

Comments on Freud and the concept of the mind and unconscious at the time of the fall of positivism

• ABSTRACT

This comment aims to bring Psychoanalysis as the precursor of a new vision about mental processes and the mind as a whole and allies this discovery to the change in the scientific thinking at the time of the beginning of Psychoanalysis, exemplified by the evolutions of quantum and relativistic physics, in counterpoint to the positivism in vogue. For this reason, it contextualizes the theories in relation to the brain and to the brain functions at the time of Freud, that sought in each brain region the correspondent for specific functions, exemplified mainly by Gall's phrenology. Although regional correspondents to the function of language have been found, such as Wernicke's and Broca's areas, it has not been possible to date to find specific locations for complex emotions and the behavior, even with Luria's attempts. The possible analysis of a mind that goes beyond the morpho-physiological limits of the brain was Freud's great contribution to the evolution of a scientific thinking regarding mental disorders.

Keywords: psychoanalysis, Freud, modern physics, neuroscience

The knowledge about the encephalon at the end of the 19th century was scarce and marked with the beginning of ideas about the localization of the brain functions after Paul Broca's discovery of the motor speech center in the left frontal lobe [1]. Here it is important to separate Gall's phrenology, which considered the brain functions in relation to the "lumps" of the skull. The location of the brain functions in lobes and anatomical structures does not relate to the cranial elevations, because the gyri do not grow or decrease with the use, in a manner analogous to muscles, as Gall thought.

The discovery of the sensory speech area by the German Wernicke in the left inferior parietal lobe [2] fosters the idea of regions with specific functions, and starts a search for successful brain functions and positions for motor and sensory areas - culminating in the confection of Penfield's homunculi [3] relating the anterior and posterior frontal gyri, motor and sensory, respectively; but with frustrated searches for the higher functions that insist on hiding within the brain organization [4].

At that time, late 19th century, the histological structure of the brain was under discussion whether or not there were separate cells, the neurons, according to Ramon y Cajal, or if there would be a trophoblastic mass, according to Camilo Golgi; Cajal was right for a glimpse of reality, because the microscopic methods of that time did not allow visualizing the cell membranes, which would come to occur with the advent of the electron microscope in the 40s of the 20th century. The knowledge of neuroanatomy was incipient, and the conduction structure of neural impulses was not associated with cellular processes.

It was at this time, before the brain physiology had its solid bases, that Freud began to study the mind [5,6]. The functions of thought were associated with the brain and, due to the studies started by Galvani and Volta in the 18th century, it was known that electricity made muscles move, but it was not known how it could be responsible for the thought, if at all today! A situation emerges: if electric currents generate magnetic fields, the studies of the brain's

Comment [JD1]: German neurologist

Comment [JD2]: Language is unclear; I think you're trying to specify how multiple other functions (besides speech comprehension and speech production) were localized, but higher mental functions (but which ones?) were more difficult to localize. Elaborate language in more depth

Comment [JD3]: Rhetorical phrasing not clear; be precise

magnetic properties have not advanced in the same way as the studies of its electrical properties.

Freud, even without the physiological and biochemical bases that could explain the brain functioning and without the anatomical bases of the brain being known, i.e., studied the parts of the mind and associated them with pathological behaviors [7]. Even if in the first topic the instances were considered as fixed (topographic model), in the second topic (structural model) [5,6], fluidity appears in psychoanalytic analyses, something similar to what Luria cites in the book "The Working Brain" [1] to explain the psychological processes with anatomical bases and in the histological organization of neurons.

This indicates Freud's analytical ability, who performed an analysis of the causes and effects of an immaterial structure, whose functions can exceed its morphological/material basis; to this day it is still debated whether the mind is derived from the brain or exceeds the physiological structure shown by its morpho-physiological structure, i.e., and he was able to transcend the materiality of the brain and find answers in the mental structures.

It can be said that, thanks to Freud, we started a deeper understanding of the immaterial mind before the material physiological and biophysical basis of the brain, due to an investigative process of human behavior that had as its foundation to decrease people's suffering.

The neuroses were the basis of Freud's investigative process that, seeking a way to understand the essence of the pathology, discovers intrinsic causes that serve to initiate the most solid concepts about mind and thought [7]. The situation is so complex that, at first, no morphological relationships are established for the unconscious, conscious and preconscious [8].

In fact, complex functions involving feelings have not been located in brain structures, much less functions derived from primitive emotions [1]. Here, I am not talking about the functions associated with the escape and fight of the survival instinct, but about the functions that are associated with the individual's life, that alter his thought structure and that can generate psychic suffering by generating emotions such as envy, jealousy, hatred, love [4].

Psychoanalysis developed with an object of study that it conceptualized itself, there was no concept of mind that Freud could use based on the positivism in vogue at the time that advocated the fact, the attachment to the observable material [9]. However, this beginning occurs concomitantly with the evolution of physics with the quantum and relativistic disciplines whose mathematical basis privileged the intuition of the scientist [10]. We do not suggest a relationship between the mind and the theories of quantum mechanics, we are just talking about the organization of the scientific thought at the time, when biology was centered in the search for locations of brain functions, but physics was breaking with positivism.

The rigorous analysis of the atom, invisible, creates a science that shows its strength of mathematical prediction by the destruction caused by the atomic bomb in World War II and breaks with positivism, as Einstein himself quotes in The Ultimate Quotable Einstein via Calaprice [11]:

I am not a positivist. Positivism claims that what cannot be observed does not exist. This conception is scientifically indefensible, because it is impossible to make valid claims about what people can, or cannot, observe. One would have to say that only what we observe exists, which is obviously false [11].

It can be said that the demonstration of the existence of mind was shown by the pathologies whose bases Psychoanalysis started to explain in a similar way to what happened with Physics and Chemistry in the beginning of the 20th century, but without a mathematics capable of explaining the mind, due, obviously to its intrinsic complexity, which escapes from the limited scope, so far, of this science.

Freud accomplished a revolution regarding the mental health of humanity, for the treatment of the mentally ill in the beginning of the 20th century was inhumane and consisted,

Comment [JD4]: This is either unclear or untrue. fMRI uses the magnetic properties of the brain regarding blood oxygen use; TMS uses magnetic fields to manipulate neural activity; EEG and direct recording methods exploit the electrical effects of neural activity. Both electrical and magnetic properties of the brain have brought significant advances

Comment [JD5]: Unclear what is meant by "fixed" and "fluidity." Freud's 1915 essay "the unconscious" illustrates clearly dynamic features even in the topographic model

Comment [JD6]: Citation needed

Comment [JD7]: This isn't quite true. Although it is rather difficult, there are links made between unconscious, conscious, and preconscious - whether in terms of localization (see the work of Mark Solms) or in terms of functional (see the work of Georg Northoff, Ariane Bazan)

Comment [JD8]: This is also inaccurate; see the extensive field of affective neuroscience - whether one follows Panksepp's basic emotional circuits, LeDoux's fear research, or others.

Comment [JD9]: This is an interesting point; the essay should focus more on this point and spend less time trying to demonstrate whether or not mental functions can/have been localized

even if they did not express themselves this way, in removing the devil from people, it seems, by the demonic action of the doctors of the time!

Freud intended to search in the physical structures of the brain for the parts that could be associated with ego, Id and superego, but he did not do it. In fact, attempts to associate psychic instances with the brain physiology were and are being made [12,13,14,15] In this sense, the idea of brain functions occurring in a continuous flow in order and simultaneously that Luria conceives seems to us to be more in agreement to explain the mental instances, which may allow the real, but not yet satisfactorily explained body-mind relation [14]

In the former Soviet Union, Vygotsky, in the second decade of the 20th century, studied cultural-historical psychology with his disciple Luria, seeking plausible explanations for mental processes on neurophysiological bases, later concluding on the importance of speech in the bases of the evolution of the individual's being and mental processes [16,17,18,19], something that should be discussed in comparison with Psychoanalysis, but, elsewhere.

From here, we conclude that Freudian Psychoanalysis was a science that, in addition to its functions of healing the mental health from neuroses and psychoses, initiated the scientific foundations of the mental structure, allowing the behavioral structure of human beings to be studied with more details before neurosciences provided the morpho-physiological basis of the brain functioning.

This discussion should be deeper, but, in this text, we intend to place Psychoanalysis as a non-positivist precursor of mind studies.

Comment [JD10]: While I agree with the point, the phrasing is rhetorical and imprecise, without clear content on what is meant by "removing the devil" - surely there were more than exorcisms at the time

Comment [JD11]: This is a very nice point to make in this essay; it should be more clearly organized around it. That, despite and whether brain sciences link or localize mental functions, psychoanalysis - like quantum physics - proceeded in a non-positivist approach. I would stress that the author still emphasize that psychoanalysis - at least Freud - proceeded in a scientific fashion (a non-positivist science), which they hint at, but is important in many contemporary debates over the scientific status/nature of psychoanalysis

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