

Optogenetics: A New Technology To Control The Human Brain. Will People Prevent the Rise of A “New Totality”?

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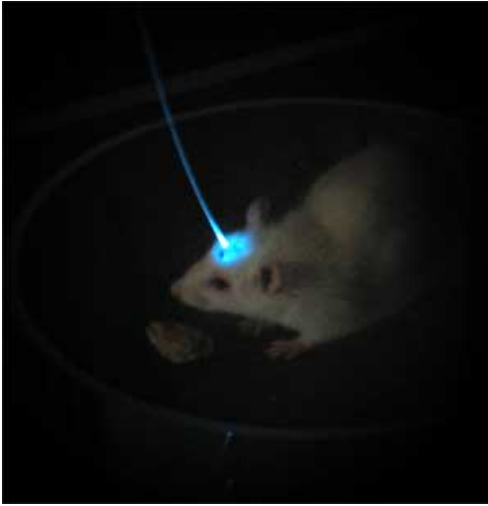
The USA and the European Union invested in the past years billions of dollars and euros in brain research. Perfect maps of the brain were developed thanks to this research, including the areas of the brain that control different body organ activity, and higher brain functions such as where speech and thought are taking place. The information inside of the brain is transferred by frequency and number of nervous impulses. Today it is well known which frequencies correspond to those different activities in the brain. So the brain, just like computers, functions in a digital way. It is now so much easier to understand or control the brain with computers.

Doctor Sarah Lisanby from the National Institute of Mental Health in Maryland can use those brain maps to make different parts of the human body move by the magnetic stimulation of its brain even against his own will (see [this](#)). To do this, she is using a magnetic coil which pulsates a magnetic field in a specific frequency, corresponding to the frequency of the activity of neurons in the brain spot, which controls the movements of a specific body part. The magnetic field can produce electric currents in the neurons, responsible for those movements, across the skull.

The brain research financed by the USA and the European Union produced a discovery of the new technology of the control of the activity of the human brain. It is called optogenetics and it is using light. To make this work, it is necessary to introduce special proteins into neurons in the brain by means of special viruses.

Then the light, blinking in the brain in a specific frequency will produce the same neuronal activity as normal neuronal activity in the brain would produce.

Mice which are used to experiment with this new technology, can be made to run in circles (see [this](#)) or their psyche can be manipulated. Scientists managed to produce false memories of fear in the mice and then delete them, and as well they were able to turn their positive emotional memories into a negative ones and vice versa (see [this](#) and [this](#)).



At the University in Berkeley this technology is now being perfected still with the use of mice. The research, that should follow, should make it possible to edit human sensations, paste images people have never seen into their brains, or insert non-existent scents into their memories. To achieve this the scientists are using computer-generated holographic projections into the brains of mice and in this way activate or suppress ultimately thousands of neurons at once in frequencies simulating the neurons natural activities. They believe they will manage to read the brain activity “online” and decide about its reactions, which would help people with neurological damages caused by degenerative diseases or injuries. (See [this](#)) If the scientists would not have to make neurons to react to light and implant a source of light into the brain, they would work on a method on how to control the human brain and human behavior at a distance.

But in the 30’s of the past century research already began on the effects of microwaves inside of the human brain. In 1974 the experiment was published, where pronounced numbers from 1 to 9 were transmitted into the brain of a subject of experiment by means of pulsed microwaves and he could understand them. In this experiment the pronounced number must have been converted into the microwave pulses in frequencies corresponding to the normal nervous activity during the perception of words (see [this](#), [this](#)). The assertion that at present time it is impossible to control the activity of the human nervous system at a distance is made questionable in a principal way by this experiment.

Thanks to the knowledge of specific locations of different centers in the brain and frequencies of the neuronal activity in them the teams of physicians are today capable to help many people, who were in the past, for different reasons, unable to participate in a normal life. Today there exist prosthesis, which are controlled directly from the brain centers that normally control the movement of the limbs (see [this](#)) and enable people, who lost them, to use the prosthesis in a way similar to the way normal people use their limbs. People, who were paralyzed and completely separated from communication with the world, have been reconnected to the world by this modern neuroscience. In 2006 scientists placed into the brain of a completely paralyzed man an implant, which transferred the activity of his brain into different devices and enabled him to open his e-mail box, control his TV set and robotic arm. Other paralyzed people were able to search on the Internet, play computer games, and drive their electrical wheelchairs (see [this](#)) .

The computers were taught to understand the neuronal activity so much that nowadays they are capable of using the activity of our brain to reproduce our perceptions. Canadian

scientists demonstrated an experiment, where the computer could interpret the electroencephalographical recordings from the brain to produce a painting of a face that the subject of experiment was perceiving (see [this](#)).

In the opposite way the data, processed by the computer in the way that will make them intelligible for the nervous system, can be transmitted into the brain and there produce a new reality. When an implant is placed in the brain and connected to a camera, placed on spectacles, for people whose photoreceptors in their retina stopped working, the sight is at least partially restored. In this case the camera on the spectacles is transmitting into the implant light frequencies and the implant re-transmits them in frequencies which „understand“ the neurons processing the visual perceptions (see [this](#)).

Those discoveries are already making their way into the industry. The Japanese car maker Nissan was at the beginning of this year testing a cap with electrodes reading the brain activity and communicating it to the car driving system. In this way the car is capable to start breaking by 0.2 to 0.5 second faster than the driver could be able to do it. (See [this](#) and [this](#))

In 2014 some Chinese corporations ordered their employees to wear caps, recording their brain activity and transmitting it to the offices of their bosses. From the data, sent to their offices, the bosses can find out about the emotional state of their employees - if they became angry, began to feel fear or became sad. With drivers of high speed trains the caps verify whether they are concentrated and not falling asleep. The information collected by bosses in this way resulted in some employees being sent home for one day to relax (see [this](#)).

Scientists believe that they will manage to increase the distance between brains and devices, which are collecting the activity of the brain or controlling it. In 2013 Italian scientists used electrodes and internet to interconnect brains. In this way they realized extraneural communication between several couples of volunteers, when their brain frequencies synchronized their activities at large distances. In one experiment they made the hand of a distant volunteer press a key and in another one they made a person perceive light flashes, which were actually being perceived by someone else.

The scientists then speculated, that the same interconnection of two brains could be achieved by means of quantum entanglement. In this concept of quantum physics two systems may be non-locally connected and imitate their reactions at whatever distance. The authors said: „For example in the Generalized Quantum Theory [5,6], entanglement can be expected to occur if descriptions of the system that pertain to the whole system are complementary to descriptions of parts of the system. In this case the individual elements within the system which are described by variables complementary to the variable describing the whole system, are non-locally correlated.

Reasoning by analogy, we hypothesized the possibility of entangling two minds, and consequently two brains as complementary parts of a single system and studying their interactions at distance without any classical connections (see [this](#) and [this](#)).

This year the historian Yuval Noah Harari was invited to deliver a speech at the [World Economic Forum](#) in Davos. The editor of the British Daily Financial Times stressed, when introducing him, that it is not usual to invite a historian to speak to the world's most important economists and politicians. Yuval Noah Harari warned in his speech against the

rise of new totality, based on the access to the human brain. He said:

“Once we have algorithms that can understand you better than you understand yourself, they could predict my desires, manipulate my feelings and even make decisions on my behalf. And if we are not careful the outcome can be the rise of digital dictatorships. In the 21st century we may be enslaved under digital dictatorships”.

In a similar way a Stanford University researcher in neurology and Dolby Labs’ chief scientist Poppy Crum warned at the conference in Las Vegas:

“Your devices will know more about you than you will. I believe we need to think about how [this data] could be used”. (See [this](#))

In California scientists developed a device, which can register the brain waves and, using analysis, find among them consonants and vowels and in this way transform our thoughts to words. A paralyzed man could write in this way without using a keyboard and even, with the help of synthesizer, he could talk. At present time the accuracy of the device reached 90%. Scientists believe that within five years they will manage to develop a smart phone, to which their device could be connected. Naturally the device would also disclose secret thoughts of a paralyzed man or woman (See [this](#) and [this](#)).

As a matter of fact the Apple and Samsung companies have already developed prototypes of necessary electroencephalographical equipment and they expect that the direct connection with brains will gradually replace computer keyboards, touch screens, mice, and voice orders as well. (See [this](#))

In 2013 scientists in the USA could infer from the brain activity the political views of people and distinguish democrats from republicans and in 2016 scientists used transcranial magnetic stimulation to make subjects of experiment more positive towards criticism to their country, than the participants whose brains were unaffected. (See [this](#))

When people open their brains up to access to computers and smart phones, it will be no trouble for intelligence agencies to collect data from their brains and with no big trouble they will find as well the ways how to control and manipulate the activity of citizen’s brains in a way to make them fit the needs of governments.

In April 2017 the neuroethicist at the University of Basel Marcello Lenca and Roberto Andorno, a human rights lawyer at the University of Zurich, writing in the journal Life Sciences, Society and Policy, published the article “Toward new human rights in the age of neuroscience and neurotechnology” (See [this](#) and [this](#)) where they called for the creation of legislation which would protect human right to freedom and other human rights from the abuse of technologies opening access to the human brain. In the article they wrote that

“the mind is a kind of last refuge of personal freedom and self-determination” and “At present, no specific legal or technical safeguard protects brain data from being subject to the same data-mining and privacy intruding measures as other types of information”.

In their article they noted that access to the human brain also could be used for advertisement and that some companies like Google, Disney, CBS and Frito-Lay already use services of neuromarketing companies for measurements of customer preferences and impact of their advertisement on customers. Neuromarketing companies EmSense, Neurosense, MindLab International a Nielsen regularly use technics of nervous activity analysis to analyse and predict the customer's behavior and even to influence it.

Marcello Ienca and Roberto Andorno also drew attention to the fact that there are already lie detectors, based on analysis of nervous activity working with the accuracy of 90% and that their use could be in conflict with legal principles guaranteeing that the suspect is not obliged to testify against himself.

They did not omit to mention the fact that intelligence and military agencies as well are engaged in the brain research and that

“it has been reported that over the last decades violations of human rights might have taken place in experiments involving brain electrodes, LSD, hypnosis, the creation of Manchurian candidates, the implantation of false memories and induction of amnesia” and that “many of these experiments were conducted on unwitting civilians”, suggesting thus the danger that mind control experiments may be conducted on unwitting citizens of democratic states at present time.

However they did not mention the fact that pulsed microwaves could be used for remote control of the activity of human nervous system.

Apparently among legal experts the discussions on this subject are not new. Marcello Ienca and Roberto Andorno quote the conclusion of one of them: “the right and freedom to control one's own consciousness and electrochemical thought processes is the necessary substrate for just about every other freedom” (see [this](#)).

In the years 2016 and 2017 10 European organizations asked the European Commission to launch a work on legislation, which would ban the electromagnetic interference with the activity of human nervous system and brain (see [this](#)).

The European Commission did not produce any positive response to this request. There is no doubt that the longer the world governments will postpone their reaction to this threat to democracy, the closer they will be getting to the totalitarian system, based on the control of the brains of their citizens. The question is whether the citizens will defend themselves if they will not be told by the authorities, that their brain activity can be controlled by pulsed microwaves transmitted for example by cell phone systems (more information on this subject can be found [here](#) in the article “Psychoelectronic Threat to Democracy”). Evidently the governments know well, why they are suppressing this information in major media.

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