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Psychoanalysis and neurosciences on the Moebius strip*

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Litterature becomes quite interesting at its intersection with psychoanalysis and neurosciences, mainly when their relational difference from scientific discourse is fully identified. At this point, neurosciences are much closer to experimental sciences, but this does not imply that Psychoanalysis has to be considered folk psychology, even if its object can not be studied through experimentation. Freud's theory elaborates some laws on psychic functioning that may connect psychoanalytical theory to conjectural sciences, like Mathematics and History. This article examines some of these laws, and how helpful they may become to the discussion between neurosciences and psychoanalysis. The most important distinction we could firstly observe relies on the fact neurosciences work with conscious memory strains, while freudian psychoanalysis makes difference between conscious memory strains, structured by secondary processes and the primary ones, regarded with a completely different – unconscious – logic. Furthermore, neurosciences also deal with a cognitive concept of perception directly related to memory, while Freud clearly observes that those neurons which perceive do not retain any strain of memory. Aphasia and dreaming are two clear examples that emmerge from the discussion. Recalling Descartes distinction between res cogitans and res extensa, the development attracts our attention to the fact that we

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are still at the very begining of our investigations on human mind despite our enthusiasm since the 1990's – an era known as the "brain decade".

Key words: Scientific methods, neuroscience and psychoanalysis, conscious and unconscious, primary and secondary processes, discourses

Don't bite my finger, look where I am pointing
McCulloch, Papert, 1965, p. xxviii

In spite of the fact Psychoanalysis is not specifically a science, it consists on a self sustained knowledge in relation to scientific discourse according to the following terms: for Psychoanalysis there is a conceptual world that creates and organises its theory, in which even the subject[1] may be conceptualized. While this subject is always a matter to be left aside from science since it interfeers in objectivity, for Psychoanalysis subject is just all it is about! We mean, Psychoanalysis has itself just one interest: the subject. Clinic is not an experimental field, even though theories grow from facts observed in its events. Psychoanalysis is not only a theoretical, but also a clinical method and all its researches are necessarily clinical ones, but even the verification in our clinic can only be reached with subject acceptance.

It is quite different when we consider neuroscientific field. Here, on the contrary, all ideas are to be very well tested, since it is necessary to verify their effectiveness in experiments. This paradox is stated with great accuracy by Jean-Pierre Changeux (1979), as follows: he says, sometimes he has just "ideas", "feelings" that are put into scientific language. Naturally, as a scientist he has to be very strict on observed facts.

Not a small amount of the litterature on the intersection between psychoanalysis and neurosciences has driven us into wondering if authors

1. Psychoanalytical concept created and established in regard to Sigmund Freud's concept of the Ich, whose translation to ego restrains and reduces some observations and developments in this article. This is the reason we've chosen another translation, inspired in Lacan's readings (i.e. Lacan, 1960).

really have a clear idea on them, and one could even arrive to consideration such as: "since I don't know very well the psychoanalytical theory nor neuroscientific one, exchanging some of their ideas might lead me into a better understanding of the human being" (Soussumi, 2001, p. 80)...[2] Well, questioning the non freudian idea that psychoanalysis "wants to understand human being", our article intends to consider the possibilities and impossibilities of the exchanges between both fields a bit better. This is also the reason for the title we've chosen: the Moebius strip helps us to represent our idea on the current interaction between both fields: psychoanalysis and neurosciences in a given projective field are not "sides" of a same object, even though we could state they can meet along the infinite projective surface.

We could make a comparison with what has happened to genome project: it was thought to definitely show the big differences between genetic characteristics in a small period, but since its very beginning, it has shown to be much more complicated than it was originaly expected. Most spectacular observations, for instance, have shown that there is very little difference between rats and men – just referring to Steinbeck –, than it was firstly imagined. We could even say there is always an hiatus between biology and culture, and it is very difficult for biologists to consider the cultural point of view and vice versa. Being on the strip, one can not perceive there is no inside and no outside, even though there is a border. It is what happens to the ant on the Moebius strip, from the drawing by Escher: to the animal, there is no inside nor an outside. This article is also a bibliographical research in Freud's work to identify particular issues to help us to clarify new departures for the main discussions on the subject.

Qh in neurology in 1895

Sigmund Freud, a neurologist who studied synapse as contact barriers during the last decade of the 19th century, conceived how nervous system works. It was at the moment he began to study energy quantity (Qh) related to this fact. At those times, the model was still a hydrodynamic one, and Freud would enhance it afterwards rising possible electrochemical exchanges he would not be able to

2. Effectively, Soussumi (2001, p. 80), a psychoanalyst of the International Psychoanalytic Association, proposes that if there is a lack of knowledge in Psychoanalysis and in Neurosciences, it would be interesting to put both knowledges together. This procedure would fullfil each other as well as improve knowledge… We must say, in a quite particular epistemology difficult to follow…

verify at his lifetime. In fact, Freud died in 1939 and synapse chemical functions were found out a bit later. However, in 1895, as he wrote in his never published Entwurf einer Psychologie,[3] Freud was trying to articulate some of his discoveries on the nervous system to psychic life. What did Freud preserve afterwards of this never published paper?

Qh is a quantity that enters the nervous system, originated from the outside (world or body – the organism). Two different types of neurons are imagined by Freud: the f neurons, that are in contact with outside world, supporting a big amount of incoming energy; and the j neurons, that are in contact with j neurons, receiving their synapse and, thus, much weaker amounts of energy –, as the idea was that the flow of energy looses strength at every new synapse. The first ones (j) are permeable; the second (y) are impermeable or, at least, less permeable. This difference is not necessarily a priori. One can very well attribute this model the idea that differences starts up from genetic inheritance and use (nature and nurture). Anyhow, the fact the second is impermeable or less permeable makes these j neurons retain strains of memories. Retained energy can, then, become a mnemonic strain. It means that those permeable j neurons do not retain enough Qh to enable the registration of the experienced event.

Freud's idea, already in 1895, was that the conscious system is only the w/cs[4] system; there is no other conscience outside perception, conceptualized as investments driven to organism, outside or inside world. The neurons responsible for that are w neurons; a third type of neurons, and those do not retain any strain of memory. Therefore, conscience is just screen modifications to be perceived and immediately taken away by other neurons to empty w/cs system and make it ready to receive new stimuli, while other neurones (not w neurons) enrigister those perceived experiences somewhere else.

For Freud, in 1895, some important concepts already were:

1. Pleasure principle and its consequences – Every animal, from the most simple to most complex one is satisfied and peaceful at the moment Qh has its homeostatic level low. Pleasure is defined by keeping homeostatic energy level low. Freud established it as the first law of psychic life. Therefore, every amount of incoming Qh has to be discharged and, in this case, the whole psychic system should work for discharging exceeding energy. Freud illustrates it by a little baby example: chemical stomach excitation – a consequence of hunger – increases Qh and the new born (which has no idea

3. Translation of the title from the Gesammelte Werke. Freud was not trying to create a scientific psychology, just a new Psychology...
4. Where w stands for Wahrnehmung, perception, and cs for conscious.

he is hungry) begins to cry, to sweat, to make different movements in his organic essay to discharge this exceeding Qh. The question is that this procedure will increase his excitation and we do know the rest of the story: he will only be still when mother comes to feed and caress him. Now a days, we know this same fact happens to many birds and mammals, but not to all animals (new born reptiles or fish, for instance, that do not always need their mothers/parents).

2. Anguish and pleasure – Freud works on the hypothesis that every animal, from the most simple unicellular ones, for instance, to man – the most complex one –, that every living system has only two goals: 1) to reject every painful and unpleasant experience and to avoid it after memorization; 2) to try to repeat every satisfacting experience, after feeling it for the first time. In his Project, Freud even schematically draws the path avoiding and repeating may take, with each refraining (censoring) obstacle, or the ways to facilitate, make contact barriers (as he used to call synapse at that time) easy.
3. Two different paths of experiences vicissitudes: memory and memory impossibility – In his Project for a Psychology, Freud emphasizes the baby's first experiences vicissitudes and also rises the hypothesis that a great part of these experiences may associate and may be explained by memory work. Associations enable knowledge and lead to judgement. Jugement of what is good and what is not, what should be taken in and what should be left out (Freud, 1911 and 1925). An other part, nevertheless, remains unchangeable and Freud neames it a thing.[5] Acting like a hole in knowledge, the thing, is, though, a rest of experiences that cannot be associated. In Lacan's psychoanalytical theory it is, on one hand, the enjoyment object and, on the other, it is the object that causes our desire. Even though Freud does not develop this concept, it leads – in 1900, in the Interpretation of dreama –,[6] to the dream navel concept: part associations can never independently attain how long you analyze and interpret the same dream. The navel of the dream is a wonderful metaphor to take us into the most contemporary topological developments in psychoanalysis. It stands for those psychic references that can never be symbolized and, therefore, they can never be symbolically known. Two other 1895 directions emerge from Freud's observations: our psychic life develops through associations, on one side, either on the other one, it does not

5. Ding, in the original text, is written in italics by Freud himself. Only in the 1960's, Jacques Lacan paid more attention to these questions that enabled him to clearly discuss difference between Freud's concepts.
6. This book was identified by Freud as the one in which he first published his creation: psychoanalysis (with the analysis of his dream about Irma).

develop since it is always in relation to this unchangeable thing, as, for instance, the navel of dreams. The part which develops, the associating that can also be modified by associations, is stored as memory in the unconscious, but also in the preconsciously (not for repressed memory).

4. Two kinds of process: the primary and the secondary – do process these memory strains which stand as representations, as Freud names them, or signifiers, according to Lacan's description. The primary process, the unconscious one, has no regards to conscious logic, since it solely follows the laws of crude association; the secondary process censors and judges representations by laws regarding the reality principle which sustains the second law of psychic functions (the first, as we have seen above, is the one sustained by the pleasure principle). It's in the preconscious-conscious system that secondary process develops and not in the unconscious.
5. The importance of the relation to the Other for each psychic construction – If the way out of exceeding energy amount requires maternal or, sometimes, parental interference, and if it establishes the first law of psychic life, there would not be any psychic life without the Other's aid.[7] In fact, it is the relation to the Other that determines the subject's psychic structure – an explanation to psychoanalitic differences between men and other animals throughout phylo- and ontogenesis.

   Naturally, as Jean-Pierre Changeux presently affirms, these freudian ideas and hypotheses come from a time testing them was not feasible. But, as Thomas Kuhn (1970) also affirmed, revolutionary science does not follow paradigms. Freud's ideas and hypothesis developed from two sources: his laboratory studies as a neurologist and his discoveries in clinical field as, for instance, his research about aphasia.

   Scientists and philosophers (i.e. Merleau-Ponty) did bend on aphasia during years. It was Rolland Broca and Wernicke who first drew neurological attention to this symptom. In fact, even now-a-days it is a polemical phenomenon. In the early years of the 20's century, aphasia permitted, for example, a correspondence between Sigmund Freud and Alexandr Romanovich Luria, in Russia. Known as one of the most important founders of cognitive sciences, Luria had relevant contact with Freud in Vienna before 1917. He translated Freud's Interpretation of the dreams and founded Russian Psychoanalytic Society. As a student of Vygotsky, Luria stuck to the idea that "the psyche is

7. The Other: Lacan's concept of otherness in relation to the subject. There are two kinds of others: the Other, which is hierarchically different to the subject and therefore determines it, and the others, those to which the subject can imaginarily identify.

[…] the subjective expression of neurological processes" (apud Fonseca, 2002, p. 92). Freud's own work about aphasia, read by Luria and by Merleau-Ponty, observed, already in 1891, that "the chain of physiological processes in nervous system has no causal relation to psychic processes. Physiological processes do not end when psychic ones begin, on the contrary, physiological chain goes on indefinitely, only that at a certain moment, to each of it's elements corresponds a psychic phenomenon. The psychic is, though, a parallel process to the physiological, a dependent concomitant" (Freud, 1891, p. 56), which does not mean a psycho-physical parallelism as normally stated, since it is not biunivocal. As a matter of fact, Freud's paper about aphasia was written as a critical review on the locational doctrine from Broca, from Wernicke-Lichtheim and some others. It proposed a speech apparatus whose regulation is functional and not, as stated, anatomical. Freud refuses to identify a localization of the representation since there is no correlation between representation and physiological localization (cf. Garcia-Roza, 1991). This is still clearer in his observations on the hysterical subject called Elizabeth: she suffered from paralysis on both legs, a fact that was elucidated through associations and not physical issues. Her paralysis began the day she realized her loneliness and singleness – her Alleinstehen – which concretely resulted in being alone. Freud could diagnose it as a symbolic functional paralysis that immediately vanished after she recovered this association (Freud, 1893, p. 123-4).

The importance of the phenomenon in our study is its close relation to language and speech, a domain men mostly differ from animals. From a psychoanalytic point of view, one can never identify human psychic life to animals ones, despite the fact in earlier development there is an equivalence. It's been a long way from Freud's unicellular animal to men (ibid., 1920)! Each step implies new neuronal organization, and each new organization has also prevailed over the earlier one. The complexity of our organization is so huge that we (humans) are not even anymore led by instinct; we are so much influenced by our language and culture that, whatever we do, it will always be determined by our relation to the Other. This relation has given birth to our Triebleben, which is not an instinctual one.[8] It is this complexity that ought

8. More recently translated as "drive", Trieb is here meant as an effect of the culture, the language, the desire and enjoyment of the Other, and human's relation to it as a participant of a cultural world and it's equivocality and, therefore, reacting on those influences. This evolutionary modification makes the human being much more independent from nature but, on the other hand, requires big investments on social life. As a consequence, phantasy can retain a lot of libido (psychic energy), which can not be explained through instinctual life.

to be taken into account whenever neurosciences are associated to the human being. It is one of the reasons to check interrogations up on both fields: psychoanalysis and neurosciences.

The conscious

No further development can be done in our essay to verify possible interaction between both fields without touching one of the most important differences between biological theories and psychoanalysis: what prevails in human thinking? Conscience or unconscience? How can one describe them?

Where is the issue? If one can identify memory traces in unconscious; if unconscious is in one hand knowledge stored by representations associated in memory strains, as mentioned above in 1.3., conscious prevailing wouldn't be necessary to sustain important observations biologist, cognitive scientists and neuroscientists have risen now-a-days about the operations on memory traces. The fact of the unconscious only increases the field of investigation: there would be, for instance, at least two kinds of processes, as we have seen, the primary and the secondary one. Two kind of logic, the unconscious and the preconscious-conscious. Then what, or where is the problem of accepting, in biological, cognitive and neuroscientific studies, the observations psychoanalysis introduce? Is there any resistence to it?

First of all, it would demand extra effort from scientists who have already worked very hard in trying to brake through a quite complex field of variables that are, by themselves, quite difficult to control. It has to be said that it's just been two hundred years since science really began to try its way through such complex fields, if we start up at Gall's first essays on phrenology... In fact, the first idea was trying to localize all our passions in brain, as well as our acts and thoughts. If Gall's essay may sound rather grotesque, the localizing hypothesis developed its own history, without bringing up the terrible moments eugenic ideology was on. But, already, in 19th century, there was another equally important hypothesis that was known as a functional one. It wasn't Freud who began to work on it, but Hughlings Jackson, an English neurologist. It was in fact Jackson who first considered the hypothesis on concomitance by identifying language with psychic processes rather than anatomical ones. Observing quite a hundred percent incidence of verification on localization hypothesis, some scientists imagined there was more between earth and heaven, as Shakespeare postulated. Each hypothesis differs from localization issue as well as demands more complex studies – an open door to resistance.

Besides the difficulty to control more variables, a second hypothesis to understand resistance against psychoanalytic theory is the problem concerning precise definition on what psychic is. This point takes us to a long journey into past, but in order to keep the limits of scientific discourse, let's just recall René Descartes. For him, res extensa and res cogitans are two different human registers. If there is a representative and conceptual world able to be modified by association – just to follow freudian idea –, it is represented by res cogitans, a field we could specify as human. Res extensa is something that is not necessary specifically human if we don't observe its relation to res cogitans. After all, if there were no information from res extensa we wouldn't even be able to perceive anything from the external world.

Since Descartes, some categories have been thought as specifically important to point out the relation between the two res, such as: memory, emotion, sensation, perception, thinking, just to bring the most important up. During three hundred years these categories were identified with psychic life, and a certain short circuit was ideologically built: if these categories are specifically psychic ones, psychic life is these categories! But then, the 19th century was the scene of increasing research in scientific studies which lead to quantification and visualization, necessarily reductive. Regardless the forementioned short circuit on the ideological construction – sustained by Positivism –, and the consequent reductionism on psychic life, the idea was to obtain knowledge from all psychic life, regardless subjective participation. This fact would, once again, take us into research by enabling observation as, for instance, sensation innervation that permitted quick identification with something humans effectively do (human behavior). So, if sensation on a rat nerve implies different results, the same conclusion could be reached upon human beings... But who would assure these categories are equivalent to human psychic life?

When we investigate this subject, we do conclude it would be possible to make an equivalency if we reduced psychic life to consciousness. During 18 and early 19th centuries (Alberti, 2003), this short circuit was consistently increased. But on those days, for philosophical theories of self-consciousness, there was also a split: self-consciousness changed on one side into perceived experience, even though, on the other hand, it didn't change at all because due to its relation to the religious soul, hold a priori as immutable and autonomic.

This aspect changed a lot and was highly developed by scientific research based, as well, on the conscious categories: according to scientific new theories, self-consciousness is affected by outside experience and even by organic experiences in such way human mind really changes, even though it can perfectly remain unaware of these changes since modifications can act on synapse, a point consciousness would never be aware. In consequence of scientific research,

things can happen despite subjects autonomy, the soul has been taken of, but, there remains no more difference between man and animal either...

To psychoanalysts, the most concerning aspect is that subject is completely kept out the scenario, and, in consequence, its choices, responsibility and human ethics are also aside. There is no psychoanalysis without subjective attribution and responsibility, not even in psychoanalytical treatment. To Psychoanalysis, every subject becomes responsible for what he says, does, feels, wants, wishes... even if he doesn't know what leads him into them. Psychoanalysis is eager to know these answers, since neurosis is conceptualized, in fact, as a consequence of ignored desire!

If consciousness is only a state things acquire through their passage in the w-cs system, as Freud theorizes, then, to obtain knowledge is equivalent to pay attention on ideas that are originally not conscious ones (unconscious or preconscious). And then, in consequence, the idea invested with attention becoumes conscious, capable of being projeted on the? – cs screen. Attention is the nomenclature Freud applied to conscious energy: if there is an idea you pay attention to, it becomes conscious and it is represented on w-cs screen.

Cognitive sciences, one of the fields neurosciences has carefuly considered lately, has not, so far, undergone the limits of consciousness categories. Again, it probably becomes a matter of real limitation. But then, we must also say, one can not directly transfer research conclusions to human subject, as if this subject could be reduced to this limitation, without clearly identifying the field we are working on.

Nets and assembles

Following neuroscientific studies presently takes us into the same point of view Jacques Monod expressed, accordingly to what André Green (1995) quoted: "Of course the unconscious exists; there is no doubt consciousness is only a very small part of everything alive [...]. All biological mechanisms is unconscious, the biggest part of brain mechanisms occur out of biological structures of consciousness" (p. 70), drawing attention to a possible identification between unawareness of the functioning of nervous system and the laws of the primary process conceptualized by Sigmund Freud as being unconscious. The fact that the nervous system acts autonomically has no relation to the autonomy of soul in philosophical theories of the 18th and 19th centuries and – to be kept in mind – neither to subject responsibility in psychoanalysis. Such simplifications lead to several problems, but the structure remains the same: they identify two different

kinds of things because both are net structured, or in other words, possibly equivalent to assembles. A clear picture of this fact is neuronal assemblage compared to human society. Identifying the unconscious itself with a kind of neurons, is a huge error, as André Green demonstrates on his comments on J. P. Tassin's article in which the latter defines dreams as a consequence of a specific activity of dopamnimergic neurons, producing a modification on the normal metabolic balance between sensorial and limbic areas so that metabolism favors limbic areas: that would be the reason for an unconscious modus operandi (Green, 1995, p. 76).

In order to study possible contributions from the neuroscientific point of view, it is very important to define the real extension of neuroscientific field, a task that, by itself, is quite hard. There are so many paths, from the most biological to cognitive sciences, passing through neurophysiology, neuroanatomy, artificial intelligence, contemporary neurology, neuropsychiatry, only to bring up some. Neuroscientific field is a brand new one and so many interests are involved in it now-a-days. Defining some references would permit us identify this very new scientific field, as we could count on historic reasons, scientific and conceptual ones.

Neurosciences rely their hypothesis on consciousness, brain structure and function, and on neural models developed from the concept of networks that made computer sciences feasible. Consciousness is mostly defined by those categories we've already mentioned, as perception, emotion, motion, memory, intelligence among others. All of them are categories that can be measured through experimentation, so scientists are able to make sure they are dealing with objective and controlled variables, necessary to control their own results about neuroscientific hypothesis. If, at a first glance, this is very important for the development of these hypothesis, on a second one, the very same rigor must be observed when it comes to generalizations! This scenario has not been so constant, as it should, unfortunately. In consequence, to state our whole psychic life on consciousness withdraws psychoanalytic theory itself. It would be acceptable if psychoanalysis were effectively a folk psychology, but it is definitely not the case. In order to avoid such errors, we can recall that even the most positive scientist may be ideologically influenced. So, not to observe the relation between psychoanalysis and the scientific discourse is necessary to reach, ideologically, a point of view that rejects psychoanalytic discoveries. Fortunately, this idea is not widespread among neuroscientists. Let's listen to one of them who does not think so – Edelman –, for instance.

If Edelman reads Freud, it is a result of his own careful examination of the categories he works with. As a neuroscientist, Edelman sustains a different field to contemporary discoveries in conscious science, and does not intend to have

the capacity to criticize Freud's constructions, and, at least, questions some colleagues who "rule out" the mechanisms proposed by Freud.

Now-a-days we think we know and very well define physiological modifications, and therefore we think we don't have to differentiate languages so far as it belongs to physiology or psychology. But not to distinguish these languages represents the very same mistake Freud denounced, and we should be very aware about it if we really want to elaborate scientific observations (Alberti, 2001, p. 86).

Evolution shows us that the more complex brain structure is, bigger adaptation possibilities are allowed because it is not the unique zone to respond to external stimuli, but, in fact, one among several others. Each of them acts differently and has got its own learning capacity. More complex the structures result in bigger interaction between zones and larger response possibility. As a consequence, and in order to establish psychic processes, scientific research should follow the complexity of networks, much similarly to Mathematics (theoretical field, topological maps, Keymeulen and Decuyper 1994, p. 64f, for instance). Mathematical researches have become the way science would have enough basis to check neurological conclusions out.

Sciences and the subject[9]

In fact, studies on artificial intelligence show that we don't need to build a model of neurological and organic structures to have a scientific conceptualization of life. Conjectural sciences may be as interesting and, perhaps, much more reliable on these matters.

Anyhow, observations on last century developments, show that two major movements have centered discussions:

1. Centripetal scientism of disciplines which were previously centered at the soul. Intending to be included in the row of sciences, the methodological reduction of their practices gradually quit discourse on subjectivity. Any theoretical construction apart from experimental bases is ruled as non scientific. For these authors, science as a concept has been fined by Positivism.
2. Insistence on the importance of subjectivity. Since Lacan, this second movement may be evaluated through the study of several disciplines that were

9. The correlation is still clearer when we compare the same scheme with that one of 1933, p. 515.

in course during the 19th century as Linguistics, structural Ethnography and the General Theory of Symbols. Lacan observed that such movement was based on the specificity of symbolic reference in researches on subject. He also affirms this movement is associated to science not because some possible experimentalism may occur, but as a consequence of important advances in Mathematics and in History. Both of them, as we know, determine new possible perceptions of the world. During Illuminism (18th century) and, mainly, during the 19th, some important answers to innumerable mathematical problems were found. To give only one example, these findings made it possible to study relations between sets – unconceivable before… Working with intersubjectivity, may demand resource from Modern logic and Mathematics! On the other hand, in regards on History, it was also only in the 19th century that man could do general strikes! – and this is not a lesser event in a world in which labour was submitted to the order and the rules of the One – also recalling mathematical reference.

It is perfectly possible to infer from the appendix of "Die Laienanalyse" (Freud, 1927) that Psychoanalysis was said to be a sort of Psychology aimed to protect itself from Medicine. Why should psychoanalysis protect itself from medicine? Because, since its very beginning, there was an important negative reaction from Medicine to Psychoanalysis. Freud arrives to ask if the attempt to dominate Psychoanalysis in 1926 wouldn't destroy it definitively (ibid., p. 343). He was clearly afraid that the inclusion of Psychoanalysis as a medical discipline would definitively empty its most important basis: the subject. As a matter of fact, it is very important to observe that to strict scientific field, this subject has been excluded, and of course, if, by one side it's exclusion is necessary to the development of sciences, on the other, it enabled the recrudescence of mysticism, religions and sects. That is the problem contained on the expression "human sciences": the man of science does not exist, he is excluded, even if the scientific discourse – founded by Descartes – verifies subject's existence. Foremost as the subject of self-consciousness, then, with Freud, subject of it's own unconsciousness and, therefore, the subject of unconscious.

The attempt to inscribe Psychoanalysis in medical discourse threatens Freud's discovery. Of course, regarding the difficulties sprung from psychoanalitic daily clinic, we observe it's not a small amount of people who identify themselves as psychoanalysts, or are identified as such through earned titles, searching for help through explanations that do explain scientifically points that even Freud couldn't explain… and, as already observed with the aid of Soussumi's honesty at the very beginning of this paper, it is not rare.

Discussion

As Edelman himself once observed: even his framework for the diseases of consciousness "is not to be considered a substitute for various nosological or etiological systems of diagnosis" (Edelman, 1989, p. 215), since he, himself, made it explicit that the Theory of Neural Global Systems he created does not distinguish disorders as neurotic or psychotic, nor as organic or functional, but the aspects of disorders regarding attention, motion, categorization, qualia, self and so on (ibid.). He is clearly interested in demonstrating how these terms are suitable with neuroscientific field.

Psychoanalysis has it's own theory and can perfectly demonstrate how it is built. As a matter of fact, neuroscience's developments invite psychoanalysts to a new task: obliging psychoanalysts to refine their research and clinical theory, regarding the specific ethic field of psychoanalysis, in order to sustain Freud's contribution and paradigm of the subject in an era scientific discourse sometimes rejects this very subject and its reasons. Of course, this attitude demands an always larger in-depth study of Psychoanalysis itself, clinically as well as theoretically.

On the other hand, this attitude should not refrain any possible relations with other fields. On the contrary, exchanges with other areas can enriche only if one owns field is strong enough to find it's own answers to new questions! But this always in relation to the others! Moving towards a consistent network theory in neurosciences represents the possibility of exchanges with other conjectural sciences in their researches on symbolic representations. Isn't it the very same aspect Freud observed as determining the subject and its symptoms? In fact, the only analysable material for Psychoanalysis is this network and its consequences: "le discours qui nous determine est la seule chose analysable"[10] (Lacan, 1971-1972, 4th may 1972).

If it is right to bet on possible contributions, we ought to, neverthless, make a point on what has happened during the last ten years, including the forenamed "brain decade". Besides hard work from neuroscientists, a lot of too immature conclusions seemed to arise. It probably represents the results of many other variables external to neurosciences themselves. Freud was always very careful on his diagnosis. As a former neurologist, he learned to identify neurological syndromes and could do a fine distinction between neurological problems and psychic ones. This is stated by many clinical cases he refers to through his whole work. But, the need of quick results – since for the mainstream discourse now-

10. The discourse which determines us is the only possible thing to be analysed.

a-days time is money – changes many things. Pharmaceutical laboratories also claim for results to develop new drugs and, consequently, more capital. Last, but not least, the demand on treatments that require no other effort from subject than swallowing a pill, sustains the possibility of avoiding historic, theoretical and doctrinal thesis of the subject (cf. the introduction to the DSM-III[11]). The question is that the subject has become less and less involved and increaslingly more dependant on drugs that, as we have observed, do not solve his problems. In order to meet results, many clinicians conclude now-a-days that all behavior and cognition problems have, necessarily, neurochemical origin.

A real scientist knows perfectly well that his field is a very small one, that all variables can be controlled now, but we never know about tomorrow... That is what really defines scientific research and its limitations and not it's inferred extended boundaries. Psychoanalysis directs itself to the subject, this is it's boundary, since the patient is not an object – as it happens normally in science – but the subject himself.[12] Psychoanalysis has to justify itself and show its reasons by sustaining them to scientific community. This would be better fullfilled in exploration of the very conditions of Psychoanalytic origin. Not an experimental science but completely related to scientific discourse through conjectural sciences. If psychoanalysis can justify itself, it will help neuroscientists consider their limitation.

On the other hand, this effort will expand neuroscientific research itself. If dreaming is, for instance, stated as an unconscious product with its own logic developed in primary processes, the preconscious/conscious system has no "understanding" of the laws which determine the dreaming, and we can only reach that logic if conjectural sciences instrument psychoanalysis. It does represent that science has to develop a way to study this other logic. Rather than trying to anatomically recognize where and what primary process requires – which will never occur, as, according to Freud, unconscious is nowhere anatomically located outside an elliptic point of view –, neuroscience should be concerned with some other "how" and "why" involving neural network itself. Since it is a very complicated matter, we have to humbly admit that we are presently at the very beginning of a huge involving research, trying to identify the most simple network of some categories as bottom up and top down in cognitive science, still far, far away from the structure of desire.

11. As a matter of fact, the text that presents DSM-III looks forward to build a psychiatry which would be ahistorical, adoctrinal and atheoretical… as written with all letters in its "Introduction".
12. See Lacan's developments on psychoanalytic discurse (Lacan, 1969-1970).

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