EPISTEMOLOGICAL AND INNATE IN KANT AND CHOMSKY

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EPISTEMOLÓGICO E INATO EM KANT E CHOMSKY

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Abstract

In this project, I aim to discuss some points of Kantian and Chomskyan theories of knowledge, pondering on connections between them. I propose the question "what are the epistemological connections between Kant and Chomsky?" using the comparative method. Besides an historical topic, I propose theoretical contents, as Chomskyan linguistics development; Kantian *aprioristical* thoughts; Kantian judgments and Port-Royal judgments; innate triangles for Kant, Chomsky and Descartes; and Chomsky's linguistic on century 21st. The main objective of the article is to achieve a better understanding of Kant's and Chomsky's epistemic relations, in order to comprehend more about innateness and theory of knowledge in general.

Resumo

Neste projeto, objetivamos discutir pontos das teorias de conhecimento de Kant e Chomsky, ponderando sobre possíveis conexões entre eles. Questionamos "quais são as conexões epistemológicas entre Kant e Chomsky?" utilizando o método comparativo. Além de um tópico histórico, é proposto um tópico teórico, como o desenvolvimento linguístico Chomskiano; os pensamentos apriorísticos kantianos; juízos kantianos e de Port-Royal, herdados por Chomsky; triângulos inatos para Kant, Chomsky e Descartes; e a linguística Chomskiana no século XXI. O objetivo principal deste artigo é alcançar um melhor entendimento das relações epistemológicas entre Kant e Chomsky, em razão de compreender mais sobre o inatismo e a teoria do conhecimento em geral.

Entradas para indexação

Texto integral

INTRODUCTION

This research is a comparison between the epistemological theories of Immanuel Kant and Noam Chomsky. Firstly, I found relevant to achieve a better understanding of historical aspects that concerned linguistic and philosophic matters, antecedent to these authors. This criteria was adopted for the fact that Chomsky's and Kant's works may be seen by different perspectives, and in this case, I took their historical paths (this means, philosophical alignments to scholars along the years) as an important factor, and as a base to comprehend their ideas. Regarding this, epistemological basis for each author were presented in this paper to comprehend their theories.

Naturally, much is said about the correspondence between Descartes and Chomsky; After all, there is a book named *Cartesian Linguistics* (2002) in which Chomsky ponders on Descartes' work, and for the title itself it is possible to perceive that Descartes had influence on him (KENEDY, 2016: 93). However, little has been said on Kant's work allied to Chomsky. In *Cartesian Linguistics*, Chomsky mentions:

> Certain major figures — Kant, for example — have not been mentioned or have been inadequately discussed [...] Still, even such a fragmentary survey as this does indicate, it seems to me, that the discontinuity of development in linguistic theory has been quite harmful to it and that a careful examination of classical linguistic theory, with its accompanying theory of mental processes, may prove to be an enterprise of considerable value. (see CHOMSKY, 2002: 104; GLENDAY, 2010: 188)

My inquiries did not stop by this premise – when Chomsky stated that he did not mention much about Kant in "Cartesian Linguistics", in other books of his own (1979), for example, he talks about an author that his thought would be

aligned with: this would be Charles Sanders Peirce – an author who evolved Kantian theories (1979: 70-71). According to Chomsky (1979),

> M.R. [Mitsou Rounat]: To what degree can your discoveries about language and your definitions of fields of knowledge lead to the emergence of new philosophic questions? To which philosophy do you feel closest?
> N.C.: [Noam Chomsky] In relation to the questions we have just been discussing, the philosopher to whom I feel closest and whom I'm almost paraphrasing is Charles Sanders Peirce. He proposed an interesting outline, very far from complete, of what he called 'abduction'...
> M.R.: Abduction is, I believe, a form of inference which does not depend solely on a priori principles (like deduction), nor solely on experimental observation (like induction) [...]" (70-71)

As written above, in Chomskyan's talk with Mitsou Rounat, Peirce's theory would be the closest Chomsky would get to another scholar's philosophy. Peirce's resemblance to Kant would be the theory that not only *a priori* principles are taken into consideration, but also the senses from experience, or in Kantian words, *sensibility* (1998).

My justification for this research is based upon (i) the facts mentioned above, in which Chomsky mentions the importance of studying more of his work's relations to Kantian work; (ii) the importance of Kantian work to Cartesian tradition, which is significant for historical and philosophical purposes. In fact, his contributions for epistemology are much relevant, beside other areas of knowledge. I aim to demonstrate that there may be Kantian relations to Chomskyan work, for example, in the theory of mind, when it comes to *innateness*, which might be conceptualized as "in which nothing is to be encountered that belongs to sensation" (KANT, 1998: B35A21).

Other justification to the work (iii) is that it might be an addition for theoretical sources concerning Chomskyan generative linguistics and their history, allied to a philosophical, epistemological approach concerning the Kantian system of thought.

It is significant to say that for centuries, linguistics, philosophy and other sciences have tried to argument for the innateness phenomena, as the rationalists. Others tried to falsify it, as the empiricists. Although, some questions remained for these empiricist scholars, for example, how children acquire language in a short period of time, without being exposed to the whole grammar (see PINKER, 2007).

I proposed the comparative method in the development of this research project. According to Lakatos & Marconi (2003: 107), comparisons are relevant when verifying similarities and divergences between groups in the present, past or both, in order to understand their disparities and stages of evolution of thinking.

With this in mind, a study about scholars and theories that are not in the same period of time is plausible and has a scientific procedure. There are more than two centuries of time gap between the writings of Immanuel Kant (1724-1804) and the writings of Noam Chomsky (1928). Chomsky, on the matter of comparative methods, has endorsed the usage of comparisons in language studies.

In his specific situation, it was on the theme of language evolution (FITCH *et at*, 2002: 1572).

Through the comparative method, I have set the following questions: "what is the philosophical background of Immanuel Kant?" and "what is the philosophical background of Noam Chomsky?"[1] After this, I have researched through their epistemic approaches more closely, and looked for epistemological connections in sequence. I intend to explore their ideas in this article as correlated, rather than postulating that one is the causation of another.

What I set as a problem of research after these primary questions was "what are the epistemological connections between Kant and Chomsky?" Some points, which I named *Historical Aspects*, are previous theoretical knowledge that Kant and Chomsky shared in the *History of Science*. My aim in this topic is pointing out some interesting facts that are relevant to the theoretical exposition.

Immanuel Kant published the *Critique of Pure Reason* in 1781. His contributions took place in the Enlightenment, while developing German idealism and Transcendental Idealism. He was also an intellectual in a variety of fields, including Mathematics, Science and Philosophy, Metaphysics and Ethics.

According to Sebastian Gardner "[...] the success of the *Critique* lies in a set of metaphysically neutral but epistemologically forceful arguments which may, with more or less difficulty, be isolated from their idealistic environment." (1999: IX), In other words, Gardner (1999) argues that Kantian theory of epistemology may be more significant than his participation in Transcendental Idealism, and also that his contributions could be managed with another theory of thought.

Many authors comment on the difficulty in understanding Idealism authors' technical language, for the fact they were developing new perspectives and did not know how to talk about them. Gardner pointed out that for Kant this was no different; Kant might have struggled with technical language at some points, and this justifies why it is so complicated to first-time readers enjoying the *Critique* in a first scan: they would possibly not read it completely.

Concerning Chomsky, one of the aspects of his studies is the investigation of human knowledge, which leads to the concept of innateness. Innateness may be found in this argument, for example:

> In the case of language, one must explain how an individual, presented with quite limited data, develops an extremely rich system of knowledge. The child, placed in a linguistic community, is presented with a set of sentences that is limited and often imperfect, fragmented, and so on. In spite of this, in a very short time, he succeeds in 'constructing', in internalizing the grammar of his language [...] (1979: 63)

As demonstrated above, the possibility of internalizing language by children has not been explained yet by biology, linguistics, and other sciences. How could children, with limited access to language, learn a whole system of language? In other words, how can someone who has a *poverty of stimulus* by the environment learn more data than is given to him? (LUNGUINHO & TEIXEIRA, 2019: 125-126)

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[1] The possibilities of research are not exhausted with this paper.

Considering this fact, Noam Chomsky postulated that we are born with the *capacity to learn language*, named the "faculty of language" (PINKER, 2007: 30). This means that the child is born with an inner ability to learn data.

1 HISTORICAL ASPECTS

In this section, I aim to present the historical and philosophical aspects of the History of Science towards Kantian and Chomskyan theories of thought. Some scholars cited on this section may be: Plato, Aristotle, Copernicus, Descartes Leibniz and Hume. Firstly, I aim to outline some of Plato, Aristotle, Copernicus and Descartes influences on Kant and Chomsky (1.1). Secondly, in (1.2), I aim to outline the other authors cited: Leibniz and Hume.

 In sequence, I will comment on rationalism and empiricism, in order to outline their impact on the author's theories as well. These topics are important to comprehend the Kantian philosophical conduct in the Critique, as well as understand the Cartesian Linguistics' tradition mentioned by Chomsky.

1.1 From Greeks to Modern influences on Kant and Chomsky

Kant (1998) and Chomsky (2002, 2006) mentioned René Descartes[2] (1596-1650) in their works. Descartes made relevant inquiries on epistemology in the 15th century. For Marcondes (2007: 169), the impossibility of finding a still doctrine made Descartes postulate "*how one can be sure he is not wrong".* Looking for unity among a variety of theories, he only found an alternative in oneself – only true reasoning and the devotion to the inner thoughts would lead one to the correct answer. Kant would have the same urge later, to find a *pure human reason*, in the *Critique of Pure Reason* (1998).

Therefore, Descartes' objective was to find a basis for knowledge in one's *interior*. The set postulation to his theory would be the *cogito*: "I think, therefore I am" (*Cogito, ergo sum*). There are many interpretations for this postulation. A possible interpretation of the *cogito* is that, if a person is capable of reasoning, then this person exists in the world. Other scholars would say the *cogito* does not prove our existence, but only that we can think for our own. According to Marcondes, the *cogito* "reveals us only this: the existence of pure thinking, which is possible for the evidence of the act of thinking itself" (2007: 174). Then, as Marcondes mentioned, the *cogito* proved only that the act of thinking itself exists, which means it is possible and is different from living, sleeping, and so on.

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[2] A little before modernism took place, there was a scientific revolution; it had its beginning based on Copernicus, who discovered the heliocentric system. The heliocentric approach postulates that Earth moves around the sun and not the opposite, and this caused the prior philosophy system to crash. According to Marcondes (2007: 154), Copernicus discovery points out one of the most remarkable facts that has ever happened in the history of modernity. Beyond that, a growing interest in natural sciences led to the reinsertion of Aristotelian works in Europe. It was an important contribution for the era, for the fact that many authors were influenced by him. Modernism happened in 17th century. It was an era of inquiries in a multiplicity of fields, especially the sciences and philosophy.

Kant (1998) seemed to amplify Descartes' model of cognition theory presented before, with the same empirical, innate, and judging mechanisms of knowledge (1998). His model of epistemology theory was set in the 19th century, following Descartes' path.

Descartes identified three types of ideas: innate, empirical and from imagination. Innate ideas are a component of the individual since birth, and cannot be learned through the senses. Empirical ideas rely on our relation to the senses and the palpable world; and the ideas of imagination depend on what we create on our mind based on the elements of the world (MARCONDES, 2007: 175). Beyond that, about human faculties, Chomsky says that, for Descartes,

> [...] man has a species-specific capacity, a unique type of intellectual organization which cannot be attributed to peripheral organs or related to general intelligence and which manifests itself in what we may refer to as the "creative aspect" of ordinary language use – its property being both unbounded in scope and stimulus-free. (2002: 52)

This means that both Descartes and Chomsky consider the creative aspect one of the relevant topics of language. Different from non-human animals, humans can create unique sentences, in an infinite number. Descartes argued that the animal's lack of language occurs because they do not have a substance called "mind", and not because they are missing something as organs.

Another relevant author who was mentioned by both Kant (1998) and Chomsky (2002, 2006) is Plato. Plato elaborated the first versions of the innate concept. This may be seen in the *Menon* dialogue, (PLATO: 51-53), in which Socrates talks to Menon on the subject of learning, and he explains that if the soul is immortal, there is nothing one cannot learn, for passing lives and lives learning; if this person can learn, he will get to learn all things.

Aristotle, as well, was pondered by Kant (1998) and Chomsky (2002, 2006). While Aristotle defended experimental research and investigation of nature, Plato emphasized mathematical abstraction and metaphysics (see MARCONDES, 2007: 155; SELL, 2002: 8). They would be responsible for setting two sides of philosophical thinking in the following centuries, to be outlined: empiricism and rationalism.

In his book, Kant commented on the Copernican revolution to explain what metaphysics was to him:

> Hence let us once try whether we do not get farther with the problems of metaphysics by assuming that the objects must conform to our cognition, which would agree better with the requested possibility of an a priori cognition of them, which is to establish something about objects before they are given to us. This would be just like the first thoughts of Copernicus, who, when he did not make good progress in the explanation of the celestial motions if he assumed that the entire celestial host revolves around the observer, tried to see if he might not have greater success if he made the observer revolve and left the stars at rest. (1998: BXVI)

In this paragraph, Kant expressed that if a system is not organized correctly, the processes do not work. In his beliefs, metaphysics, for example, is a particular subject which has been treated similarly to the celestial system; scholars have been trying to classify it as one thing or another, and they assumed that cognition must have met metaphysics at a given moment without changing their perspectives.

With this in mind, Kant proposed a "changing" of perspective to his philosophical system and aligned rationalism and empiricism to build a new theory: the transcendental idealism.

1.2   Rationalism and Empiricism impacts on Kant and Chomsky

Rationalist and empiricist doctrines are relevant to comprehend Kantian philosophy, as mentioned in the last section. These systems of thought are also important to perceive Chomsky's side on philosophy, since innateness belongs to rationalist thought.

It was pointed out by Gardner that "Kant's original philosophical orientation may be safely described as rationalist, but his early, 'pre-Critical' writings, taken as a whole, do not express a unified philosophical outlook" (1999: 9).

Figueiredo (2005) and Dudley (2007) pointed out that what inspired Kant to write the *Critique* was David Hume, an empiricist — this may be explained because Kant was doubtful about his earlier works, and reading Hume's work made him write the parameters for the transcendental idealism doctrine.

Hume postulated that one learn through the senses; consequently, ideas would be copies of these sensory impressions from the world: "Hume first distinguishes between impressions, which are direct results of sensory experience, and ideas, which are copies of impressions". (DUDLEY, 2007: 4). In this system, every idea would come from the sensitive world, and innateness would not exist— for example, the abstract idea of *fairy* would be oneself combining an idea of wings and the idea of person. In other words, empiricism implies learning through senses.

Dudley (2007) and Figueiredo (2005) argued that Hume was a deterministic author, and also a skeptic. Skeptic for the fact that, for Hume, expecting for the future the same conditions that happened in the past is a matter of faith. Besides, for him, human reason would be no different than another animal reason, and this would make Hume a determinist.

Hume's determinism made Kant think about the freedom postulations for that specific time. It was the Enlightenment; the Age of Reason, and Kant was very interested in freedom of thought. According to Dudley,

> He [Kant] saw that Hume's skepticism and determinism constituted a challenge to the very possibility and promise of modernity, and therefore responded Hume to the rude awakening of his comfortable dogmatic slumber by trying to answer Hume in a way that would save the prospects of rational cognition, moral agency and political freedom. (2007: 10)

Besides being interested in a pure reason, Kant proposes the transcendental doctrine. He submits that perceptual *intuition* is possible, through *sensitivity*; also, that after the phenomena is perceived, it can be *learned* by another process, when this information acquires the *understanding* (1998).

There were parallels between Leibniz and Kant, for the fact Leibniz was ancestor of Kant in the rational philosophy. Leibniz was one of the prominent figures of rationalism and some echoes were kept between him and Kant (see GUYER & WOOD, 1998: 28). Kant maintained some arguments of Leibniz's works in his own texts, for example, the *principle of coexistence*, which according to Guyer & Wood (1998: 28), was a contradiction to another principle elaborated by Kant, the *principle of succession*. Even then, according to Guyer & Wood, Kant did not remove this principle from his work.

A postulation made by Leibniz is that in the process of knowledge the only thing that is not in the senses is the intellect itself (1768/1949, bk. II, chap. I: 111 apud PINKER, 2007: 93). On this subject, Kant mentioned that "As for objects insofar as they are thought merely through reason, and necessarily at that, but that (at least as reason thinks them) cannot be given in experience at all" (1998: BXVIII). Therefore, according to the authors, one can perceive that the rationalist origin of Kantian ideas were based on Leibniz, for the fact Leibniz (and Wolff) was one of Kant's rationalistic influence (see also FIGUEIREDO 2005: 22; MARCONDES 2007: 212). Although, Figueiredo (2005: 22) mentioned that Kant continued being a rationalistic author, for the fact that the *Critique* is pursued in the name of reason.

Likewise Kant postulations, Chomsky express his concordance to the rationalist school of thought. When it comes to empiricism, Chomsky mentions he does not accord with the theory:

> [...] empiricism insists that the brain is a tabula rasa, empty, unstructured, uniform at least as far as cognitive structure is concerned. I don't see any reason to believe that; I don't see any reason to believe that the little finger is a more complex organ than those parts of the human brain involved in the higher mental faculties; on the contrary, it is not unlikely that these are among the most complex structures in the universe. (1979: 81)

Chomsky explains that there is a dualism in empiricism, expressed by Hume. The organs of the human body are conceived as complex, while the mind is conceived as a *tabula rasa*. Chomsky refuses this theory, especially because he believes that the brain is the most complex organ of the human body.

As commented above, in Chomskyan words, human's mind would be a complex system, which "[...] do not develop by means of uniform principles of 'general intelligence'; it is constituted of 'mental organs' just as specialized and differentiated as those of the body". (1979: 83). These "mental organs" would include the ability for language: "it is the mechanism of language acquisition that is innate" (1979: 98). This means, it is not language itself that is innate, but the capacity of acquiring it. Besides, it is on the human's mind that everything happens: a person cannot have a blank organ in its organism, being it the brain, and being this organ responsible for commanding the body. The brain may be an organ of specialization, to use his word; this means, it is responsible for

commanding the body and solving complex problems, being one of them learning and evolving one's language.

Mitsou Rounat defines what would be a rational hypothesis of language that fits Chomsky: "[...] the structure of the brain is determined *a priori* by the genetic code, the brain is programmed to analyze experience and to construct knowledge out of this experience." (CHOMSKY, 1979: 84). Therefore, Chomsky denied Hume's skepticism and determinism; denied skepticism, for the fact Chomsky postulates the "nature of linguistic competence" (2006: 4), and denied determinism, because Chomsky agrees on the complexity of the brain (1979: 83).

Chomsky pointed out that there is a segment of scholars named functionalists who are variants of empiricists, and who postulated that the usage of language influences its form (1979: 84). Chomsky stated he is contrary to the point of view of functionalists and empiricists, and consequently, he is better described as a rationalist.

It is an observation of this topic, therefore, that both Chomsky and Kant prevail being rationalistic authors. Besides Kant had empirical approaches in his doctrine, his theory has the possibility of thinking in *a priori* objects, for example, in the same concordance of Chomsky.

Hence, considering the historical assumptions mentioned, it is possible to state that Kant and Chomsky have some parallels when comparing their philosophical path, for their similarity of agreements considering Plato and Aristotle, for example, along with Descartes, Leibniz and Hume.

2   THEORETICAL ASPECTS

When commenting on theoretical aspects, I intend to expose interesting points of view of the authors, which were discussed on topic 3. I divided the topics in *Universal Grammar* (2.1), *Judgments and Common Notions* (2.2), *The innate triangle concepts* (2.3), *Spatio-temporal concepts* (2.4), and *Innateness on 21st century* (2.5). With these topics, I aim to bring out specific relations between Kant and Chomsky, for example, judgment constructions, or the abstract idea of space and time according to each author. On *Innateness on 21st century*, I bring some new information on the subject, when regarding Chomsky's theory, to contrast with his first ideas, mentioned on *Universal Grammar* — Port-Royal grammarians are mentioned in this topic.

2.1   Universal Grammar

The first indication of the consciousness about an affinity between languages were the *universal grammar,* postulated by the grammarians of Port-Royal, on 17th century (KENNEDY, 2016: 92). They were not only responsible for the universal model of grammar, but also created the deep and surface structures (CHOMSKY, 2002). In linguistics, Chomsky followed the line of Port-Royal grammarians, deflecting from Structuralism.

About Port-Royal, in Chomsky's words,

> We have observed that the study of the creative aspect of language use develops from the assumption that *linguistic and mental processes are virtually identical*, language providing the primary means for free expression of thought and feeling, as well as for the functioning of the creative imagination. Similarly, much of the substantive discussion of grammar, throughout the development of what we have been calling "Cartesian linguistics" derives from this assumption (2002: 72, my highlight).

Considering the above explained, if linguistic processes and mental processes are the same for Chomsky, this means that, for him, there are no differences between a theory of language and a theory of knowledge. The consequences are that if one is thinking of Chomsky's epistemological theory, one is considering his linguistic theory; there are no major differences, according to his writings.

In the following paragraph, it is possible to observe that Chomsky considers himself connected to the Cartesian linguistic tradition. He explains some points of Port-Royal theory, which are assimilated by his own theory:

> Summarizing the Port-Royal theory in its major outlines, a sentence has an inner mental aspect (a deep structure that conveys its meaning) and an outer, physical aspect as a sound sequence. Its surface analysis into phrases may not indicate the significant connections of the deep structure by any formal mark or by the actual arrangement of words. The deep structure is, however, represented in the mind as the physical utterance is produced. The deep structure consists of a system of propositions, organized in various ways. (2002: 79)

Hence, it can be perceived that Chomsky shared the Port-Royal point of view concerning deep and surface structure, along with innateness.

On his theory of deep structure and surface structure, the surface structure produces the sentence physically, phonetically, while the deep structure is responsible for thinking, organizing and observing the possibilities of creation of sentences. This theory was accepted and used by Chomsky, who later turned this system into the principles and parameters theory.

On the *principles and parameters*, an interesting change is that Chomsky evolved his theoretical approach without abandoning innateness, for example. Therefore, in this theory there are language *principles*, which are universal, and a priori for all languages; and the change is that in these languages some *parameters* diversify them, making these languages particular (SILVA, 2019: 86).

The last modification of Chomskyan theory is called the minimalist program, set in the 1990s. The minimalist program postulates some "economy" principles for the faculty of language, which means simpler principles. Therefore, there would be no more surface and deep structures, and the difference of languages would be present in their lexicon. Although, this progress does not affect basic, philosophical approaches of his theory, considering these assumptions are the basis for the generative grammar, which have advanced through time.

Chomsky and Kant agree about the *aprioristical* possibility of knowledge. For Kant, there is a concept which is connected to *a priori* when mentioning learning from inner thinking, or representations without contact with the external: the concept of *pure*.

> I call all representations pure (in the transcendental sense) in which nothing is to be encountered that belongs to sensation. Accordingly the pure form of sensible intuitions in general is to be encountered in the mind *a priori,* wherein all of the manifold of appearances is intuited in certain relations. This pure form of sensibility itself is also called pure intuition. So if I separate from the representation of a body that which the understanding thinks about it, such as substance, force, divisibility, etc., as well as that which belongs to sensation, such as impenetrability, hardness, color, etc., something from this empirical intuition is still left for me, namely extension and form. These belong to the pure intuition, which occurs *a priori,* even without an actual object of the senses or sensation, as a mere form of sensibility in the mind. (KANT, 1998, B35A21)

For Chomsky and Kant as well, there are innate mechanisms on the human mind which makes possible the interaction with the world. In addition, they argue that it is only possible to learn data because we have a predisposition for learning it.[3]

2.2   Judgments and Common Notions

When it comes to reason, Kant stated "Yet by this I do not understand a critique of books and systems, but a critique of the faculty of reason in general, in respect of all the cognitions after which reason might strive *independently of all experience*" (1998: AXII). In the same path, Descartes pointed: "Human reason, in fact, 'is a universal instrument which can serve for all contingencies'."[4] (See CHOMSKY, 2002: 52). It is possible to observe that reason was a relevant issue for the authors. Kant kept the same principle as Descartes when talking of true reasoning; both searched for a universal aspect for reason that would be pure, aside from all experience.

Chomsky, inspired by Cartesian author Herbert of Cherbury (1624), (2002: 94-97) stated that "innate capacities, or Common Notions" are principles taken by us when identifying objects; and these principles are a precept of natural instinct. Thus, *Common Notions* are the ones that permit us to perceive, learn and judge. These notions, says Chomsky (2002: 96), were developed after Descartes by English Platonists, Leibniz and Kant. Therefore, one might observe this connection

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[3] When it occurs through our senses, Kant calls it *sensibility*.

[4] As we can observe historically, there is a connection between Descartes and Kant, for the fact that Kant evolved some aspects of Descartes' theory on his own *Critique*, for example, the division of Descartes' ideas in innate and empirical mentioned before. There is also a connection between Chomsky and the Cartesian linguistics, as he points out in the book with the same title (2002).

between Chomsky and Kant on Common Notions and *a priori* reasoning: both created epistemological theories that had *aprioristical* systems.

To present the judgment topic, it is important to remember that Chomsky esteemed Port-Royal grammarians, and also their arguments on theory of language (CHOMSKY, 2002).

Chomsky's statements of *Common Notions* (2002: 94) are similar to statements that Kant called the *logical function of understanding in judgments*. These statements, for Kant, assume a format of a table, for the fact they symbolize the theoretical formula of the understanding and the possibilities of logical thinking.

Kantian judgments would be basic assumptions that one has in mind (1998). This is similar to Chomsky's *Common Notions*: they tend to be basic and logical premises.

The Port-Royal judgments were commented by Chomsky (2002) as a development of Cartesian deep/surface structures:

> This point is brought out with particular clarity in the Port-Royal *Grammar*, in which a Cartesian approach to language is developed for the first time [...] The principal form of thought [...] is the judgment, in which something is affirmed of something else. Its linguistic expression is the proposition, the two terms of which are the "subject, which is that of which one affirms" and the "predicate, which is that which is predicated". (2002: 73)

It is a key point in the above quote the strong connection between Chomsky and Port-Royal thought, and consequently, the Cartesian linguistics. Comparatively to the explanation of Port-Royal grammarians, Kant mentions that a judgment would be more than a sentence, because inside of it there is a logical structure. As Kant would exemplify,

> Judgment is therefore the mediate cognition of an object, hence the representation of a representation of it. In every judgment there is a concept that holds of many, and that among this many also comprehends a given representation, which is then related immediately to the object. So in the judgment, e.g., "*All bodies are divisible*" the concept of the divisible is related to various other concepts; among these, however, it is here particularly related to the concept of body, and this in turn is related to certain appearances that come before us. These objects are therefore mediately represented by the concept of divisibility. All judgments are accordingly functions of unity among our representations, since instead of an immediate representation a higher one, which comprehends this and other representations under itself, is used for the cognition of the object, and many possible cognitions are thereby drawn together into one. We can, however, trace all actions of the understanding back to judgments, so that the *understanding* in general can be represented as a *faculty for judging*. For according to what has been said above it is a faculty for thinking. Thinking is cognition through concepts. (1998: A69B94)

Hence, if one consider the judgment "All bodies are divisible", one is, according to Kant, dealing with a variety of concepts: the concept of divisible, the concept of body, the concept of being, of all, of affirmation. One is, in other words, affirming "all A is B"; and in this proper case, one would not need to verify the experience. In discoveries of science, mathematics and physics laws, knowledge comes *a priori* (innate), because they do not need checking (checking was already made): "*Mathematics* and physics are the two theoretical cognitions of reason that are supposed to determine their *objects a priori,* the former entirely purely, the latter at least in part purely [...]" (KANT, 1998, BX).

Therefore, in Kantian theory, innate judgments comes before experience in two manners: it may be merely *a priori,* as exemplified above, or it may be *pure* "[...] those are called pure with which nothing empirical is intermixed" (1998: B3).

> Either the predicate *B* belongs to the subject *A* as something that is (covertly) contained in this concept *A*; or *B* lies entirely outside the concept *A*, though to be sure it stands in connection with it. In the first case I call the judgment *analytic*, in the second *synthetic*. Analytic judgments (affirmative ones) are thus those in which the connection of the predicate is thought through identity, but those in which this connection is thought without identity are to be called synthetic judgments. (1998: A7B11)

Analytic judgments are AB, therefore from the concept A one does not need to go beyond the concept A to get to B, this means, A gets to B with no more than A.

From a different side, the synthetic one is a judgment AB that has the capability of extracting something different from concept B that was postulated from concept A. The implications are, if this judgment is totally innate, and pure, from where does one take the mental information to express this judgment?

Kant (1998) would say that this person would take the information from the a priori basic concepts that we all have in our understanding. In the same fashion, Chomsky would say, it would be from our innate Common Notions (2002). The example Kant postulated for analytic and synthetic judgments were the following: "All bodies are extended", as analytic, and "All bodies are heavy", as synthetic. His explanation to the first judgment would be that the concept of extension belongs to the concept of body, therefore, from a concept A, body, there would be related the predicated B, concept of extension, not separated from the other concept. On the other hand, in the second judgment, the concept A, body, has the predicated B, heavy, which according to Kant (1998: B11) does not belong to the concept of body, but creates a new concept.

2.3   The innate triangle concepts

The abstract idea I submit here as "the innate triangle concepts" may be understood as a reference to a metaphysical investigation on the origins of geometrical forms. The inquiries about how and where the theoretical, geometrical concepts were created and assimilated by the brain were discussed by different

and broad ways by many philosophers along the humanity development – take Pythagoras and Plato as the beginning of the data, for example (MARCONDES, 2007: 55). In this essay, I am considering Kant and Chomsky (see KANT, 1998; CHOMSKY, 2002) discussions on the topic, therefore I am selecting their comments on the subject.

Chomsky commented on triangle forms and their innateness when he was pointing on Cudworth's work:

> Obviously every sensed triangle is irregular, and if there were a physically perfect one, we could not detect this by sense […] And it is only by means of these 'inward ideas' produced by its 'innate cognoscitive power' that the mind is able to 'know and understand all external individual things' (CHOMSKY, 2002: 100).

Therefore, for Chomsky, it would be the innate capacity that would give a person the perceptive insight to reason and understand external objects, although, one cannot differ the perfectness of a triangle only by the senses. When talking of triangles drawn onto a paper, Chomsky mentions: "[…] the idea of a triangle is innate". (2006: 73)

In contrast, Chomsky mentioned Descartes' opinion in *Cartesian Linguistics*. For Descartes, one already has the concept of triangle in oneself, because one is used to seeing it. Therefore, when he sees the figure of the triangle, he does not apprehend the figure that has been shown, but reinforces the true figure of the triangle that is in his mind (CSM II: 262 *apud* CHOMSKY, 2002: 100-101).

The Kantian considerations on the subject are the following:

> From this it follows that in respect to it an *a priori* intuition (which is not empirical) grounds all concepts of them. Thus also all geometrical principles, e.g., that in a triangle two sides together are always greater than the third, are never derived from general concepts of line and triangle, but rather are derived from intuition and indeed derived *a priori* with apodictic certainty. (1998: A25)

Therefore, for Kant, there is the idea that geometrical principles, for example, the triangle, are inside a person's mind, while the capacity of perceiving it is in their external senses. This is possible because one has an inner mechanism, which is innate, and this mechanism knows what is a triangle. Besides, this inner mechanism (which is the Kantian concept of *sensibility*: "through the first of which objects are given to us" (KANT, 1998, B30)) receives the phenomenon and searches for the particularities of a triangle in it. When they are similar to the concept of triangle, mind and *world-triangle* match. This argument of Kant seems to agree to Chomsky's theory, which means, it agrees with his theory of mind when it comes to recognizing external data.

Descartes and Kant have also corresponding theories in the triangle subject, for the fact that Kantian assumptions always consider phenomena instead of real objects.

2.4   Spatio-temporal concepts

When mentioning space and time, Kant proposed they are *a priori* intuitions (1998). This means they are necessary for humans as a condition to contact phenomena, but they are not available as objects in the world; they are the circumstances for objects in the world, and also for human knowledge. In Kantian words, "Time is the *a priori* formal condition of all appearances in general. Space, as the pure form of all outer intuitions, is limited as an *a priori* condition merely to outer intuitions." (1998: A34)

This means they are *pure* forms, for the fact they were not extracted from world phenomena, and they are also innate, because we have never needed to learn them.

Related to this idea, Chomsky (1998) suggests that space and time notions are present in children even before they learn language. According to him, experiments have shown that children have basic concepts of time and space before express thinking, and it is equivalent for all cultures (1998: 71).

As a result, if space and time are prior to the development of language in children, they must be innate, for the fact that language development is innate. Therefore, these data reveal a relation between Chomskian and Kantian arguments, in which spatio-temporal concepts are not learned for both authors.

2.5   Innateness on 21st century

Chomsky (1979: 98) mentioned that if one was born with natural languages instead of the ability to learn language, one would be able to speak all languages perfectly. It is known that one is not born speaking: the speaking process is gradual, and it has a *critical period* for humans, which means, one has a target time to learn language. The ability to learn language is available for a critical period, and then it decreases (see KENNEDY, 2016: 76; HAUSER *et al,* 2002: 1572).

Recent studies done by Hauser, Chomsky and Fitch demonstrate the results of the faculty of language theory. Hauser, Chomsky and Fitch (2002 and 2005) conducted these studies in order to get a better understanding of language and its performance in the brain. According to Hauser *et al* (2002), what separates humans from non-human animals would be that they do not have the faculty of language in the narrow sense, the FLN, but only in the broad sense, known as FLB.

FLB "includes an internal computational system [...] combined with at least two other organism-internal systems, which we call 'sensory-motor' and 'conceptual-intentional'." (Hauser *et al*, 2002: 1570). Therefore, FLB would be a larger concept, which animals would have. This concept, according to studies, would include animals' knowledge and their capacities of language, for example, including humans and non-humans.

FLN, on the other hand, would be more specific. It is a possibility of recursion; it is the creativity for sentences that, for now, is only perceived in humans. Hauser *et al* concluded that "[...] although we have argued that most if not all of FLB is shared with other species, [...] FLN may be unique to humans." (2002: 1578). This data is very significant for the fact that it may show us that animals

may have their own systems of language, and different from what Descartes postulated (DESCARTES, CSM I, 39–140 apud CHOMSKY, 2002: 52), animals would be more intelligent than what was thought centuries ago. As Gonçalves would say, "[...] major parts of cognitive processes are independent of verbal language" (2008: 21, my translation).

As I mentioned before, for Chomsky (2002), linguistic processes are equal to mental processes: "linguistic and mental processes are virtually identical" (2002: 72). Hauser *et al* also mentioned that in the FLN system, a creative capacity for creating multiple sentences (recursion) would differ humans from animals, for the fact they only have access to the FLB system.

Kant (1998) did not mention critical periods for learning external objects, for the fact he was not pondering on language learning in his writings. In the *Critique*, the phenomenon perceiving task is mentioned as a sensibility work, unless one is born with the concept or it is learned by theoretical sources, as explained before (see topics 2.2, 2.3, 2.4).

3   DISCUSSION

In 1979 *On Language*, Chomsky explains that some theories postulate people are born with language. Although, if one is born with French language inside its brain, then it would mean this person would be born talking, and this is not true. For Chomsky, people are born with the ability to learn languages. One example of this theory would be a computer software, with a large variety of data, without capacity to read these data. When growing up, one become capable to run the software and the data of its language, according to the outputs of his/her ambiance.

Therefore, as mentioned before, speaking process is gradual, with a *critical period.* Apparently, Kant did not mention critical periods for learning on his writings, in contrast he always considered phenomena instead of the real objects in the process of contacting the world, a Platonic — and rationalistic — idea, which finds in Chomsky its resemblance: Chomsky is also a rationalistic author.

Regarding the problem of *poverty of stimulus,* when one is listening to another language which he does not understand, all he apprehends is undistinguished noise. And why does this happen? According to Chomsky, the *aprioristical* of humans is not the language itself, but the ability to learn it, the *faculty of language* (CHOMSKY, 1998 and 1979). Besides that, there may be a universal grammar in people, pointing the correct direction to formulate what should be understandable or not when one is sharing knowledge among other human beings.

In this paper I have argued that Port-Royal grammarians had the same universal posture that may have inspired Chomsky through this path. I have pointed out that Kant and Chomsky are correlated for their epistemological theories; that is because both are close, rationalistically, to Descartes' theory. In *"Cartesian Linguistics",* Chomsky himself said he wanted to discuss more about Kantian theory.

For judgments matter, one interesting issue to point out would be the distinction between *pure* and *a priori*, to be outlined in a future paper. It is

interesting to mention that both Kant and Chomsky agreed about the basic form of judgments, being Chomskyan ideas inspired by Port-Royal scholars. When it comes to innate triangles and spatio-temporal arguments, the results are that both Chomsky and Kant have similarities of thought, which approach each other, and this may not specifically be in order of the argument itself, but from their epistemological contexts. Both considered an ideal triangle, not the true triangle, and both authors agreed that individuals have the metaphysical concept of space and time from an innate source.

On the innateness on 21st century, besides having new terminologies, Hauser *et al* theory maintains its scope from Chomskyan prior works, since the body of the theory have the same shape.

CONCLUSION

Firstly, I summarize that my hypothesis for Kant and Chomsky being correlated has been confirmed through this research, due to the historical aspects and findings in authors' works that confirmed some similarities.

It is a key point that Chomsky's path is lined by Cartesian linguistics. Descartes, for example, was not specifically a linguist, although he contributed to the history of linguistics. Kantian *Critique* had mentions to Descartes, and consequently Descartes figured as an important scholar to comprehend echoes between Chomsky and Kant in order to delimit the similarities among them. The same happened between Plato, Aristotle, Hume and Leibniz. Along this article, I aimed to mention the author and his importance on the subject, as well as the concordance to Kant and Chomsky.

Descartes, Chomsky and Kant agree on the possibility of innate knowledge. For them, there are mechanisms that make knowledge prior to sensorial sources possible. In particular Chomsky and Kant have emphasized the existence of mental concepts which would allow innateness before the contact to the world, by their own ways of thinking. This might be the most remarkable connection between the authors, and there is the possibility to continue the studies on this concepts.

It is important to recognize the fact that Kant's and Chomsky's research fields are not the same; although, their epistemic connections are allied by their historical, philosophical paths.

Another point that may be very important on setting is that I am not arguing that Kant had a causation role for Chomsky. In contrast, I am arguing that these authors have similarities of thought, and they were caused by their correlation of ideas, theories and so on. I also comprehend that this may have occurred by other means related in this article, for example, contact with the same basis of philosophers, as Descartes, Plato, Aristotle, Hume and Leibniz.

In the Discussion topic I have outlined that there may be possibilities of studies between Noam Chomsky and Charles Sanders Peirce. In my analysis, if there is a path to follow in philosophy concerning Chomsky, one should, perhaps, consider the Chomskyan pondering about Peirce and its resemblance to Kant. Clearly, Chomsky and Kant have differences among their thoughts, although the spatio-temporal concepts are a point I would like to outline, for the fact both

authors consider them innate. These concepts integrate metaphysical areas of study and involve interdisciplinary fields.

On the judgments, it is relevant to cite that the concept used by linguistics to refer to judgments may not be the same as philosophical ones, and it could be interesting for future works to distinguish them in philosophical or linguistic when writing.

To summarize, I would like to point out that Chomsky's and Kant's epistemological theories are undeniably correlated, and as a result various studies may be done in order to reflect on the history of science, the history of linguistics and philosophy.

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