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NEUROSCIENCE AND FREE WILL: NEW CHALLENGES FOR THE LEGAL FIELD

NEUROCIÊNCIA E LIVRE-ARBÍTRIO: NOVOS DESAFIOS PARA O CAMPO JURÍDICO

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ABSTRACT

The debate involving neuroscience and free will tends to accentuate two positions, a (bio) determinist, anchored in Neuroscience; and another (partner) determinist, anchored in the sciences of the spirit. Without pretense of wanting to close the debate, the present essay aims to present another perspective of analysis of this phenomenon, since it calls for new studies, new research and new deepening. To do so, it assume, as references the environmental sciences (NORGAARD, 1994; SOUZA-LIMA, 2014) and the sciences of complexity (MORIN, s/d). The main conclusion is that brain and processes of hominization are inseparable. In all past and present attempts to treat them as separate domains, they have not production high-yield results for the dialogue

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between the fields of research and for the advancement of knowledge (especially in the juridical field) about the complexity of the human condition.

KEYWORDS: Coevolution; Complexity; Environmental Sciences.

RESUMO

O debate envolvendo Neurociência e livre-arbítrio tende a acentuar duas posições, uma (bio)determinista, ancorada na Neurociência; e outra (socio)determinista, ancorada nas ciências do espírito. Sem pretensões de querer encerrar o debate, o presente ensaio tem como objetivo apresentar uma outra perspectiva de análise deste fenômeno, vez que o mesmo clama por novos estudos, novas pesquisas e novos aprofundamentos. Para tanto, toma como referências as ciências ambientais (NORGAARD, 1994; SOUZA-LIMA, 2014) e as ciências da complexidade (MORIN, s/d). A principal conclusão é que cérebro e processos de hominização são indissociáveis. Em todas as tentativas passadas e presentes de tratá-los como domínios separados, não conquistaram resultados profícuos para o diálogo entre os campos de pesquisa e para o avanço do conhecimento (sobretudo no campo jurídico) acerca da complexidade da condição humana.

PALAVRAS-CHAVE: Coevolução; Complexidade; Ciências ambientais.

INTRODUCTION

I recently contacted two texts produced within the scope of the "legal field[1]", both facing a theme of extreme importance for all contemporary societies, focus on the binomial production / consumption, the findings of Neuroscience on the determinants of human choice. In the first text, "Neuroscience, free will and criminal law", Guaragni and Guimarães (2014), from the legal field, but based on research carried out by

[1] He borrow from Santos (1998) the concept of "legal field" as a sociological concept, which transcends the sense stricto sensu commonly used by some law researchers.

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Neuroscience, point the limits of this emerging field of knowledge in defining what effectively determines the human choice, free will. The authors demonstrate that up to the present, Neuroscience researches, which try to relativize or minimize the power of free will from biological determinants of the human brain, are insufficient.

In the second text, "Principle of consumer vulnerability and neuroscience of consumption", Alves Junior (2016) argues that the consumer, as the weakest link involved in the production / consumption binomial, has its dignity[2] shuddered by the power of corporations, mainly corporations that take ownership of Neuroscience's findings on consumer choice to leverage their sales. Contrary to the argument of Guaragni and Guimarães, who minimize the power of Neuroscience in relation to free will, Alves Junior maintains a different position. For this researcher, the findings of Neuroscience about on the determinants elements of human choice increase corporate power and, in turn, make the consumer even more vulnerable. In this sense, indirectly, Neuroscience provides an attack on the principle of consumer vulnerability, Article 4 of the Brazilian Consumer Defense Code (BRASIL, 1990).

Despite this debate occurring within the legal field stricto sensu (Criminal Law and Consumer Law), two positions that break away. For Guaragni and Guimarães, the findings of Neuroscience are not enough to reduce or neutralize the force of free will. For Alves Junior, the opposite occurs because the findings of Neuroscience, once appropriated by large corporations, neutralize any power of resistance and reaction of free will. It is evident that the two studies here reviewed have asymmetrical positions in relation to the findings of Neuroscience and free will.

Far from wanting to present a final solution to this proficient debate, the present essay aims at presenting another perspective of analysis of this phenomenon that claim for new studies, new research and new insights in favour of present and future civilization. Therefore, it takes as references the environmental sciences (NORGAARD, 1994; SOUZA-LIMA, 2014) and the sciences of complexity (MORIN, s / d).

In addition to the Introduction and the Final Considerations the essay structured in three sections. In the first, through a metaphor, here present the

[2] The first article of the Federal Constitution of Brazil (BRASIL, 1988).

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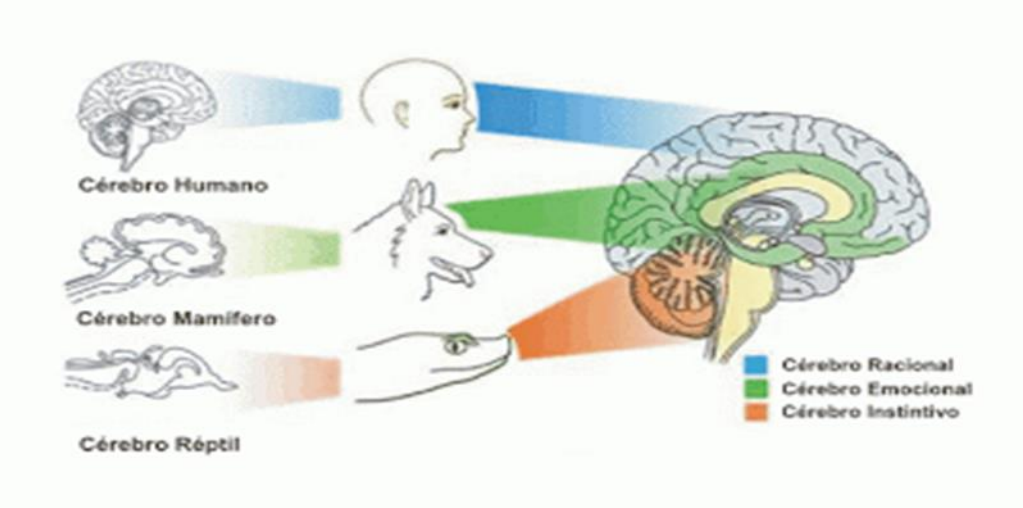
constitutive and constituent elements of the triune brain. In the second, the attention turns to the singular relation existing between the rational brain and the reflexivity of the human condition. In the third and final section, the concept of coevolution presented with the purpose of demonstrating how the environmental sciences and the complexity sciences can contribute to this debate involving neuroscience and free will.

2 METAPHOR OF THE TRIUNE BRAIN

In this section, by means of researches in the biological field, the constitutive bases of the triune brain will be present.

The "metaphor" of the triune brain derives from a theory consolidated in the biological field (MACLEAN, 1973; HEEMANN, 2001) about the developmental processes of the brain of Homo sapiens along its evolutionary path.

It is imperative to point out that this separation between the brains is a didactic device, because they, despite their singularities, are integrated (Figure 1).



Human Brain - Mammal Brain - Reptile Brain
Rational Brain - Emotional Brain - Instinctive Brain
FIGURE 1: TRIUNE BRAIN.

According to triune brain theory (reptilian, emotional, and rational), the brains that play the most significant role in the processes of a human choice are the reptilian and the emotional, the two most profound brains of Homo Sapiens. The more recent

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brain, the rational, though it does not play a central role in choice, in the process of justification of choice it becomes fundamental.

2.1 THE REPTILIAN BRAIN

It is the most primitive brain, with approximately 250 million years, is:

> (...) responsible for the mechanisms of self-preservation, this brain commands the routine functions of maintenance and those necessary for survival, such as the escape from a predator or the attack on a prey (HEEMANN, 2001, p. 43).

Studies about the evolution of this brain allow the understanding of some modern behaviours, present in the most diverse associative experiences, such as dissimulation, aggressiveness and tendency to create repetitive and operational routines. It is the brain responsible for the operational dimension of Homo sapiens, Homo faber. In organizations, in general, the reptilian brain occupies a prominent position, as it is at the base of the repetition processes in search of results, preferably through competitions. In the world of contemporary organizations, the people who stand out are not the supportive and cooperative, but the most courageous, ready to perform tasks and meet goals without many questions from an ethical perspective, for example.

2.2 THE LIMBIC BRAIN

The limbic brain, approximately 150 million years old, is the brain of "(...) affection, passion, and other emotional states that identify with pleasure and pain" (Heemann, 2001, p. 46). Refers to the brain whose tonic syllable is the deep ability to feel, to make the body of Homo sapiens shudder and blush in the face of a tragic and unjust phenomenon as a brutal or jocular murder, as any hilarious situation of everyday life. It is the brain that transforms Homo sapiens into a being who feels indignant who cries at the death of a loved one or in the face of an injustice, but who also rejoices at a pleasurable event.

With the development of the limbic brain, to bounce into a previously unknown world of Homo sapiens, strongly conditioned by the reptilian brain, the world of

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immateriality, of the individual imagination, but also of the collective and social imaginary. To bounce into a world of dreams, desires and vibrations in every possible perspective. Studies demonstrate that this is the brain that stores feelings associated with two types of sanctions, the negative is translates into punishment and the positive is translates into premiums. The result of this learning, in the context of associative experiences, the human being, in behavioural terms, develops a refined adaptive plasticity, with a view to escaping of punishment and approaching the prizes. This adaptive plasticity to induce and teaches him to obey, to submit to the norms laid down and followed by the collective, so as not to be censored, ridiculed, much less excluded by the collective.

Strictly speaking, this adaptive plasticity can be understand not as the final point, but as a first brake on the aggressive inclinations inherited from the reptilian brain.

Deep feelings of discontent, since all are measure by fear, resentment, rancour, chatter of teeth, prepotency, arrogance, intolerance, indifference, intransigence, selfishness etc, serve as indicators of the strength of the limbic brain. However, the limbic brain helps Homo sapiens to develop the ability to disguise, to deceive the other, to achieve their goals. It is the brain of manipulation.

2.3 THE RATIONAL BRAIN

The third brain is the youngest, the rational which, with it:

> (...) the animal armed with the ability to plan and calculate aggression, to overflow in entertainment and to accumulate goods on an unlimited scale, far beyond needs. Now, it is possible for the reptilian brain to go to war, while the neocortex [rational brain] and limbic produce the speeches of peace (HEEMANN, 2001, p.53, emphasis added).

It is the brain enables Homo sapiens to distance themselves from their operational and sentimental acts for purposes of evaluating, reformulating, and reinventing them. This process of detachment, while inventing new practices, (re) invents Homo sapiens itself as it establishes contacts with the outside world. This reflexive brain combined with the other two, makes Homo sapiens into a magnificent,

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ambivalent creature, for despite its biophysical limitation. It is always fitting to remember that any change in the composition of the atmosphere, Homo sapiens disappears like foams in the wind - this small and insignificant mammal became, as Descartes (1999) wrote, in his classic "Discourse on Method," the "Lord of the World.

In the light of triune brain theory, it is possible to emphasize that Homo sapiens can't be reduced to the rational brain, as advocated by approaches that overestimate free will. Strictly speaking, Homo sapiens results from this entanglement involving the three brains, without any rigid hierarchy between them. Aggressiveness, adaptive plasticity, and calculation are three constitutive faces and constituents of this fragile but equally powerful and dangerous creature. In the ancestry of Homo sapiens was the rational brain that helped him realize that collective hunting was less risky and effective than individual hunting. It is to be suppose it that this type of flash was decisive for the survival processes of Homo sapiens.

3 THE RATIONAL BRAIN AND REFLECTIVITY

In the formulation of some social theorists of modernity (Giddens, LASH and BECK, 1997), one of its founding elements is reflexivity, is which anchored in the idea that, from the point of view of knowledge, everything can be contest, since there is no authority a priori. With reflexivity, even the gods and demons can and should be contest and, in the provocative terms of the Italian philosopher Agamben (2007), desecrated. This process of reflexivity allows the collective to understand its potentialities, but also its limits. Reflexivity allows the exposure of these demons not to eliminate them (impossible task), but to coexist alongside them, as it enables the group to learn to live with their demons.

The maturity of a group seems to be associated with their ability the form to deliberate to confront their gods and their demons. This confrontation became possible from the development of the rational brain. Is he responsible for the ability of a group to reinvent itself from very concrete imponderables that projected as an obstacle. When a group can't coexist with their gods and demons, this difficulty tends

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to grow larger as concrete difficulties arise. It becomes a vicious circle. Concrete difficulties grow in proportion to the difficulties of coexistence with gods and demons.

It is imperative to learn to overcome this vicious circle and replace it with a new circle, this time virtuous. In this new circle, gods and demons, instead of being underestimated or overestimated, will be included in the processes of invention of solutions to collective problems that emerge. It should be emphasized that the virtuous circle can't be confused with a world of fantasies, of absolute and reciprocal generosity; on the contrary, it is also constituted and fed by tensions and contradictions inherent in associative life and the human condition.

It is about a circle that pretends to be virtuous in function of self-declaring imperfect and contradictory, but capable and willing to reinvent itself in the face of objective possibilities and obstacles. The rational brain get not to domesticate totally the inherent aggressiveness of the reptilian brain, much less the inclinations to the dream of the limbic brain. One of his tasks has been the possibility to enable a reasonably coexistence between the three brains. The rational brain get in the evolutionary context of Homo sapiens as the brain of mediation, of instrumental calculus capable of transforming aggressive or dreamy beings into authentic ones, as Foucault (1997) adduced, "dutiful bodies." In the same perspective of Foucault, but also of other interpreters of the processes of expansion of the rational brain, it is through him that the disciplining organizations transform people initially (des) qualified as indolent into true productive machines. Perhaps one of the early scenes from Chaplin's "Modern Times" (Figure 2) makes explicit at jocular form but blunt of some of the ramifications derived from the triumph of the rational brain.

FIGURE 2: The triumph of the rational brain.

In Chaplin's denunciation, in the unbridled world of overproduction, there was no place for someone who guided his existence, just as he was an artist, in the light of

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the limbic brain. The attempt to domesticate the artist produced madness. Chaplin, subjected to a strenuous and repetitive routine (this is the indicator of rational calculation and capable of producing "dutiful bodies"), went out wildly by the factory and on the street trying to tighten real and imaginary screws.

4 THE CONCEPT OF COEVOLUTION

The previous sections to serve the support to presentation of the concept of "coevolution" between the three brains, a fundamental concept to the debate about the tension involving "biodeterminisms" and "free will" (GUARAGNI and GUIMARÃES, 2014). This concept, although its genesis must to be sought in biology, transposed to this debate from the contribution of Norgaard (1994), an economist who dialogues with the environmental question. In Norgaard's research,

> (…) the ambient conditions the adequacy of how people behave when guided by alternative modes of knowledge, forms of social organization and types of technologies. [...] At any point in time, one conditions the other. Over time, none is more important than the other [...]. Thus, the coevolutionary perspective explains why options are uncomfortably limited in the short term; the culture has conditioned the ambient and the ambient has conditioned the culture. At each point in time, there is an almost total brakedown amount of knowledge, values, technologies, social organization and natural ambient coevolution. [...] Where we will be in the future is not conditioned by today's culture or by the ambient alone, but by these and innumerable future factors unpredictable (Norgaard, 1994, p.46).

The first idea to emphasize in the passage from Norgaard is the idea that "(...) over time, none is more important than the other." The author is referring to the complex relationship[3] that exists between cultural systems, namely inventions derived from human choices, and biophysical environments (SOUZA-LIMA, 2014). For him, it is not a matter of arbitrarily defining who overlaps whom, whether it is the culture to the environment or the other way around. However, it is important to be clear that the two systems, the cultural and the biophysical, coevolve. This idea, presented by Norgaard

[3] The direction of this complex relation is close to the sense used by the theories and the thought of complexity (MORIN, s/d).

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and Souza-Lima, is the central inspiration to reflect on the "current" debate[4] involving "biodeterminism" and "free will".

It seems that in this field of research there is a clear "dispute of meanings" (BOURDIEU, 1994) between two fields of knowledge: the biophysical sciences and the sciences of the spirit. On the one hand, the biophysical sciences represented by Neuroscience, try to minimize the supremacy of "free will". Stating that it is not and has never been as free as one imagines, above all, after the advance of Enlightenment ideas; on the other, the sciences of the spirit, represented by the Field of Criminal Law, reinforcing the idea that Homo sapiens can't be reduced to the older, reptilian and limbic brains.

Despite the tensions and contradictions that have erupted after the debate has raged. The concept of "free will" will need to be repair, while remaining fundamental. The first point is that free will, as capacity the absolute choice of Homo sapiens, never existed. In the evolutionary history of Homo sapiens it has always been conditioned by the imperatives not only of the rational brain and of the two other brains but mainly of the ambient in which Homo sapiens is inserted.

In this melody, the idea that the findings of Neuroscience destroy free will is at least equivocate. The findings of Neuroscience shake one of the main foundations of modern science, attributed to Descartes, the cogito ergo sum (I think, therefore I am). With cogito ergo sum, modern civilization was induce to absolutize free will, anchoring it only in the rational brain of an individual. In this matrix of thought, there is a primacy of "thinking" about "existing." The ability to think may waive with the concrete and material condition of existing. This primacy of "think" about "exist" establishes the separation between mind and body, subject and object, culture and nature, etc., the fundamental separation of all fields of modern knowledge (biophysical and spirit). The thinking capacity gains an absolute autonomy in relation to the concrete determinants of existence. In sociological terms, "reification" occurs, which corresponds to the process of acquisition of the life of thought itself. Free will, taken in its absolute sense,

[4] In fact, this debate has already been made by Anthropology in its homeric epistemological battles with the geographic determinism of Geography and the biological determinism of biology since the end of the nineteenth century. For deepening further reading, it is enough for the reader to look at chapters 1 and 2 of Laraia's tiny but robust and inspiring book (1989, p.17-24).

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emerges and is consolidate in this context; as if it were an entity suspended in the air, without anchorage in the concrete world.

Neuroscience get attention to the fact that this absolute separation between the world of "think" and "exist" has never existed. The act of "think" is always anchors in concrete conditions of "exist" and vice versa. If on the one hand, the world of "exist" (the reptilian and limbic brains in their material configurations) is conditioning the world of "think" (the rational brain), the opposite is also true. It is imperative to clarify that the material basis of the brain conditions, but does not determine the world of "think", since it is distinguished by its relative autonomy, in the face of the world of "exist." The idea of relative autonomy is associated with the fact that although the world of "think" depends on the world of "exist," it does not mean that it is "determined" but only conditioned by the latter. In spite of Neuroscience claiming the primacy of "exist" over "think", the main inference we can make is that it helps to minimize the classical separation (for some, dogmatic) between the world of "think" and the world of "exist".

In light of this "reconciliation" between these two worlds, it is possible to (re) signify the concept of free will. Instead of anchoring it only in the world of "think," it is necessary to anchor it equally in the world of "exist." This (re) signification of the concept of free will tends to limit its ability to overfly, on the one hand, but on the other, tends to impart to it more substantive elements of the human condition. "Think" and "exist" are faces of the same process of constitution and permanent reconstitution of Homo sapiens. In this tension between these two worlds, instead of rigid and sterile separation, there is a perennial process of coevolution (NORGAARD, 1994; SOUZA-LIMA, 2014) of "think" and "exist." Itself findings of Neuroscience prove this statement, for "... by the transcribed observation of neuroscientific experience, there is no absolute separation between one moment [that of pre consciousness] and another [that of consciousness] (GUARAGNI and GUIMARÃES).

Anthropology (MORIN, 1973) has recorded a great deal of evidence that on the one hand, the biophysical development of the brain has led to advances in the process of hominization, which in turn has enabled the biophysical development of the brain. There is neither (bio) nor (partner) determinisms. What there is coevolution.

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CONCLUSION

The idea of this essay was to try to escape the dichotomous temptation that served as a foundation for all fields of modern knowledge since Descartes (1999) and to propose a theoretical-explanatory alternative from a complex perspective. The findings of neuroscientific research make it clear that the two domains are inseparable. If we look for an understanding of this phenomenon in the light of a complex (MORIN, s / d) approach, nonlinear or supported by the classical relation between "cause" and "effect", in the same proportion as the base material (biophysical) of the brain conditions human choices, these, in turn, also interfere with it. Any attempt to put this fundamentally complex phenomenon in hierarchical order, rather than throwing light on a dialogue between the fields of knowledge - the biophysical sciences and those of the spirit - promotes the opposite, the dispute in the sense of who is with ultimate reason.

The founding affirmation of the sciences of spirit, that Homo sapiens can't be reduced to the brain is true, but without this biophysical basis and the ambient, it can't exist. Brain and processes of hominization are indissociably. All past and present attempts to treat them as separate domains, such as Descartes wanted (1999) and his followers , the result does not seem to be useful for the dialogue between the fields of knowledge and at to advancement of knowledge (especially in the legal field) about the complexity of the human condition.

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