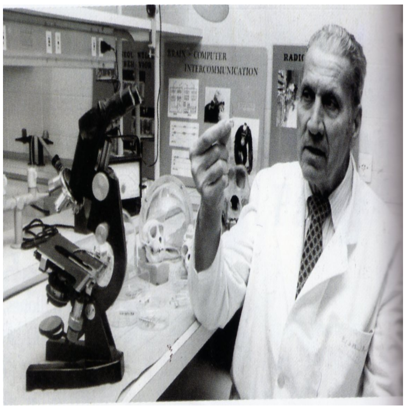

José Delgado, implants, and electromagnetic mind control: Stopping the furious Bull

Description

José Manuel Rodríguez Delgado (August 8, 1915 – September 15, 2011) was a Spanish professor of physiology at Yale University, famed for his research on mind control through electrical stimulation of the brain.


Delgrado used permanent brain implants to control behaviour. Later he utilised non-inversive methods.

- *José Manuel Rodríguez Delgado (1969). Physical Control of the Mind: Toward a Psychocivilized Society. Harper and Row. ISBN 978-0-06-090208-7.*
- *Delgado JM (1977–1978). "Instrumentation, working hypotheses, and clinical aspects of neurostimulation". Applied Neurophysiology.* ***40*** *(2–4): 88–110.*
- *Delgado, Jose M.; et al. Intracerebral Radio Stimulation and recording in Completely Free Patients, Journal of Nervous and Mental Disease, Vol 147(4), 1968, 329-340.*
- *Delgado, José M.R. (1964). Free Behavior and Brain Stimulation. International Review of Neurobiology. 6. pp. 349–449. doi:10.1016/S0074-7742(08)60773-4.*

Abstract - Free behaviour and brain stimulation (1964)

Of the methods used to investigate the neurophysiological basis of behavior, perhaps the most direct and dramatic is electrical stimulation of the brain. Direct stimulation of the brain is considered a crude method for the exploration of cerebral functions, and the understanding of the results is limited. The chapter describes methodology for cinemanalysis, telerecording, and telestimulation to study free behavior during brain stimulation. It also demonstrates that spontaneous activities are recorded, identified and quantified, allowing the systematic study of free and evoked behavior on both individual and social levels. The chapter also discusses the types and significance of behavior evoked by brain stimulation in unrestrained subjects and presents a theory of fragmental organization of behavior. Brain stimulation evokes (1) stereotyped tonic or phasic activity without any emotional disturbance, (2) driving activity to reach an objective with a motor performance adapted to the relations between subject and purpose, (3) changes in behavioral tuning that are detected in isolated animals because of the lack of manifestations, but may modify decisively the character of response to normal stimuli, (4) inhibition of spontaneous or evoked behavior, and (5) abnormal effects such as tremor or seizures.
www.sciencedirect.com/science/article/pii/S0074774208607734

Rodríguez Delgado's research interests centered on the use of electrical signals to evoke responses in the brain. His earliest work was with cats, but he later did experiments with monkeys and humans, including psychiatric patients.[3][4]

Much of Rodríguez Delgado's work was with an invention he called a stimoceiver, a radio which joined a stimulator of brain waves with a receiver which monitored E.E.G. waves and sent them back on separate radio channels. Some of these stimoceivers were as small as half-dollars. This allowed the subject of the experiment full freedom of movement while allowing the experimenter to control the experiment. This was a great improvement from his early equipment which included visual disturbance in those whose wires ran from the brain to bulky equipment that both recorded data and delivered the desired electrical charges to the brain. This early equipment, while not allowing for a free range of movement, was also the cause of infection in many subjects.[5]

The stimoceiver could be used to stimulate emotions and control behavior. According to Rodríguez Delgado, "Radio Stimulation of different points in the amygdala and hippocampus in the four patients produced a variety of effects, including pleasant sensations, elation, deep, thoughtful concentration, odd feelings, super relaxation, colored visions, and other responses." Rodríguez Delgado stated that "brain transmitters can remain in a person's head for life. The energy to activate the brain transmitter is transmitted by way of radio frequencies."[6]

Using the stimoceiver, Rodríguez Delgado found that he could not only elicit emotions, but he could also elicit specific physical reactions. These specific physical reactions, such as the movement of a limb or the clenching of a fist, were achieved when Rodríguez Delgado stimulated the motor cortex. A human whose implants were stimulated to produce a reaction were unable to resist the reaction and so one patient said "I guess, doctor, that your electricity is stronger than my will". Some consider one of Rodríguez Delgado's most promising finds is that of an area called the septum within the limbic region. This area, when stimulated by Rodríguez Delgado, produced feelings of strong euphoria. These euphoric feelings were sometimes strong enough to overcome physical pain and depression.[2]

Rodríguez Delgado created many inventions and was called a "technological wizard" by one of his Yale colleagues. Other than the stimoceiver, Rodríguez Delgado also created a "chemitrode" which was an implantable device that released controlled amounts of a drug into specific brain areas. Rodríguez Delgado also invented an early version of what is now a cardiac pacemaker.[2]

In Rhode Island, Rodríguez Delgado did some work at what is now a closed mental hospital. He chose patients who were “desperately ill patients whose disorders had resisted all previous treatments” and implanted electrodes in about 25 of them. Most of these patients were either schizophrenics or epileptics. To determine the best placement of electrodes within the human patients, Delgado initially looked to the work of Wilder Penfield, who studied epileptics’ brains in the 1930s, as well as earlier animal experiments, and studies of brain-damaged people.[2]

The most famous example of the stimoceiver in action occurred at a Córdoba bull breeding ranch. Rodríguez Delgado stepped into the ring with a bull which had had a stimoceiver implanted within its brain. The bull charged Delgado, who pressed a remote control button which caused the bull to stop its charge. Always one for theatrics, he taped this stunt and it can be seen today.[7] The region of the brain Rodríguez Delgado stimulated when he pressed the hand-held transmitter was the caudate nucleus. This region was chosen to be stimulated because the caudate nucleus is involved in controlling voluntary movements.[2] Rodríguez Delgado claimed that the stimulus caused the bull to lose its aggressive instinct.

Although the bull incident was widely mentioned in the popular media, Rodríguez Delgado believed that his experiment with a female chimpanzee named Paddy was more significant. Paddy was fitted with a stimoceiver linked to a computer that detected the brain signal called a spindle which was emitted by her part of the brain called the amygdala. When the spindle was recognized, the stimoceiver sent a signal to the central gray area of Paddy’s brain, producing an ‘aversive reaction’. In this case, the aversive reaction was an unpleasant or painful feeling. The result of the aversive reaction to the stimulus was a negative feedback to the brain.[2] Within hours her brain was producing fewer spindles as a result of the negative feedback.[8] As a result, Paddy became “quieter, less attentive and less motivated during behavioral testing”. Although Paddy’s reaction was not exactly ideal, Rodríguez Delgado hypothesized that the method used on Paddy could be used on others to stop panic attacks, seizures, and other disorders controlled by certain signals within the brain.[2] [9][10] Publication

José Rodríguez Delgado authored 134 scientific publications within two decades (1950-1970) on electrical stimulation on cats, monkeys and patients – psychotic and non-psychotic. In 1963, New York Times featured his experiments on their front page. Rodríguez Delgado had implanted a stimoceiver in the caudate nucleus of a fighting bull. He could stop the animal mid-way that would come running towards a waving red flag.[11]

He was invited to write his book Physical Control of the Mind: Toward a Psychocivilised Society as the forty-first volume in a series entitled World Perspectives edited by Ruth Nanda Anshen. In it Rodríguez Delgado has discussed how we have managed to tame and civilize our surrounding nature, arguing that now it was time to civilize our inner being. The book has been a centre of controversy since its release.[1] The tone of the book was challenging and the philosophical speculations went beyond the data. Its intent was to encourage less cruelty, and a more benevolent, happier, better man, however it clashed religious sentiments.

José Rodríguez Delgado continued to publish his research and philosophical ideas through articles and books for the next quarter century. He in all wrote over 500 articles and six books. His final book in 1989, was named Happiness and had 14 editions.

Delgado later learned he could duplicate the results he got with the stimoceiver without any implants at all, using only specific types of electromagnetic radiation interacting with the brain. He lamented he didn't have access to the technology when Franco was in power, as it would have allowed him to control the dictator at a distance.

Articles

- *John Horgan (October 2005). "The Forgotten Era of Brain Chips" (PDF). Scientific American.* ***293*** *(4): 66–73. doi:10.1038/scientificamerican1005-66.*
- *John Horgan (October 2004). "The Myth of Mind Control: Will anyone ever decode the human brain?". Discover.* ***25*** *(10). Archived from the original (Scholar search) on October 20, 2006.*
- *Maggie Scarf (1971-11-25). "Brain Researcher Jose Delgado Asks "What Kind of Humans Would We Like to Construct?"". New York Times.*
- *Delgado JM (1977–1978). "Instrumentation, working hypotheses, and clinical aspects of neurostimulation". Applied Neurophysiology.* ***40*** *(2–4): 88–110. doi:10.1159/000102436. PMID 101139.*

Books

- *Elliot S. Valenstein (1973). Brain Control: A Critical Examination of Brain Stimulation and Psychosurgery. John Wiley & Sons. ISBN 978-0-471-89784-2.*

Delgado, J. M. R.. (1970). SCIENCE AND HUMAN VALUES. Zygon®

Plain numerical DOI: 10.1111/j.1467-9744.1970.tb01129.x
DOI URL
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"A brief study of the generic features of science and of man's patterns of behaviour shows that there is scope for the establishment of a science in the field of human values. an essential premise to the argument is that there can be an absolute form of contingence without absolute determination of the actual course of events, the law of nature providing alternative consequences depending on the subject's choice of action."

Blackwell, B.. (2012). Jose Manuel Rodriguez Delgado. Neuropsychopharmacology

Plain numerical DOI: 10.1038/npp.2012.160
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“Presents an obituary of jose manuel rodriguez delgado (1915-2011). jose enrolled in madrid medical school in 1933 to study both medicine and physiology. in 1936, the spanish civil war erupted, his mentor juan negri fled the country and jose joined the republican side as a medical corpsman. from 1942 to 1950, he began research in neurophysiology on selective brain ablation and electrical stimulation in animals, published 14 articles and won several prizes. in 1950, delgado won a scholarship to the yale university in the department of physiology under the direction of john fulton whose pioneer work on pre-frontal lobotomy in chimpanzees encouraged the portuguese psychiatrist egas moniz to perform the operation in schizophrenic patients, for which he received the noble prize in 1949. delgado positioned himself between growing disapproval of mutilating brain surgery and his own belief that electrical stimulation of specific brain areas was scientifically superior to oral administration of drugs whose effects were mitigated by liver metabolism, the blood-brain barrier, and uncertain distribution. in the last years of his life, jose and his wife returned to america and lived in san diego where he died unheralded. unjustly treated and harshly judged by segments of the public and his profession, jose delgado’s ground breaking research, benevolent philosophy, and memory deserve better recognition. his career trajectory may provide budding scientists with a cautionary note about the pitfalls of mingling science with philosophy. (psycinfo database record (c) 2016 apa, all rights reserved)”
Delgado-García, J. M.. (2000). Why move the eyes if we can move the head?. Brain Research Bulletin

Plain numerical DOI: 10.1016/S0361-9230(00)00281-1
DOI URL
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“To see while moving is a very basic and integrative sensorimotor function in vertebrates. to maintain visual acuity, the oculomotor system provides efficient compensatory eye movements for head and visual field displacements. other types of eye movement allow the selection of new visual targets and binocular vision and stereopsis. motor and premotor neuronal circuits involved in the genesis and control of eye movements are briefly described. the peculiar properties and robust biomechanics of the oculomotor system have allowed it to survive almost unchanged through vertebrate evolution. (c) 2000 elsevier science inc.”
Delgado-García, J. M.. (2001). Estructura y función del cerebelo. Revista de Neurologia

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“INTRODUCTION the cerebellum is a neural structure, of a crystalline like organization, present in all vertebrates. its progressive growth from fishes to mammals, and particularly in primates, takes place following the repetition of a primitive cellular plan and connectivity. development the cerebellum is organized in folia located one behind the other in the rostrocaudal axis, and placed transversally on the brain stem. the cerebellar cortex has five types of neuron: purkinje, stellate, basket, golgi and granule cells. apart from granule cells, the other cell types are inhibitory in nature. afferent fibers to the cerebellar cortex are of two types (mossy and climbing) and carry information from somatosensory, vestibular, acoustic and visual origins, as well as from the cerebral cortex and other brain stem and spinal motor centers. the only neural output from the cerebellar cortex is represented by purkinje axons

that synapse on the underlying deep nuclei. cerebellar nuclei send their axons towards many brain stem centers and, by thalamic relay nuclei, act on different cortical areas. functionally, the cerebellum seems to be organized in small modules, similar in structure, but different in the origin and end of their afferent and efferent fibers. the cerebellum is involved in the coordination or integration of motor and cognitive processes. conclusion although cerebellar lesion does not produce severe motor paralysis, loss of sensory inputs or definite deficits in cognitive functions, its certainly affects motor performance and specific perceptive and cognitive phenomena."
Wilder, J.. (2018). Physical Control of the Mind. Toward a Psychocivilized Society. American Journal of Psychotherapy

Plain numerical DOI: 10.1176/appi.psychotherapy.1971.25.3.485
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"Http://en.wikipedia.org/wiki/jos%c3%a9_manuel_rodriguez_delgado josé manuel rodriguez delgado from wikipedia, the free encyclopedia jump to: navigation, search 'jose delgado' redirects here. for the comic book character, see gangbuster. text document with red question mark.svg tthis article includes a list of references, related reading or external links, but its sources remain unclear because it lacks inline citations. please improve this article by introducing more precise citations where appropriate. (may 2010) dr. josé manuel rodriguez delgado (born august 8, 1915) is a spanish professor of physiology at yale university, famed for his research into mind control through electrical stimulation of regions in the brain. contents [hide] * 1 biography * 2 research * 3 references * 4 further reading * 5 external links [edit] biography delgado was born in ronda, spain in 1915. he received a doctor of medicine degree from the university of madrid just before the outbreak of the spanish civil war, in which he served as a medical corpsman on the republican side. after the war he had to repeat his m.d. degree, and then took a ph.d. at the cajal institute in madrid. "
Molaee-Ardekani, B., Márquez-Ruiz, J., Merlet, I., Leal-Campanario, R., Gruart, A., Sánchez-Campusano, R., … Wendling, F.. (2013). Effects of transcranial Direct Current Stimulation (tDCS) on cortical activity: A computational modeling study. Brain Stimulation

Plain numerical DOI: 10.1016/j.brs.2011.12.006
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"Although it is well-admitted that transcranial direct current stimulation (tdcs) allows for interacting with brain endogenous rhythms, the exact mechanisms by which externally-applied fields modulate the activity of neurons remain elusive. in this study a novel computational model (a neural mass model including subpopulations of pyramidal cells and inhibitory interneurons mediating synaptic currents with either slow or fast kinetics) of the cerebral cortex was elaborated to investigate the local effects of tdcs on neuronal populations based on an in-vivo experimental study. model parameters were adjusted to reproduce evoked potentials (eps) recorded from the somatosensory cortex of the rabbit in response to air-puffs applied on the whiskers. eps were simulated under control condition (no tdcs) as well as under anodal and cathodal tdcs fields. results first revealed that a feed-forward inhibition mechanism must be included in the model for accurate simulation of actual eps (peaks and latencies). interestingly, results revealed that externally-applied fields are also likely to affect interneurons. indeed, when interneurons get polarized then the characteristics of simulated eps become closer to those of real eps. in particular, under anodal tdcs condition, more realistic eps could be obtained when pyramidal cells were depolarized and, simultaneously, slow (resp. fast) interneurons became de- (resp. hyper-) polarized. geometrical characteristics of interneurons might provide some explanations for this effect. © 2013 elsevier inc. all rights reserved."

Delgado, J. M. R.. (1964). Free Behavior and Brain Stimulation. International Review of Neurobiology

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"Of the methods used to investigate the neurophysiological basis of behavior, perhaps the most direct and dramatic is electrical stimulation of the brain. direct stimulation of the brain is considered a crude method for the exploration of cerebral functions, and the understanding of the results is limited. the chapter describes methodology for cinemanalysis, telerecording, and telestimulation to study free behavior during brain stimulation. it also demonstrates that spontaneous activities are recorded, identified and quantified, allowing the systematic study of free and evoked behavior on both individual and social levels. the chapter also discusses the types and significance of behavior evoked by brain stimulation in unrestrained subjects and presents a theory of fragmental organization of behavior. brain stimulation evokes (1) stereotyped tonic or phasic activity without any emotional disturbance, (2) driving activity to reach an objective with a motor performance adapted to the relations between subject and purpose, (3) changes in behavioral tuning that are detected in isolated animals because of the lack of manifestations, but may modify decisively the character of response to normal stimuli, (4) inhibition of spontaneous or evoked behavior, and (5) abnormal effects such as tremor or seizures."

Delgado, J. M. R., Hamlin, H., & Chapman, W. P.. (1952). Technique of Intracranial Electrode Implacement for Recording and Stimulation and its Possible Therapeutic Value in Psychotic Patients. Stereotactic and Functional Neurosurgery

Plain numerical DOI: 10.1159/000105792
DOI URL
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"THe method for the permanent placement of multiple lead electrodes in the brain of animals was developed by one of us four years ago. during this time, its use in the conscious cat and monkey has revealed that motor effects and changes in behavior can be elicited by electrical stimulation of various parts of the brain; the placement of the electrode has not been associated with infection and during several months time has caused only slight gliosis formation about the needle electrode. with this experience in animals and in the hope that it might be helpful in establishing a more physiological basis for psychosurgical procedures, we have modified this technique for use in psychotic patients."

Delgado-García, J. M., & Gruart, A.. (2005). Firing activities of identified posterior interpositus nucleus neurons during associative learning in behaving cats

. Brain Research Reviews

Plain numerical DOI: 10.1016/j.brainresrev.2004.10.006
DOI URL
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“On the basis of stimulation and permanent or transient lesions of putatively involved structures, and using transgenic mice with defective functional circuits, it has been proposed that cerebellar cortex and/or nuclei could be the sites where classically conditioned nictitating membrane/eyelid responses are acquired and stored. here, we review recent information regarding the electrical activities of deep cerebellar nuclei neurons recorded during the performance of reflex and acquired eyeblinks. in particular, the rostral pole of the dorsolateral region of the posterior interpositus nucleus contains neurons significantly related to reflexively evoked and classically conditioned eyelid responses. thus, type a interpositus neurons increase their discharge rate during eyelid movements, modulating it depending upon eyelid motorics. in contrast, type b neurons decrease their firing, even to a stop, during the same eyelid responses. however, as these changes in firing start after the onset of eyelid conditioned responses (crs), and because they do not seem to encode eyelid position and velocity during the cr, the interpositus nucleus cannot be conclusively considered the site where eyelid learned responses are generated and stored. additional microstimulation and pharmacological blockage of the recorded sites support the suggestion that posterior interpositus neurons contribute to the enhancement of crs. moreover, interpositus neurons probably contribute to the proper damping of newly acquired eyelid responses. the contributing role of other neuronal centers and circuits related to the eyelid motor system are also discussed. © 2004 elsevier b.v. all rights reserved.”
Márquez-Ruiz, J., Ammann, C., Leal-Campanario, R., Ruffini, G., Gruart, A., & Delgado-García, J. M.. (2016). Synthetic tactile perception induced by transcranial alternating-current stimulation can substitute for natural sensory stimulus in behaving rabbits. Scientific Reports

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“The use of brain-derived signals for controlling external devices has long attracted the attention from neuroscientists and engineers during last decades. although much effort has been dedicated to establishing effective brain-to-computer communication, computer-to-brain communication feedback for closing the loop” is now becoming a major research theme. while intracortical microstimulation of the sensory cortex has already been successfully used for this purpose, its future application in humans partly relies on the use of non-invasive brain stimulation technologies. in the present study, we explore the potential use of transcranial alternating-current stimulation (tacs) for synthetic tactile perception in alert behaving animals. more specifically, we determined the effects of tacs on sensory local field potentials (lfps) and motor output and tested its capability for inducing tactile perception using classical eyeblink conditioning in the behaving animal. we demonstrated that tacs of the primary somatosensory cortex vibrissa area could indeed substitute natural stimuli during training in the

associative learning paradigm."
Category

1. Cognitive science
2. General
3. History
4. Neuropolitics
5. Psychopolitics
6. Social psychology
7. Sociology

Tags

1. behaviour control
2. brain signals
3. brain stimulation
4. brain-computer interface
5. brain-computerinteraction
6. caudate nucleus
7. radio
8. remote control of behaviour
9. stimoreceiver

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