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SOME HISTORICAL NOTES AND A BRIEF SUMMARY OF THE
EXPERIMENTAL METHOD AND FINDINGS OF
FERDINANDO CAZZAMALLI

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From time to time research will appear in journals and then it will be buried for a number of years before it is revived. Sometimes it reappears when the times are ripe for its reception. Often these buried pieces of research are so completely unconventional that they cannot fit into the existing scientific framework. This is also the general problem of articles appearing in foreign journals; they remain buried as far as other nationalities or cultures are concerned.

The purpose of this paper is to present briefly a summary of some of Ferdinando Cazzamalli's work and this will include a brief description of his methodology and some of his findings.

A. DESCRIPTION OF METHOD AND SUMMARY OF RESULTS

Ferdinando Cazzamalli (1, 2, 3, 4, 5) was a fellow at the neuropsychiatric clinic at the University of Rome. He attempted to record electrical activity of the human brain without the usual attachment of electrodes to the scalps of his subjects. He attempted this by using antennae placed some distance from the scalp, recording the changes as the subjects would go through certain kinds of mental activities. This work appeared as early as 1925 (1) and was continued for approximately 10 years.

Cazzamalli (4) used a leaden-sheeted room which functioned as a Faraday's cage. An oscillator was contained in this room, constructed according to Hartley's plan, and regulated on the wave length of about one meter (frequency of 300,000 kilocycles).

The detector antenna of the electromagnetic oscillations started from the copper spire of the oscillator and was supported by isolated small ebonite stubs, beginning about 70 centimeters above a couch upon which the subjects lay.

The oscillator, the amplifier, and the rectifier were reunited in a metal case. This metal case had a plate feeder and wire guard. A regulator

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consisting of a vibrant cord oscillograph was joined to a complex oscillator with a place for photographic registration on film which was set up in a dark room.

Cazzamalli enlisted the support of a noted engineer, Eugenio Gresetta, a radio technologist. They worked for 10 years and attempted to eliminate every cause of disturbance to the delicate functioning of the oscillators.

They selected subjects who were characterized by "intense psychosensuality." (These were subjects who were habitually disturbed by vivid

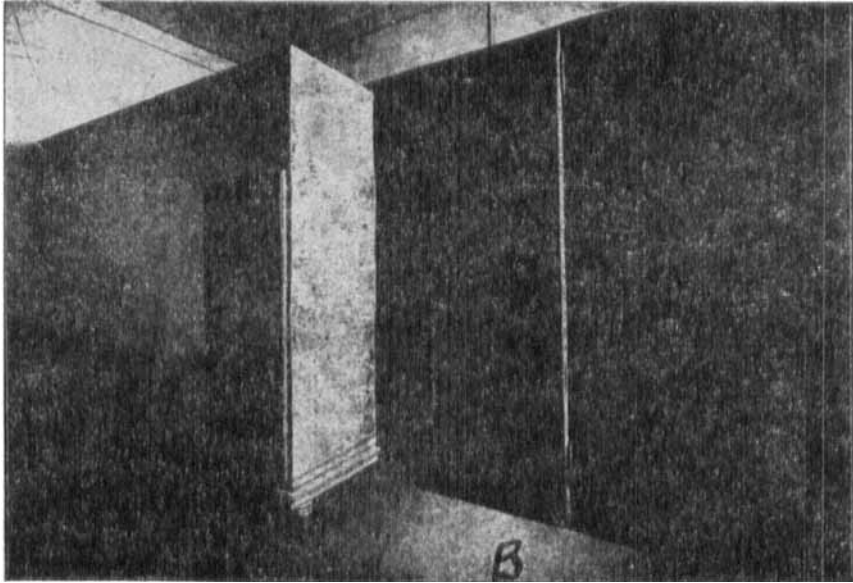


FIGURE 1

EXTERIORS OF THE TWO ROOMS; *A* IS THE ISOLATED ROOM, OR EXPERIMENTAL ROOM;
B IS THE RECORDING ROOM

dreams and who recalled people and happenings vividly.) The subjects were individuals inclined to reveries and those endowed with a capacity to create artistically, such as painters and musicians. There were also subjects who showed evidence of having hallucinations.

The subject was instructed to lie on the couch with his eyes closed, and to put himself into a "mentally passive state." The room was illuminated with red light. The oscillator and the film apparatus were set in operation. The subject remained in a passive state for several minutes. He was then instructed to think of people or activities, particularly those of an intense

sort. After a brief instant, an abrupt change on the oscillator was determined; these changes were registered on the film. These recordings varied with the degree of stabilization of the oscillator, the velocity of the unrolling of the film, etc. Cazzamalli compares this with the psychogalvanic reflex, and used the term "cerebropsychoradiant reflex" for the phenomena observed.

In Figure 1 are shown the exteriors of the two rooms; A is the isolated room, or experimental room, and B is the recording room (4, p. 46).

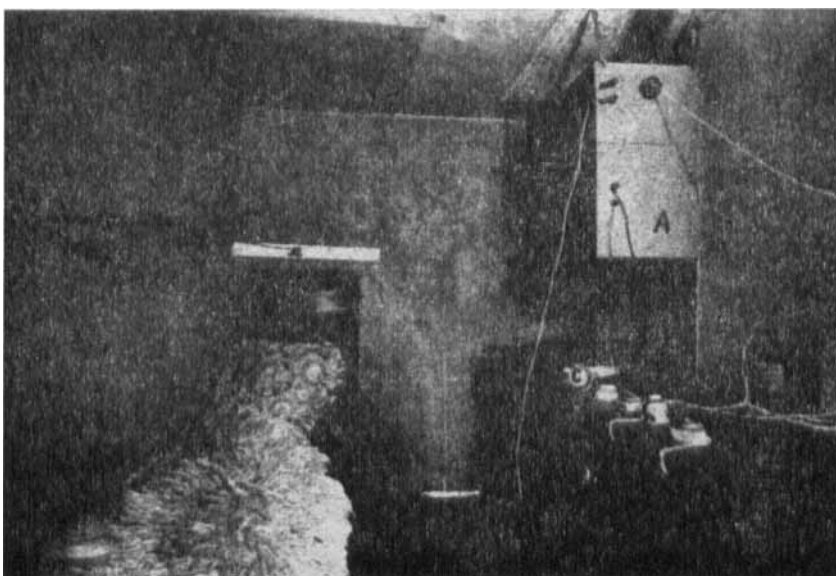


FIGURE 2

INSIDE OF THE ISOLATED ROOM

A is the complex oscillator, closed in a blinded hood which also contains the plate feeder and wire guard; *B* is the detector antenna; *D*, *E*, *F*, *G*, *H* are switches for starting and stopping the film; *L* and *I* are feeders.

In Figure 2 is shown the inside of the isolated room; *A* is the complex oscillator, closed in a blinded hood which also contains the plate feeder and wire guard; *B* is the detector antenna; *D*, *E*, *F*, *G*, and *H* are switches for starting and stopping the film; *L* and *I* are feeders (4, p. 47).

Figure 3 shows the interior of the dark room; *a* is the vibrant cord oscillograph; *b* is the luminous source; *c*, the concentration lens of the small luminous bundle; *d*, the black case which contains the film in development;

e, small windows which, when lowered, leave the film open for the impression of the luminous point (4, p. 48).

Figure 4 *SA* shows the passive state of a subject interrupted by the invitation to think of a recent familiar painful scene. The sketch reveals positive action (4, p. 51).

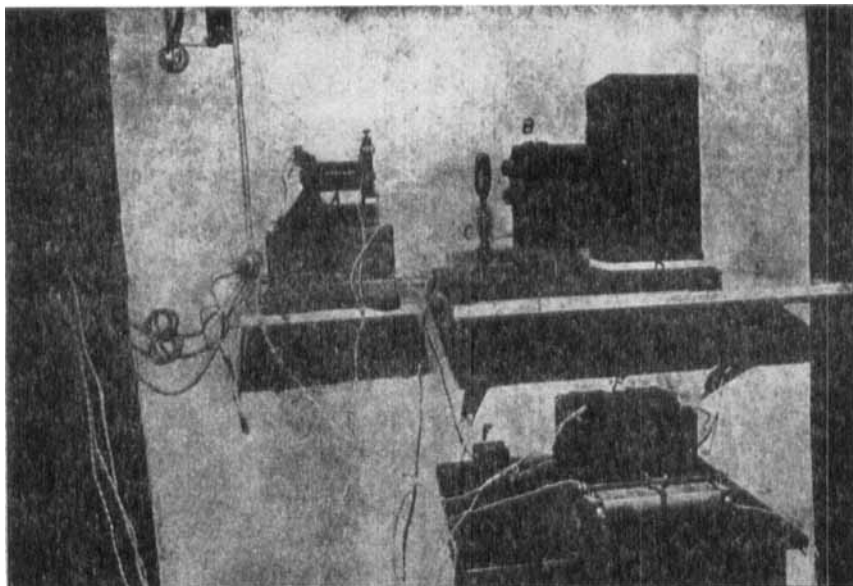


FIGURE 3

INTERIOR OF THE DARK ROOM; *a* IS THE VIBRANT CORD OSCILLOGRAPH; *b* IS THE LUMINOUS SOURCE; *c*, THE CONCENTRATION LENS OF THE SMALL LUMINOUS BUNDLE; *d*, THE BLACK CASE WHICH CONTAINS THE FILM IN DEVELOPMENT; *e*, SMALL WINDOWS WHICH, WHEN LOWERED LEAVE THE FILM OPEN FOR THE IMPRESSION OF THE LUMINOUS POINT

Figure 4 *NC* shows the subject's mental inertia broken by his being asked to think of his small sons forced away from their mother (4, p. 51).

In Figure 4 *BL* are shown recordings of a painter. He was also an Alpine mountaineer who participated in the climbing of the Andes with the Italian excursion. His passive state was interrupted by the invitation to recall the part of the Tronador ascent in which occurred the dramatic hunt for the bodies of perished Alpine mountaineers.

Figure 5 *BA* shows the recordings of a railroad man whose mental inertia is broken by the invitation to think of a person who affectively disturbs him (4, p. 52).

Figure 5 *MA* shows recordings of a subject whose psychical inertia is disturbed by the suggested vision of a fire in his own home (4, p. 53).

The following quotations in French are presented to further clarify some of the problems and methods that Cazzamalli dealt with.

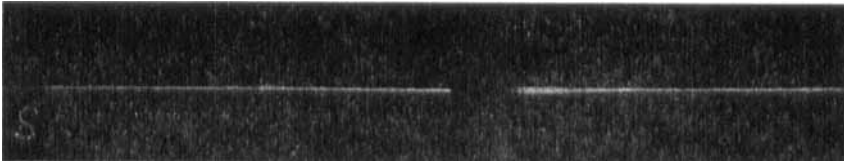
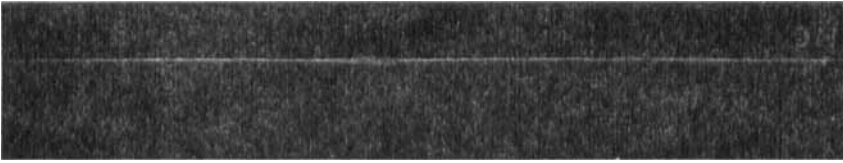
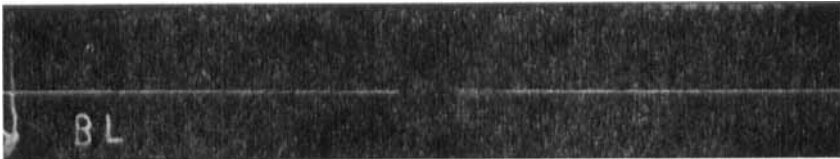


Figure 4 *SA* shows the passive state of a subject interrupted by the invitation to think of a recent familiar painful scene. The sketch reveals positive action.



NC shows the subject's mental inertia broken by his being asked to think of his small sons forced away from their mother.



BL shows recordings of a painter. His passive state was interrupted by the invitation to recall the part of the Tronador ascent in which occurred the hunt for the bodies of perished Alpine mountaineers.

FIGURE 4

He stated (5, p. 116-120):

Pour être à l'abri des ondes électromagnétiques qui sillonnent l'éther, de toutes part, j'utilise une chambre métallique isolante, formant une véritable Cage de Faraday. . . .

Cette chambre isolante qui mesure 2 m. 65 de longueur, 1 m. 65 de largeur, et 2 mètres de hauteur, est constituée par un châssis en bois de forme parallélépipédique, recouvert sur toutes ses faces par des feuilles de tôle plombée de 1 mm. d'épaisseur et soudées entre elles. Elles reposent sur un plancher de sapin isolé du parquet du local par des blocs de porcelaine. On peut à volonté mettre cette chambre « à la terre » ou l'isoler électriquement.

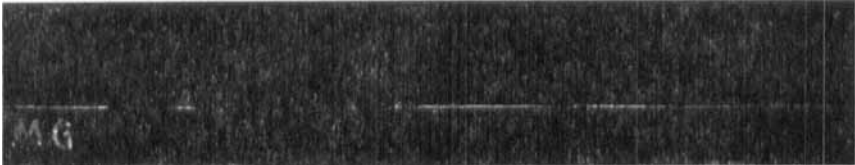
Faisant suite à la chambre isolante et s'y rattachant extérieurement au moyen d'un châssis en bois, se trouve la chambre noire. . . .

Dans la chambre isolante est installée une chaise longue pour le sujet, une table supportant les appareils, ainsi que les accumulateurs, d'alimentation, une autre petite table et trois chaises. Cette chambre est assez grande pour contenir le sujet ainsi que les expérimentateur, dont le nombre peut varier de un à trois.

Le sujet soumis aux expériences, est étendu à moitié ou complètement, sur la chaise longue. Quant à moi, assis sur une chaise voisine, à côté du sujet ou en face de lui, je puis le surveiller à mon aise, tout en contrôlant les appareils.



Figure 5 BA shows the recordings of a railroad man whose mental inertia is broken by the invitation to think of a person who affectively disturbs him.



MG shows recordings of a subject whose psychical inertia is broken by the suggested vision of a fire in his home.

FIGURE 5

De 70 à 50 centimètres au-dessus du corps du sujet et parallèlement à lui, s'étend l'antenne captatrice, constituée par un fil de cuivre attaché aux parois de la chambre isolante au moyen de petits cordons de soie; le point de départ de l'antenne se trouve sur la spire de cuivre ouverte de l'ensemble oscillatoire, à laquelle elle est reliée par une prise mobile à curseur, munie d'une vis de fixation.

La figure 2 donne une vue partielle de l'intérieur de la chambre isolante montrant la chaise longue, une des chaises et la table d'expériences où se trouve l'ensemble oscillatoire à lampes triodes pour ondes ultra courtes.

A la table de manipulation aboutissent toutes les commandes servant à la mise en marche, aussi bien de l'oscillateur que des appareils d'enregistrement renformés dans la chambre noire.

. . . . (huitième oscillateur), avec lequel furent exécutés les expériences psychobiophysiques, que j'exposerai plus loin, est établi d'après le schéma de Hartley. Il est formé d'un ensemble oscillatoire à lampes

triodes pour des fréquences pouvant aller de 60,000 à 400,000 K. cycles, c'est-à-dire, pour les ondes comprises entre Om. 70 et 5 mètres environ.

Cet ensemble oscillatoire est également capable de détectant les oscillations électriques comprises dans cette gamme de longueurs d'ondes; et, dans ce but, il est convenablement relié, par accouplement direct, avec le système aérien, c'est-à-dire, l'antenne captant les oscillations et plivée, comme je l'ai dit plus haut, au-dessus du sujet.

Les oscillations détectées par cet ensemble, sont ultérieurement amplifiées au moyen d'un amplificateur ordinaire à basse fréquence du type à transformateur; puis ces oscillations détectées et amplifiées arrivent à un appareil de rectification qui en permet l'enregistrement par un enregistreur spécial.

. . . . il permet la détection d'ondes entretenues pures et variables, dont la fréquence se trouve naturellement, à un moment donné, en interférence avec les ondes de l'appareil, le facon à provoquer des battements audibles.

. . . . est également sensible aux ondes amorties qui, comme on le sait, peuvent être miser évidence, même si elles ne sont pas en résonance parfaite avec celles engendrés par l'oscillateur.

Cet oscillateur est réglé de façon à osciller sur une onde d'environ un mètre, correspondant à une fréquence de 300,000 K. cycles.

L'oscillateur, l'amplificateur, et l'appareil de redressement, sont réunis de façon à former un ensemble unique stable, et blinde. . . .

Comme on le voit sur la figure 2, il est possible de régler aisément et avec précaution, à partir de la table de commande, le fonctionnement des appareils situés dans la chambre noire, les connexions étant faites par de petits cables sous plomb passant par deux trous à travers des douilles isolantes et faisant communiquer la chambre noire avec la chambre isolante. . . .

L'enregistreur comprend une oscillograph à corde vibrante, avec un dispositif d'enregistrement photographique sur film, dont les details sont nettement indiqués et dont le fonctionnement est commandé d'une façon précise de l'intérieur de la chambre isolante, comme on peut le voir. . . .

La mise au point de ces appareils délicats a été effectuée avec l'aide très précieuse de deux éminents techniciens: M. Gresutta, l'ingenieur spécialiste, bien connu et très renommé en T. S. F., et M. Ferdinand Roso, l'artif et habile préparateur du cabinet de physique de l'institut polytechnique, auxquels je suis heurx de renouveler mes bien vifs remerciements.

Cazzamalli further states (5, p. 124):

J'ai installé l'appareil de Murani dans la chambre noire contiguë, en introduisant des tubes de caoutchouc dans la chambre isolante pour en prélever l'air à envoyer à l'électroscope un certain nombre de fois—toujours égal et déterminé—en rapport de celui des épreuves de contrôle.

Nombreuses furent les épreuves d'analyse de l'état d'ionisation, de la chambre isolante; a savoir:

- (a) épreuves sur la vitesse de chute de la feuille d'or en une heure dans le milieu extérieur;
- (b) mêmes expériences à l'intérieur de la chambre isolante;
- (c) mêmes expériences à l'intérieur de la chambre isolante avec appareils en fonctionnement;
- (d) mêmes expériences avec sujets humains en état d'intertie psychique relative;
- (e) mêmes expériences avec sujets psychosensoriels actifs présentant les phénomènes typiques psychosensoriels, que relèvent les phénomènes électromagnétiques par l'intermédiaire du dispositif oscillateur.

In an article in Italian (4, p. 55), Cazzamalli discusses some of the theoretical implications of his findings.

Quale concetto fisico possiamo farci di tale irradiazione? Il fatto che esso sia rivelato da un complesso oscillatore a triodo per onde ultra corte, ci consente alcune ipotesi interpretative.

Secondo una prima ipotesi, potrebbe trattarsi di irradiazione dal soggetto di oscillazioni elettromagnetiche (smorzate) di caratteri transitorio; in tal caso come di una frustata nell'etere, cosicché l'oscillatore potrebbe funzionare per impulso anche per frequenze note volmente diverse da quella sulla quale è sintonizzato. Con una seconda ipotesi si potrebbe pensare ad una oscillazione permanente di lunghezza d'onda definita, ma non costante in ampiezza. Le continue variazioni di ampiezza verrebbero ad influenzare l'oscillatore, quando tali variazioni entrino nell'orbita della gamma acustica, per cui è stato costruito l'amplificatore di bassa frequenza.

Con una terza ipotesi, che siano irradiate oscillazioni di lunghezza d'onda variabile, e che, quando tale lunghezza d'onda passa per la fondamentale dell'oscillatore, dia luogo a registrazione. Una quarta ipotesi potrebbe riferirsi alla possibile coesistenza di entrambe le anzidette condizioni, cioè di possibili variazioni di frequenza ed insieme di possibili variazioni di ampiezza.

Vi sarebbe infine una quinta possibilità: che tali oscillazioni elettromagnetiche siano di frequenza multipla e quindi armonica di quella fondamentale dell'oscillatore. In tale caso la loro lunghezza d'onda potrebbe essere inferiore a quella dell'oscillatore, e quindi nell'orbita nelle onde quasi ottiche (dai 60-70 cmm.giù).

Resterebbe una ultima ipotesi, e cioè di una oscillazione locale cerebrale, che possa considerarsi come onda di supporto di altre radio-onde. Tale onda di supporto potrebbe essere una vibrazione costante X, elettromagnetica o no, e servire di supporto ad oscillazioni elettromagnetiche di qualsiasi lunghezza d'onda. Naturalmente queste ultime si identificerebbero sempre coi fenomeni elettromagnetici radianti dal soggetto e rivelati dall'oscillatore.

B. SUMMARY

The above discussion was an attempt to outline briefly some of the major methods and findings of Ferdinando Cazzamalli which were carried on at the University of Rome starting in 1925.

Cazzamalli placed antennae above the subjects' heads in order to measure electrical activity coming from the brain, as the subjects would go through various kinds of mental operations. This work was done for 10 years in collaboration with Eugenio Gresatta, a radio technologist.

Some sample recordings of changes were given for various types of mental actions. Cazzamalli compared this emission of electrical activity from the brain, to the psychogalvanic reflex and he termed the phenomenon he supposedly measured the "cerebropsychoradiant reflex."

In addition to the above summary the author presented some notes in the original French and Italian pertaining to Cazzamalli's apparatus, controls, and theoretical interpretation.

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