

Split brain case study

Business



Introduction

The capacity to distinguish oneself from others is one of the most significant cognitive abilities, which separate humans from other living creatures. People should distinguish themselves from the surrounding to operate effectively in the world. This process is a prior mechanism of human functioning, but it has been very little studied until recent time. Only few decades ago the scientists linked self-recognition with the operation of the brain. The study of the patients with split-brain can shed light on the problem of self-recognition.

Split-brain operation over humans gave new data in question of double consciousness. Empirical data received during experiments didn't let drop one definite conclusion and gave birth to multiple theories about the split mind. Some specialists state that all humans have one mind and patients with split-brain have two ones. Roland Puccetti became famous with his statement that all people who have separated hemispheres have two brains. Dennett rejects this thesis and gives his alternative interpretation. He developed his own "multiple drafts" model of consciousness.

Thomas Nagel also did not agree with Rolan Puccetti. He stated that the number of minds, in this case, can exceed two. He stated that "there is no whole number of individual minds that these patients can be said to have" and that "these very unusual cases should cause us to be skeptical about the concept of a single subject of consciousness as it applies to ourselves". (Nagel, 1970, 409) After careful study of the information on the issue, I agree with the statement that humans have one mind and one consciousness, but

it can split in some extraordinary situation. I do not agree that Puccetti's theory of two minds. In this case study, I will present main assumptions of Puccetti's theory and than arguments, which confront it.

Split Brain Experiments

Split brain experiments take place beginning from the 19th century. These experiments are very important because they give a possibility to find out how our two hemispheres work and what each of them is responsible for. For example, split bran experiments have shown that " language center" of our brain must be situated in the left hemisphere. Another experiment has found out that the person can become dumb, lose the ability to talk, if there are lesions in two specific areas of the left hemisphere. An important conurbation to split brain experiments was made by Sperry in the 1960s.

As a result, he was awarded the Nobel Prize in Medicine in 1981. He carried out experiments on so-called " split brain" patients and was the first scientist who discovered the basic knowledge about the right and left hemispheres. He was the first to reveal the functional specialization of the brain hemispheres. Until the 1960s there was only one method to help people who suffered from a serious illness called epilepsy. This method lied in cutting off corpus collosum (connection) between the left and right hemisphere.

" Epilepsy is a kind of storm in the brain, which is caused by the excessive signaling of nerve cells, and in these patients, the brain storm was prevented from spreading to the other hemisphere when the corpus callosum was cut off" (Sperry, 142). After such kind of the operation, the person was able to have a normal life and only split brain experiments have shown that there

are some mental abnormalities in the patient's behavior. After the split brain operation, each hemisphere is able to work and to learn but the problem is that the hemispheres have lost their connection and so now they can't cooperate, they have no idea what the other hemisphere has learned. Of course, such operations usually led to abnormal behavior. Nowadays, thanks to a number of experiments in this sphere, it is possible to cut off only a small portion of corpus collosum, not the whole part.

So, now consequences of brain split operations aren't so harmful. All the information about hemispheres we possess nowadays comes out of the split brain experiments. Thanks to these experiments we know that the right and left hemispheres are specialized in different spheres. The left hemisphere is usually responsible for verbal and analytical tasks, while the right one takes care of creative tasks and space perception. The right hemisphere is responsible for imagination, it gives a possibility to create images.

It's involved when the person gives directions and helps to contribute emotional text to language.

Different theories of Split Mind

There are multiple reasons that cause the brain slit. Medical procedure called brain bisection can cause this split. Brain bisection is a procedure when the connections between two hemispheres are ruined. This procedure was developed in the 60s of the last century and was used to treat difficult cases of epilepsy.

Sometimes natural lesions to the brain become the reason of the brain split. The severing of the connections between two hemispheres leads to the so-

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called disconnection syndrome. The results of such a procedure Puccetti described as the following: a right-handed patient easily names objects palpated out of sight in the right hand (since almost all of the sensory fibres of that hand project to the right, mute hemisphere, and there is no commissural transfer of the information to the speech hemisphere). Yet the “same” patient knows what is being palpated in the left hand, for upon command he or she can retrieve it from an array of objects behind a screen with that left hand (though not with the right hand, in the absence of interhemispheric commissural transfer). (Puccetti, 140)Puccetti believes that functions of both hemispheres are not fixed and left hemisphere can develop the qualities of the right one and vice versa.

Usually left hemisphere is responsible for language and interaction. Most of the researchers also believe that consciousness is also developed in this hemisphere. At the same time people, whose left hemisphere was removed developed language and consciousness in the right hemisphere. At the same time older people who come through the same procedure do not develop these skills. These facts serve as a proof for Dennett’s theory.

Roland Puccetti states that split-brain patients have double consciousness. Dennett rejects this thesis and give his alternative interpretation. He developed his own “ multiple drafts” model of consciousness. Dennett denies the Cartesian Theater of the Mind. According to this theory all the perceptions come to the consciousness all together and in this way form a single mind.

His theory of “ Multiple Drafts” assumes that his perceptions are not joined together and pass through the brain separately in the form of drafts or possibilities. The mind derives from the combination of these drafts.

(Dennett, 1991)The data about the split brain causing double consciousness he explains by the damage of the links between left and right hemispheres the patients get during the treatment (Dennett, 1991). During the treatment of some mental diseases, epilepsy, for example, the hemispheres lose wires of interaction between them and this finally causes the split. “ There are more than a few anecdotes about such ingenious jury-rigs invented on the spot by patients with split brains, but we should treat them with caution. They might be what they appear to be: cases exhibiting the deftness with which the brain can discover and implement autostimulatory strategies to improve its internal communications in the absence of the ‘ desired’ wiring.

But they might also be the unwittingly embroidered fantasies of researchers hoping for just such evidence.”(Dennett, 198) Dennett states that the center of consciousness found in the right hemisphere of some patients appears there only after the operations when ties between two hemispheres are damaged and that disconnected right hemisphere possesses nothing but a transitory consciousness. At the same time he states that the conciseness, which appears in the right hemisphere, is identical to the consciousness of the left one. (Dennett, 1991) In this case both hemispheres must have a transitional consciousness but the experiments show that they don’t (Gazzaniga, 1970; Bogen, 1985) Dennett rejects double consciousness theory, as he states “ not because ‘ consciousness is only in the left hemisphere’ and not because it couldn’t be the case that someone found

himself or herself in such a pickle, but simply because it isn't the case that commissurotomy leaves in its wake organizations both distinct and robust enough to support such a separate self (Dennett, 426). Dennett rejects the mind to be a countable thing and calls it a mere abstraction. From the other side there are cases, when people survived having only one left hemisphere functioning.

If to follow Dennett's theory, these people wouldn't have mind at all, but research show that they do have mind. In addition, Dennett's theory of "Multiple Drafts" can not give reasonable explanations of different kinds of dissociation of consciousness. This happens because the theory doesn't make any distinction between real and apparent streams of consciousness. There is even more vivid example, which illustrates the brain split, which results the split of consciousness. One man after the procedure of bisection tried to hug and to beat his wife at the same time. (Puccetti, 140)The question about the impact of the split brain on the conciseness occupies the minds of many scientists, researchers, philosophers.

William Sperry believes that " Presence of two minds in one body, as it were, is manifested in a large number and variety of test responses." (Sperry, 730) Puccetti insisted on the existence of two different streams of consciousness presenting two different minds. He stated that " individuals like ourselves never display such bifurcated behavior, there is no doubt we are dealing here with two independent streams of consciousness or minds." (Puccetti, 142)Famous philosopher Thomas Nagel became one of few philosophers, who got interested in the problem of split brain and consciousness. He uses philosophical approach to explain the cases of divided mind.

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He presents five different explanations of this phenomenon. In his first assumption he states that usually left hemisphere is responsible for our mind and consciousness. The right hemisphere is nonverbal and is not responsible for conscious mental processes. According to the next assumption Nagel states that all people have only one mind and this mind is associated with left hemisphere. His third assumption states that people have two minds but one of them, situated in the right hemisphere, is nonverbal and thus we can hear only one of them.

The fourth assumption proposed by Nagel describes one human mind, which exists as a combination of two hemispheres. The fifth assumption expressed by Nagel is based on the idea that people have one mind which functions in normal situations, while two hemispheres function in parallel. In some extraordinary situation the second mind comes in action and than we can face the situation of two minds. After viewing carefully all the assumption Nagel finally states that he can not lean to any of them. As he stated, “ My conclusion will be that the ordinary conception of a single, countable mind cannot be applied...” and that “ there is no number of such minds that they [split-brain patients] possess, though they certainly engage in mental activity.

” (Nagel, 155)

Conclusion

The problems of split brain and split mind is of current importance nowadays. Only thanks to split brain experiments now we can find out the functional specialization of two hemispheres and the connection between them. Split

brain experiments give us an idea of connection between split brain and split mind. There are different point of view on this problem. Puccetti, for example, states that all people have two minds.

I can't agree with his theory, I'm closer to the position of another group of scientists. Thomas Nagel, for example, states that different persons have different numbers of minds. Dennett presents his own "multiple drafts" theory of consciousness. Split brain operations can have different consequences. Before 1960s in the process of operations the connection between two hemispheres was cut off and it was the result of split mind, as the matter of the fact.

Nowadays with the help of new methods and new technologies only a small portion of corpus collosum is cut off and the split brain doesn't necessarily lead to split mind. Bibliography Dennett, D. C (1991) Consciousness Explained. Boston: Little, Brown. De Sousa, R.

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