



## THE HISTORY OF THE HUMAN BRAIN THROUGH AGES: AN ESSAY

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### ABSTRACT

This essay aims to be a summary of the main milestones of the history of the human brain through ages, highlighting the remarkable capabilities of this organ, such as telepathic communication and clairvoyance.

#### Key words:

A concise history of the human brain, the ESP (extra-sensorial-perception).

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### INTRODUCTION

The study of the brain is a very important subject in the history of medicine [1]. This organ of the human being has played a particular role in the study of the human body and behaviour. In fact, the story of the mankind [2] shows that the cranial capacity of the human being has undergone through deep changes through ages. In this regard, the first human species, such as the *Australopithecus* showed a skull of about 400 cm<sup>3</sup>, while the *Homo Habilis* had a cranial capacity around 600 cm<sup>3</sup>. These species were followed by the *Homo Erectus* who had a skull with a value around 900 cm<sup>3</sup>, while the *Homo sapiens* had a skull around 1600 cm<sup>3</sup>. The development of the skull of the human being through ages has allowed the human species to develop both the trivial functions of the brain and the remarkable capabilities of this organ, such as telepathic communication and clairvoyance [3].

### METHODS

In this essay about the history of the human brain through ages, I collected and analyzed the main scientific books and technical articles, in this area of study, that area available in academic libraries. Thus, I selected the 40 most important items, based on the “impact factor” of the article and the “reference” books on this topic in order to be useful to the reader who aims to have just an idea of this subject, maintaining the scientific rigor of my research.

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In this section, I will present the results and the most relevant facts of my research about the concise history of the human brain through ages described in two sub-chapters.

#### *The history of the human brain through ages: an overview*

The history of the human brain [4] has begun with Galen (130-210) who defended the existence of a fluid that was carried through the nerves from the brain to all parts of the human body. This wrong view remained unchanged until the 19<sup>th</sup> century.

In the 17<sup>th</sup> century, the philosopher Descartes (1596-1650) proposed the separation of the mind (domain of the philosophy and religion) and the body (domain of the science and medicine). The body should be treated as a machine [5]. This is the *paradigm of Western medicine* [6].

Still, in the 17<sup>th</sup> century, Thomas Willis (1621-1675) suggested that the human brain was the organ where were processed the thoughts and feelings (the mind) [7].

From the 18<sup>th</sup> century until the 20<sup>th</sup> century, there were several experiments in the brain area that questioned the dualistic and mechanistic Descartes's view [8]. In fact, in the 18<sup>th</sup> century, Luigi Galvani (1737-1798) [9] discovered the bioelectricity through an experiment performed in a frog, while Franz Gall (1758-1828) [10] proposed the generalization of Galen's point of view, which reinforced the idea that the human brain was responsible for all human behavior.

In the 19<sup>th</sup> century, Camillo Golgi (1843-1926) [11] developed a technique for the purpose of study the structure of the brain cells, while Ramón y Cajal (1852-1934) [12] proposed the theory of individual neurons (the elementary units of the nervous system).

Meanwhile, Emil du Bois-Reymond (1818-1896) [13], Johannes Muller (1801-1858) and Hermann von Helmholtz (1821-1894) claimed that the neurons and the brain itself could influence others neurons through electro-chemical signals.

Still, in the 19<sup>th</sup> century, Pierre Flourens (1794-1867) [14] performed some brain experiments in animals and concluded that each region of the brain is only responsible for a particular function (such as vision, communication) and not for all human behavior (the opposite of Gall's idea). However, John Jackson (1835-1911) [15] found that certain sensory and motor functions could be assigned to different regions of the brain.

All this brain experiments contributed to the appearance of a new model about the structure of the human brain [16], replacing the old Galen's view mentioned before. This new model defends that the brain is constituted by neurons that are responsible for a particular function (for example, communication processing) and the neurons might have an effect on others neurons through electrochemical stimulation.

This model was reinforced by two experiments. The first was performed by Pierre Broca (1824-1880) [17] who was able to relate the inability of a patient to communicate and the injury of patient's frontal lobe in the left hemisphere of the human brain (known as «Broca's area»). The second was conducted by Karl Wernicke (1848-1905) [18] who studied a patient with a brain injury but who could communicate. Thus, this physician concluded that the area of the brain damaged was different from the frontal lobe (known as «Wernicke's area»). Furthermore, Korbinian Brodmann (1868-1918) [19] distinguished 52 areas in the human cerebral cortex (known as «map of the brain of Brodmann»).

In 1958, David Hubel (1926-2013) [20] and Torsen Wiesel (1924-still alive) [21] contributed to the «mapping» of the human brain through experiments performed in cats and therefore they won the Nobel Prize in Medicine, in 1981. These brain experiments led to the conclusion that the sensory systems reduce the information received in single units and the neurons with the same trait (for example, identify «lines») are located in the same area of the brain (as proposed by Broca and Wernicke).

Furthermore, Roger Sperry (1913-1994) [22] and Michael Gazzaniga (1939-still alive) [23] concluded that when the structure of the brain that connects the two hemispheres (named by «Corpus Callosum») is removed, it occurs a disorientation in the patient's perception.

All these brain experiments have suggested that the brain (and the human body) is related with the mind (in opposition to Descartes' view) [24]. For example, António Damásio claims that emotions and feelings are an important connection between the physical body and the reason. This linkage has allowed both the survival of mankind that occurred during the evolutionary process of mankind [25] and the expansion of awareness/perception of the human being.

#### ***The exceptional capabilities of the human brain: a perspective***

Nowadays, we know from neurology that the neocortex is the area of the brain where are located the higher faculties of the mind and consciousness. For example, the mystical experiences are linked to the activity of the non-dominant hemisphere, while the brain's lobe vision is located in the

dominant hemisphere [26]. In this regard, I have to mention the emergence of a new paradigm in science and medicine that proposes an integrative medicine model that aims to see the patient as a whole: body/brain, mind and soul. This model intends to promote both the patient's quality of life, as well as do justice (or give a "rational explanation") to the spiritual side of the human being [27]. Furthermore, I have to refer the Holographic Mind Theory [28] (proposed by the physician Karl Pribram and the scientist David Bohm) and the Mind-Brain Theory (proposed by physician Stuart Hameroff and the scientist Roger Penrose) because they have contributed to the study of the human brain. [29].

The Holographic Mind theory states that the mind (thoughts and feelings) is a hologram. If a particular area of the brain gets damaged the other parts of the brain might be used in order to compensate this damage (as suggested by Flourens). The brain has the function to express the Holographic Mind into the visible world. In this regard, some scientists argue that the mind of the observer interferes with the outer reality (in opposition to Descartes' view) [30].

The Mind-Brain theory argues that there is both a «quantum component of the mind» (located in tubulins) that is responsible for the change of a particular pattern of behavior and a «classical component of the mind» (located in dendritic membranes) that is responsible for the trivial behavior of the human being.

Furthermore, I have to mention the instantaneous communication (called «non-local» or outside space-time) [31] that occurred between human brains [32]. This experiment was performed by Grinberg-Zylberbaum and his colleagues through the «entanglement» between the brains of two shamans that become «correlated» through meditation. There were also a control group whose brains were not «correlated» between them. When some «flashes of light» are shown both to one of the shamans and one person of the control group, the «evoked potential» of both of them appeared in the electroencephalogram. However, the results for the other shaman and the other person of the control group were very distinct. In fact, the other shaman presented an equal «evoked potential» in his electroencephalogram, despite not having seen any «flashes of light» and being separated and isolated from the first shaman. On the contrary, the other element of the control group did not present any «transferred potential». This is an example of ESP (extra-sensorial-perception) which occurred without the help of the trivial five senses.

## **CONCLUSIONS**

Nowadays, the physicians know the several areas of the human brain responsible for the various trivial functions performed by the human being.

However, the transcendental activities of the human being (such as, the instantaneous communication that occurs between two human brains) are still not well explained by conventional medicine. For example, the «spontaneous» healings [33] that has taken place in contemporary society and conventional medicine has no explanation.

Furthermore, the physicist Schrödinger wondered «how the body secrets the soul and the mind»? [34]. António Damásio has also written «how is the set of processes that we call «spirit»

emerges from the activity of the organ we call brain?"[35]. For example, what is the area of the brain that is activated to carry out the "spontaneous" healing? What is the area of the brain responsible for instantaneous communication and ESP (extra-sensorial-perception)?

There are some brain researches that suggest that ESP is a specialized function of both of the brain hemispheres [36]. Thus, a deeper study of some brain areas related with consciousness mind and personal choice might contribute to help human beings to have a better future. In fact, there are some "seers" (with capabilities of telepathic communication and clairvoyance) who claim that the mankind has the choice to change their personal fate, as long as they change their behavior [37], [38].

Furthermore, some researchers claim that the pineal gland (located in the human brain) might have an important function in the process of clairvoyance [39].

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