Husserl, 2008, p. 40) Here, for deeper guidance, we remark Husserl’s lectures about “continuum of the temporal object extensive perception” (Husserl, 1994) and “spatial extension” perception (Husserl, 1997). On the other hand, Locke considered that “perception, the first faculty of the spirit that deals with our ideas, is also the first and simplest idea we receive through reflection.” (Locke, 2010, p. 169) Perhaps mind “reflects” instantly on what perceives, mirroring back the reflection of the outer space composition. Many phenomena go through into our senses affection.

d) Understanding (a notion of information);

‘Understanding’ (“entender” in Portuguese), the action to extend into (*intendere: in* (“in”) + *tendere* (“stretch”)), that it approaches the element captured by the senses for a better observation.

e) Comprehension (densification of information);

‘Comprehension’, the action by which it clings closer (*comprehendere: com* (“together”) + *prehendere* (“grab”)), the one that into what the interpretant nears almost intimately before rationalizing on that information.

The sequence of ‘perception’, ‘understanding’ and ‘comprehension’, taken together, describe the coupling movement of information, or reading, of the meaning of an observed object, in mind. Because, to each time, the mind ‘captures’, ‘approaches’ and ‘clings’ the information that the sensitive senses had perception. These listed nouns that before were seen as human capabilities now become designations of places in, and of, a sort of space.

f) Reason (construction of information);

Finally, it operates, interprets and builds the acquired information where rationality intervenes, i.e., the making of ‘reason’. Kant (Kant, 2001, p. XVI) in his “Dialectics” centers in the faculty of Reason and elaborates an argument to support it as the “highest unit of thought.” (id.)

g) Consciousness (perception of itself, the caregiver of knowledge).

Reducing the sign to an aware knowledge, into a ‘consciousness’, which engages itself into a sensibility of presence.

In terms of placement of these names in the relationships of space’s relativity, where it mediates between the thing-in-itself and the interpreter, we set the mind’s trichotomy as follows: the *a priori* and atsight (“intuition”) classifying it as firstness; perception, understanding and comprehension as secondness; and reason and consciousness as thirdness.

If we could present in a conceptual image of the previous setting, for clarification of a mental structure simulation, we would use physics notions to produce a visual representation of the levels’ relationship from perception



to consciousness. Looking to and from a perspective of a mind-body dichotomy applied to the gravitational field idea described in the theory of relativity, we would draw it as a three-dimensional view of the mind in a space-time surface design, where it would deform in the presence of the mass imposed by an element, which represents the sensitivity of the individual's presence. Following image will represent it.

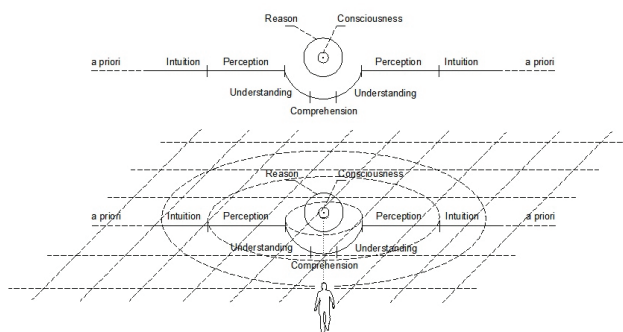


Figure 1. Interpretant's perception simulacrum

### 10.1 Interpretant's trichotomies denominations

When mind represents a thought of the oniric world, or an interpretation of the physical world constructed perception, deconstructs that world to rebuild its version of the perceived. It picks everything up to the smallest discernible meaning element of its actions in the semiosis, in a painting of relationships becoming a pictorial act. This act of "painting" the mind's frame, portrayed in the work of Deleuze "Pintura. El concepto de diagrama" mentioned by José Miranda Justo in the introduction to Deleuze's *The Logic of Sense*, "occurs when the form is put in relation with a force." (Deleuze, 2011) From this relationship, "the place of the forces, results, in Cezannian terms, into a 'deformation': 'a deformation, as a pictorial concept, it's the deformation of the form, it's the form in a way that upon it a force it's exercised'. To this Deleuze called, using Paul Klee's known expression, 'making visible the invisible.'" (id.) The thing-in-itself, which is the something invisible, becomes visible and gains such mentioned form by interpreting the sign that represents it. Engagement process of a painter with the canvas, according to the philosopher Gilles Deleuze, can describe the deconstruction and construction through the mind of it perceives.

A person interacts with the environment through affects – it becomes an affect and affects its own medium. To Spinoza 'affects' were transition states, confused in some translations with 'feelings', and to Deleuze and Guattari were considered as continuous changes. Deleuze still differentiated affects from percepts, in which he stated that affects were "not feelings, they are becomings that go beyond the one that passes through them (and that comes from another)," they are independent of its subject, they are something in itself, and that "percepts are not perceptions, are clusters of sensations and relationships that survive to those who experience it." (Deleuze, 2011, p. 15) By other words that can be translated as cognitive instruments that attach to a feeling, a kind of momentary cognitive avatar who lives the experience of that feeling. However cognitive affectivity is still a process that extends beyond body material limits, only felt by the own mind's affect. Through Deleuze's words, "percept is the landscape before man, in the absence of man." (Deleuze

& Guattari, 1994, p. 169) Where perception places itself in a presentation prior to interpretation. For Henri Bergson, Leibniz and Deleuze, the 'percept' is assumed as an independent perception of the subject. Deleuze said in "Qu'est-ce que la philosophie?" that "which is preserved in itself it's the percept or the affect. Even if the material didn't last more than a few seconds, it would give to the sensation the power to exist and to keep itself in eternity that coexists with this short length of time. [...] The feeling do not become into the material without the material entirely passes all inside the sensation, into the percept or affect." (Deleuze, 2011, p. 15) Being then, right away, grabbed and processed by comprehension.

As argued by Paul Carus, "sense-impressions are data, they are prior to ideas, the latter being constructions made out of sense-impressions. Sense-impressions are facts, but ideas are of an inferential nature; they are (to use Lloyd Morgan's excellent term) constructs." (Carus, 1892) We opted to replace Deleuze and Guattari's (1994) designation of 'concept' with the latter. From what was given as a whole, parts become as mind's constructs, which observes the transitions between subelements contrasts of each, such as depth's perception, texture, tone, color, frequency, the space they occupy, and the boundaries that shape them.

After this introduction, in terms of positioning, we define each element of trichotomy as follows: the a priori and 'intuition' ("atsight") will be called as 'affect'; perception, understanding and comprehension as 'percept'; and reason and consciousness as 'construct'. In correlation with each object's part, 'construct' will be a thirdness seen as 'conceived', 'percept' will be a secondness seen as 'perceived', and 'affect' will be a firstness seen as 'lived' (See Table 3).

Table 3. Interpretant's trichotomy

(Peirce)	thirdness	secondness	firstness	
interpreta nt	consciousness + reason	comprehension + understanding + perception	atsight + a priori	(Kant + Carus)
	construct	percept	affect	(Deleuze + Morgan)

### 11. Semiotic cube

Former trichotomy's descriptions will lay here the basic bricks combination for the semiotic cube's production. This cube, that represents the cubic model, will be designated as a Pragma unit. It will be through this cube that the relationship with the perceived information, or object, will be achieved (pragma - πρᾶγμα - derives from πρᾶσσω - prasso - which means 'pass through', 'achieve'). This perception emulator would occupy every point in an inertial system. Such cube will have an adapter role of a sign's perception at each point, depending on its spatial and temporal location subjugated to the existing perceptive fractal information.

Table 4 refers to the summary of trichotomies (representamen, object, interpretant) developed before, and of the sensibilities perceptions (time and space) initially mentioned. Cube's final shape will be obtained by unfolding Table 6 into what we see in Figure 5 and 6.

Table 4. Trichotomy combination

Interpretant		Object		Representamen		
Construct	Consciousness	Conceived	Intimate distance	Channel	Pragmatic	Thirdness
	Reason					
Percept	Comprehension	Perceived	Personal distance	Envelope (Transmitter / Receiver)	Semantic	Secondness
	Understanding		Social distance			
Affect	Atsight ("Intuition")	Lived	Public distance	Noumenon (Source / Destination)	Syntactic	Firstness
	A priori					
Thirdness		Secondness		Thirdness		

Briefly, we can describe that: At an 'intimate distance' (thirdness) the 'interpretant' constructs meaning (a 'construct'). A relationship with the 'object' is 'conceived' and the 'representamen' is seen as a 'channel'. At a 'personal distance' (secondness), or at a 'social distance', the 'interpretant' attempts to capture the meaning (a 'percept'). A relationship with the 'object' is 'perceived' and the 'representamen' acts as an 'envelope'. At a 'public distance' (firstness) the 'interpretant' feels a premonition of the meaning (an 'affect'). A relationship with the 'object' is 'lived' and the 'representamen' is seen as a 'noumenon'.

Table 5. Summary of Table 4.

Interpretant	Object	Representamen	
Construct	Conceived	Channel	Thirdness
Percept	Perceived	Envelope	Secondness
Affect	Lived	Noumenon	Firstness
Thirdness	Secondness	Thirdness	

Because the three phenomenological categories of Peirce – firstness, secondness and thirdness – are equivalent, respectively, to the sign-vehicle, i.e., the representamen (R); to the sign that represents its object (O) and to the sign that represents its object in relation to its interpretant (I), the above table can be constructed as follows, referring to space's sensibility (double axes, event and space):

Table 6. Simplification of former table

Interpretant	Object	Representamen	
II	OI	RI	Interpretant
IO	OO	RO	Object
IR	OR	RR	Representamen

Now we will unfold its respective correspondents into each trichotomy of time's sensibility.

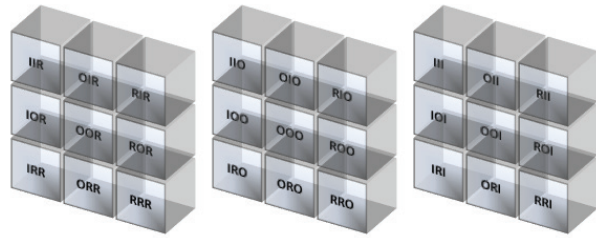


Figure 2. Unfolded Cube

Finally, gathering all sections we build the Pragma unit, seen in Figure 3.

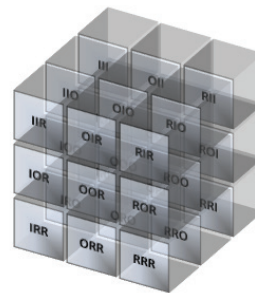


Figure 3. Pragma unit

## 12. Agrootic sphere

Agrootics (ἀγρός on "agros", "field" + "-δική" in connotation with "semiotics") arises from the interpretation of the semiosis of spaces, and its contents, from space's signic action, in which it embraces the recognition of mental sensitivity to itself through perception and understanding of information actions.

With Agrootics each individual carries the simulacrum representation of an invisible proxemic sphere, an *enveloppe corporelle*, that would bind the mind, in a kind of augmented reality that would express a pseudo-real entity of the mind. This representation would give shape to an human *umwelt*, in line with Jakob von Uexküll's description indicated by John Deely, as would also describe Lotman (Lotman & Clark, 2005) that a "structural heterogeneity of semiotic space creates reserves of dynamic processes and represents one of the mechanisms for the creation of new information inside the sphere," to where Baudrillard, mentioning Shannon's Hypothesis, would observe a "sphere of information that is purely functional." (Baudrillard, 1994, p. 79)

Visually Hall's distances are represented around an individual's sign in parallel with Peirce's trichotomic categories, thereby extending the area of analysis and interaction with the object thing-in-itself that will interact with that space. In summary:

a) 'Pragmatic' (linked to the relationship between *umwelt* and its interpretant), 'channel', 'intimate distance', 'conceived', 'construct', 'reason' and 'consciousness': relates to a Thirdness (as a sign that represents its object in relation to its interpretant) – which mediates;

b) 'Semantic' (linked to the relationship between the spaces and the objects that relate), 'envelope', 'personal distance' – 'Social distance', 'perceived', 'percept', 'perception', 'understanding' and 'comprehension': relates to a Secondness (as a sign representing your object that indicates the relative nature of the sign to a second object) – which relates;

c) 'Syntactic' (linked to the interrelation of spaces of signs), 'noumenon', 'public distance', 'lived', 'affect', 'atsight' and 'a priori': relates to a Firstness (the representamen, the sign-vehicle, the thing-in-itself, without reference to any other) – which embodies quality or iconicity.

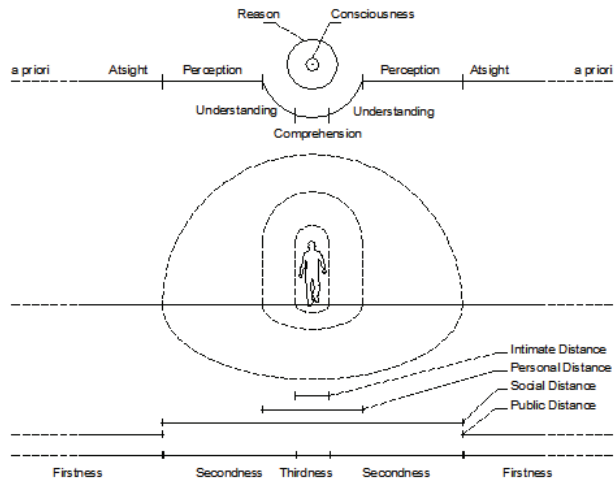


Figure 4.  
Agrootic sphere representation  
- Parallelism of spatial perception

Through Peirce's phenomenology (last line in Figure 4) an analogy was drawn between the upper line (see Figure 4), that represents the mind, and Hall's proxemics (see lower lines in Figure 4).

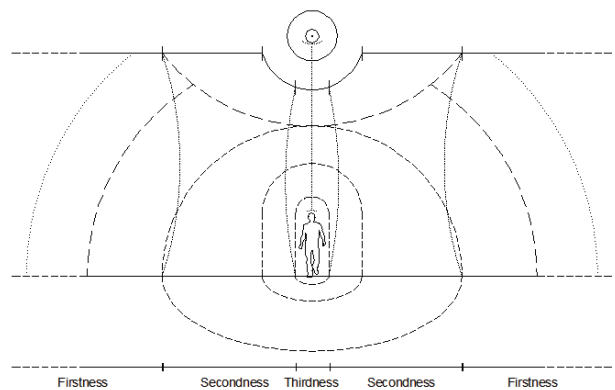


Figure 5.  
Spatial perception simulacrum

To each simulacrum is related, or connected, a semiotic cube (see Figure 6) that represents a general state or characteristic of such subject. In Figure 5 we represent the dynamic lines that establish the relationships between the spaces of mind (upper line) and body (lower line).

After outlining the surrounding areas, the analysis of an interpreter is represented by "projecting" a mental line approach to the element of focus. Seeing this as just a conceptual example, opened to other constructions of rela-

tionships with the Pragma, at the following figure we have the case of the observation of an animal: the space of the element 'dog' is represented by its signic space (its status, its pedigree, its fur, its action, its proximity, its information memory about this element and alike) that can be "virtualized" by the Pragma. Signs of each element will appear through Peirce's phenomenological space of your image, and under the representation of the Pragma it will assume an adapter role, opening up the information tree view for the elements, serving, in the example, the second Pragma as an adapter/translator of the original ones. Each interpreter as an insight, through its Pragma, of the other. At the same time each own space interacts and combines (first: firstness with firstness).

Detailing the action of a certain Pragma, we proceed by removing the spaces and remaining only with the cube that we want to represent.

In this case, for example an observation of a "vehicle", is assumed that the construction of this semiotic process is produced through RRR - OOO - III, or:

a) RRR: a representamen in which its definition of the element (y-axis), space (x-axis) and time (z-axis) are all firstness, that is, the definition is presented as a 'noumenon', in a 'noumenon' space and at a 'noumenon' time;

b) OOO: an object in which its perception, space and time are all secondness, that is, the perception of it is presented as 'perceived', in 'perceived' space and at a 'perceived' time;

c) III: an interpretant in which its notion, space and time are all thirdness, that is, the notion of it appears as 'construct', in a 'construct' space and at 'construct' time.

In other words, as an example of description, could mean that an element's representamen (or thing-in-itself) acquired by the interpreter was perceived momentarily (RRR), but because the object was somehow familiar to him (OOO) – i.e., it was placed at a social/personal distance –, the comprehension of it triggered a memory already established or the reasoning on it was eventually easily produced, building thus an easy understanding of it (III) from the received sign – i.e., the sign, or image, view was a construct –, corresponding to the assumptions that made sense to the interpreter. The interpretant construct through its perceived object had an atsight noumenon representamen of the element's first presence.

To apply the Agrootic cubic model, first (not as a premise) we have to lay around each event (observer and object) the spatial perception simulacrum (seen in Figure 5 and detailed in Figure 4), and only then we apply the correlation with the respective Pragma, doing so for an elected characteristic, or set of characteristics, analysing each event, or element, with it and the relationships with others (or itself).

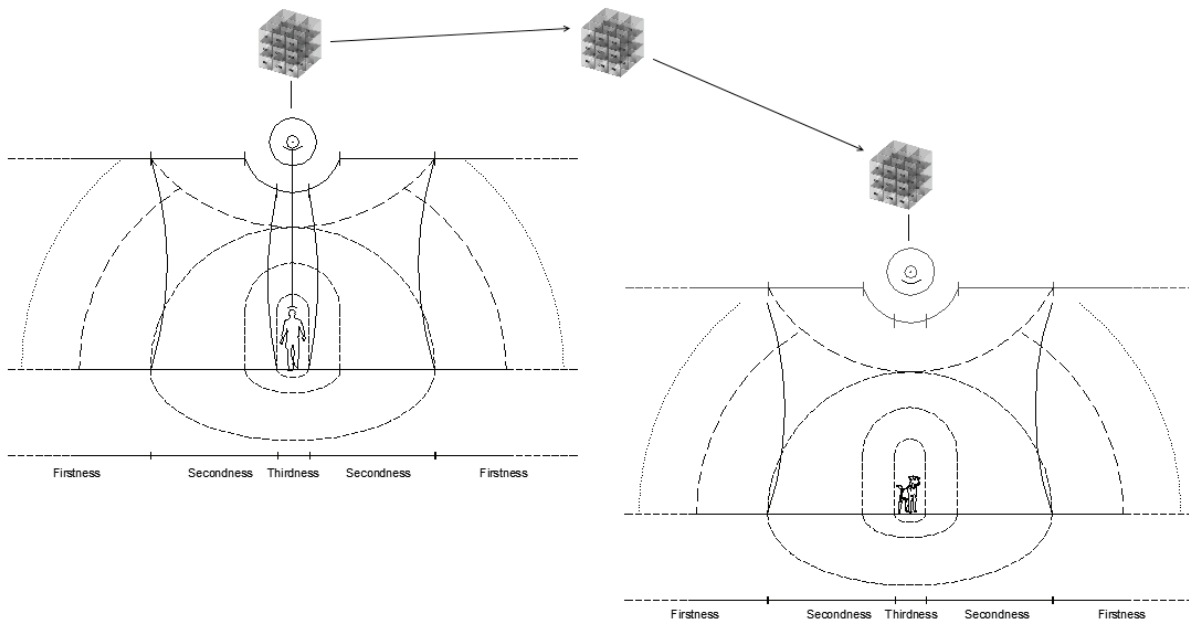


Figure 6.  
Agrotic process between 2 elements

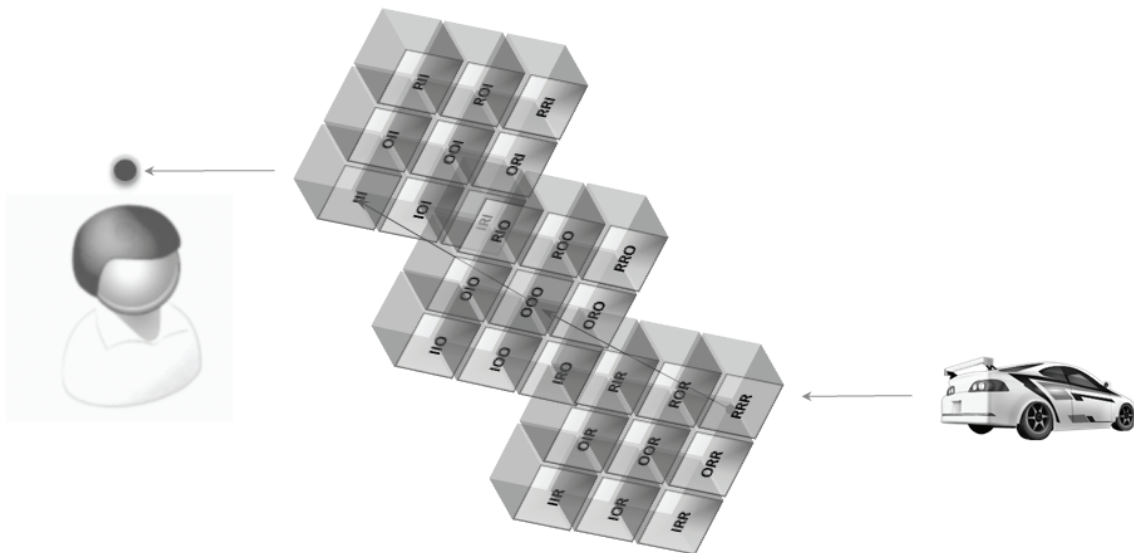


Figure 7.  
Simplified perceptual process  
between the observer and the object

### 13. Mind's expression in space

Information tendency inclines to an escape of the flatland – mentioning Edward Tufte (1995) reference's to Edwin A. Abbott's book (Abbott, 2006) written in 1884 –, which two-dimensional view come in form of book pages, painting canvas, school boards, tablets screens, and also most of our thoughts. Digital information begins to live in three-dimensional spaces and intersects with physical and virtual dimensions. Michael Heim stated that maybe “rather than control or escape or entertain or communicate, the ultimate promise of VR may be to transform, to redeem our awareness of reality.” (Heim, 1993) Thus, unconsciously, perhaps we are immersed in this process. The term 'Virtual Reality' (VR) dates back to “Myron Krueger in the 1960s and to Ivan Sutherland and Morton Heilig even earlier.” (id.) Heim described that Myron Krueger was a “far-seeing inventor of virtual-reality systems,” having dedicated “his life to bringing full freedom of body movement to the interface.” (id.) With the passing years this electronic realm extended to the real,

and in 1990 a researcher from Boeing, Tom Caudell (Lee, 2012), introduced the term 'Augmented Reality' (AR). AR is generally an evolution of the extra necessities of the virtual reality's space, becoming more than virtual by its juxtaposition to the real world, as if our mental information about a given object assumed a real external representation in relation to our mind, and thus briefly turning the real space in an extension of the mind, simulating a hyperreality of cognitive sensitivity. Augmented reality is reflected as a mediator of worlds, as its own reality, increasing the perception of reality in real time, and also of meaning's semantic context with the world that surrounds us in a quasi-hallucinogenic state in overlapped imaginaries to the real world. Agrotics easily meets with AR by its acting form, categorizing itself as an augmented reality, but, in this case, of the mind itself. Our necessity to know each other individually, our necessity to manifest ourselves, and to express our sense of things and how we perceive reality through our own eyes, always looks for a way to expose the mental ideas into material ones. There are other ways to think, to thought processing, that are imagetic visually realistic (in an associative and non-linear mind), musically and mathematically, and of



auditory perception. One of those cases is observed, like an augmented reality, an ability to think in or with images. This process mirrors in the case of Temple Grandin (2009), diagnosed with autism, which publicly shared the functioning perception of her own mind. It was in the sense of refining this type of formulation, of the hypothesis of an autistic cognition of "thinking in pictures", that Maithilee Kunda (Kunda & Goel, 2010), a researcher in artificial intelligence and cognitive systems, concluded that "given the existence of considerable evidence in line with the hypothesis, the idea that certain individuals with autism may "think visually" should be taken seriously as a cognitive model and receive more focused and sustained attention in behavioral and neurobiological experiments." (id.)

Human beings have tried to express, and represent in many ways, their mental forms of information projecting them in their own space, sometimes through computer simulations in virtual environments, or by non-touchable holography. In accordance with the user's point of view augmented reality comes to trigger an engagement of him with given information through visual interaction, thus providing another perspective about a service or a product reaching customers potential through mixed information presentation format with reality itself. Agrootics, in part, is seen as a result of the necessity of understanding the technological philosophy behind augmented realities, and its imago view of our minds combined with real space and reality itself. Nevertheless, in the end, it's all about us.

#### 14. Technology as mind's extension

We may have reached a point where the mind needs something to snatch the limiting intricacies of a skull, feeling that is more than the cocoon which inhabits and animates. In this sense, the technological evolution has complemented unconsciously this transposition of a former emptiness. In its Technosis (in 1998) writer Erik Davis remarked that "modems unscrewed the Huxley's mental 'reductive valve' and let in an unlimited mind (Mind at Large) network connected. (...) Computers and electronic media are 'connecting' to everyone and cyberspace it's taking shape as a changing virtual landscape of a merged collective mind." (Huxley, 2008, p. 24) Kerckhove said, citing Michael Benedikt, that with "cyberspace, a totally new space it's opened by life on earth own complexity: a new hive for a realm that lies between the two worlds. Cyberspace becomes a place for consciousness itself." (de Kerckhove, 2001, p. 15) A place where the mind becomes visible, where social networks are "supported by a technological extension, a technological surrogate of the central nervous system, as first noted by McLuhan." (de Kerckhove, 2001, p. 20)

According to Gilbert Ryle, philosopher and critic of Cartesian dualism, by advocating no distinction in the mind-body relationship, the mental processes are intelligent acts. In 1951, Ryle introduced the notion of "ghost in the machine" with *The Concept of Mind* (Ryle, 2009), where he wrote that "minds are not parts of a clock, are just pieces of a no clock." (Ryle, 2009, p. 20) This "ghost in the machine" was also discussed in "the ghost in the atom" (Davies & Chalmers, 1989), where Paul Davies joined some interviews with known scientists about quantum physics, arguing that the concrete understanding of the "spirit of the machine" is necessary to understand the discussion of the "ghost in the atom" (Davies & Chalmers, 1989, p. 52) itself. On the path to a better understanding of mind-body relationship neurosurgeon Sunil K. Pandya (2011) cites the neurologist Krishnamoorthy, remarking that mind's operations is similar to computers, where it becomes 'made in the image of':

"The mind... is a virtual entity, one that reflects the workings of the neural networks, chemical and hormonal systems in our brain." (id.) This form of putting in perspective the mind's shape as an information processing system, in which the mind is seen as a computing machine, has analogy in the "computational theory of mind" proposed in 1961 by mathematician and philosopher Hilary Putnam.

In fact, considering the increasingly complex online universe, we do not know if reality mimics the mental dimension or otherwise, or both simultaneously, however, human ecology is been having a parallel analogy with life itself. We are becoming the morphic space of relationships that we have established: spaces and territories to which we are daily connected in its constancy will define our perception limits. We start to extend us in virtual spaces to mentally evade from cubicular and urban spaces. In the sense of the body connection with technologies, mathematician and researcher Frieder Nake, in his article "Human-computer interaction viewed as the pseudo-communication" (Nake & Grabowski, 2001), considers semiotics as "fundamental to an understanding of human-computer interaction, and all computer artifacts." (id.) Supporting this argument Kecheng Liu (2000) points out that "understanding signs should contribute to our perception of information and information systems." (Liu, 2000, p. 1) Thus, with the argument that semiotics could be presented "as a framework for understanding and designing computer systems as sign systems," (Andersen, 1992) Peter Andersen through its "computer semiotics" (1992) pointed out "all levels of a system can be treated semiotically" (id.) having the principle that the "system interface is (...) is an obvious example of a sign-based computer." (id.) These former works are indicative of the importance for the argument of semiotics introduction as the adapter of mind with this cybersymbiosis and, overall, with social communications.

Interaction of people with extended realities, following the quality to transcend the mind of each one, provided by technological advances and the expansion of the internet connection, is transforming societies perspective which possess a reality of their own. Jean Baudrillard (1994) argued that our society is replacing all reality with signs, thus assuming a semiotic nature, and consequently our human experience is becoming a simulation of reality. Perhaps in the near future evolution of the human species reaches a point where it no longer needs technological tools and will connect its mental form with its own "ghost" in some way. Yet, for now, this is a mere thought, an imaginative wish, and Agrootics serves as replacement for the lack of such connection.

#### 15. Closure

This meaning interpretation method, Agrootics, is understood as a proposal of a dimensional emulator of mind's hinted augmented reality. A model of meaning construction is presented that's characterized by lines of thought about the sensibility of space. This way of observing the world can maybe offer a paradigm shift in how we look, how we understand each other, and visually perceive space and its elements. This article result combines related research in Semiotics, Anthropology, Sociology, Neuroscience, Communication Science, Electronics and Informatics. Conjugating Agrootics with RA, and overall with informatics, it might boost a better understanding of information meaning and communication quality. In general, it might offer, at least, a different perspective on interpreting an event element in relation to its environment, and gives us transcendence in being. After all, we all are perceived, and emotionally constructed, in a three dimensional space.

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