

HISTORICAL PERSPECTIVE

The 1907 Psychokinetic Experiments of Professor Filippo Bottazzi

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Abstract—If we define the Thomas Prejudice (Doubting Thomas) as the habit of trusting only your own sensory capacities, Professor Filippo Bottazzi was imbued with it when rumors of the wondrous psychokinetic (PK) performances of Eusapia Palladino reached his ear at the turn of the last century. Aiming to find out for himself, he persuaded distinguished professors at the Royal University of Naples to join him in a series of sessions held with Eusapia at the Institute of Physiology he directed. The outstanding data obtained in eight such sessions were masterfully described in a book Bottazzi published one century ago (1909). The main interest of these observations regards the instrumental recording of PK movements Eusapia learned to perform. Most notably, she succeeded in simultaneously pressing two electric keys, one with her natural arm, the other with her anomalous limb. These and related observations convinced Bottazzi that PK events required Eusapia to extend and operate an anomalous limb endowed with sensory and motor features comparable with those of her natural arms. Such anomalous limb was controlled by the same brain/mind that modulated her natural arms.

Keywords: psychokinesis (PK)—Eusapia Palladino—medium—physiological anomaly—mediumistic cabinet (MC)—mediumistic table (MT)

Introduction

Being an old friend of Bottazzi's grandson, I had a chance to read Bottazzi's book *Fenomeni Medianici* (1909) years ago, and more recently its reprinted edition (1996). The content and fluency of the text and the many figures describing instrumentally recorded PK data left a durable impression on me. People participating in Bottazzi's sessions were worthy of considerable trust. They were outstanding professors at the University of Naples who are still well-honored today. Their belief in the reality of PK phenomena cannot be marginalized.



Figure 1. A) Professor Filippo Bottazzi. B) Eusapia Palladino.

As nicely mentioned in the Introduction to his book, Bottazzi (Figure 1A and Box 1) was initially skeptical of or indifferent to reports of Eusapia's outstanding performances. His conversion took place when he read in national newspapers of Eusapia's feats at the Turin Institute of Physiology. Having decided to look at comparable events with his own eyes, he alerted several colleagues, contacted Eusapia (Figure 1B and Box 1) through a common friend, and succeeded in persuading her to participate in sessions held at his Institute.

It is appropriate to point out that essentially all Eusapia's anomalous phenomena described in Bottazzi's book (1909) had been previously observed in numerous sessions held in different European countries and in the United States (Aksakof, Schiaparelli, Du Prel, Brofferio, Gerosa, et al., 1893, Carrington, 1909, de Rochas, 1906, Courtier, 1908, Dingwall, 1962, Lodge, 1894). The results of these sessions, obtained under conditions that differed somewhat in scientific rigor, gave way to endless, often harsh discussions mainly dealing with the reality of phenomena often attributed to Eusapia's trickery and/or to participants' hallucinations. Only in some sessions were subjective descriptions supported by objective methods, largely photography. To my knowledge, Bottazzi's experiments were among the first to provide extensive instrumental verification of PK events in addition to subjective accounts. His results were also reported in a multi-part paper in English (Bottazzi, 1907).

Box 1. Biographical outlines.

Professor Filippo Bottazzi

Filippo Bottazzi was the most distinguished Italian physiologist of the first part of last century. Born in 1867 in a small, southern Italian town (Diso, Lecce), he obtained his M.D. degree in Rome, and held the chair of Physiology at the University of Naples from 1904 to 1938. His "theory of sarcoplasm" was highly esteemed for decades, and his 1898 two-volume *Chimica Fisiologica* (Bottazzi, 1898) was translated into German and generally considered for years to be the best treatise on Physiological Chemistry in the world (see Professor S. Lee's comments in *Nature* [Lee, 1899]). Sharing a keen interest in the history and methodology of science, Bottazzi wrote numerous studies on Leonardo da Vinci up to the eve of his death. He supported the validity of physico-chemical explanations in biological research but considered the human mind to be of a very different nature. He maintained that scientific prejudices were to be corrected by experimental results and theoretical acquisition, since scientific theories are open to change. In biology, he considered the comparative approach as both necessary and useful.

In 1923 he received a Laurea Honoris Causa at Edinburgh University. The first Italian school of Biochemistry was started through his initiative and interest. Bottazzi was a fellow of sixteen scientific Academies, national and international. He was rector of the University of Naples (1926–1927), member of the Consiglio Superiore Pubblica Istruzione (1926–1927), and president of the Comitato Nazionale Biologia (1937). In early 1940, colleagues and the Italian government proposed Bottazzi as the Italian candidate for the Nobel Prize in Medicine, but the Prize was suspended because of World War II, and a year later he died in his hometown.

Eusapia Palladino

Born in 1854 in the southern Italian town of Minervino Murge, Bari, in a family of poor farmers, Eusapia lost her mother soon after birth, and six years later her father was assassinated by brigands. As an orphan, she was sent to live with a well-to-do family in Naples, where people attempted to educate her, but with little success. Following their refusal to take further care of her, she managed to survive doing precarious jobs and with the help of other families. Later on she married a merchant of limited means. Throughout her life she remained an illiterate woman. Her paranormal faculties came out spontaneously at the age of 13–14, when she started to give occasional demonstrations to friends. From that time, she was led to believe that her mediumistic performances were supported and controlled by a spiritual guide, John King, whom she considered to be her (new) father. Eventually she became the object of considerable interest by Neapolitan spiritists who successfully called the attention of well-known scientists to her. As a result, Eusapia was frequently examined by neurologists, psychiatrists, and members of societies devoted to the study of abnormal psychic phenomena. Her capacities were studied in numerous sessions in Italy, France, England, and the USA. Twenty-two such sessions took place in the period 1891–1908 (Carrington, 1909). Often accused of fraud and of having been found in trickery several times, her response could be harsh indignation. Her striking personality and performances (Alvarado, 1993) also called the attention of European aristocracy, and Eusapia was often invited to princely mansions, where she was lavishly rewarded. Nonetheless, as noted by the daughter of Professor Lombroso who described Eusapia at the age of 54, she did not have "the manner of one who either poses or tricks or deceives others. She has had the perversity, a rare occurrence, to remain as nature made her: outspoken, sincere, instinctive" (Carrington, 1909:21). She died in 1918.

A high proportion of the large number of anomalous phenomena Eusapia was capable of producing was considered genuine by reliable investigators. It is of interest that several well-known scientists and experts of psychical science, including Enrico Morselli, Cesare Lombroso, Camille Flammarion, Charles Richet, and Hereward Carrington, who started out highly skeptical of such events, fully admitted their genuine occurrence once they directly witnessed Eusapia's performances.

Outline of the Experimental Setup

Sessions were scheduled in the spring of 1907, the first seven at 3–4 day intervals (from April 17 to May 11), the last session on July 5. Experiments lasted a few hours and were scheduled to take place in late evening when the Institute of Physiology was empty. Only a trustworthy technician or Bottazzi's assistant were occasionally present, but away from the experimental room which was remotely located. Of its three doors and one window, the door opposite the entrance door and the window on the right wall when entering the room were locked. The door on the left wall was also locked as it constituted the back partition of the mediumistic cabinet (MC). This rested in a deep recess in the wall (Figure 2A), and was closed in front by two black curtains hung on a high pole. The MC contained objects of various types (see below) which were placed on a wooden board, chair, or stool. Some of them were changed in different sessions. Several cables went through the door connecting MC instruments with recording apparatus (cylinders lined with smoked paper), which was placed in the adjacent room, also locked (Figure 2B). One or more pens transmitted signals to rotating cylinders. Eusapia was never informed of objects and instruments placed in the MC, and she never appeared interested in finding out about them.

A table (mediumistic table or MT) and several chairs were placed in front of the curtains (Figure 2A). Eusapia always sat at the MT's short side with her shoulder facing the closed curtains. Apart from a couch and a small table to the left of the entrance door and some shelves on the left wall, the experimental room was essentially bare. Four independent lamps provided decreasing intensities of white or red light, and at some point a rheostat was inserted in the circuit of the dimmest lamp to further lower its intensity. Light was generally dimmed during sessions, and it was turned off only on specific occasions (e.g., when Eusapia was asked to impress a photographic plate by holding her hands near it). In the overwhelming majority of cases, light was sufficiently intense to allow clear vision of Eusapia, people, and ongoing events. Of the participating professors (usually 6 to 8), two or more firmly held Eusapia's hands, arms, and legs. Only in the last session were Eusapia's wrists secured by inextensible strips fixed to the floor. Bottazzi's wife attended some sessions, and a married couple interested in spiritism (Mr. and Mrs. H. B.) attended the seventh session.

Reports were prepared by Bottazzi after each session or the following morning, sometimes after a sleepless night when events had been particularly impressive. Differences of opinion among participants occurred seldom, and only on specific issues. They were adequately discussed before an agreement was reached. The wealth of interactions among participants, Eusapia, and the spirit of her putative father (John King) raised a wide spectrum of emotions,

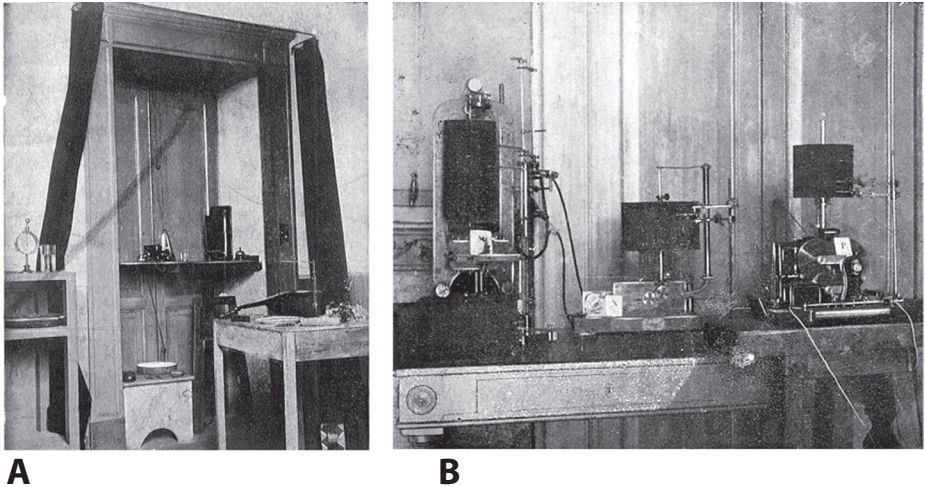


Figure 2. A) Experimental room showing the MT and the MC cabinet. The latter was delimited in the back by the locked door and in front by two black curtains.
B) Recording cylinders placed on the other side of the locked door in the adjoining room, which was also locked.

depending on the favorable or inquisitorial attitude of people, and on Eusapia's appropriate reactions. Friendly exchanges progressively increased with sessions.

As Bottazzi's main objective was to record PK activation of MC instruments, Eusapia had to learn unfamiliar finer movements rather than move large heavy objects as she was used to doing. As a result, a number of inconveniences occurred in the first two sessions, in which instruments were not secured to their supports, and supports were shaken by Eusapia's anomalous limb. In the following sessions, supports and instruments were immobilized, Eusapia was better trained, and PK events started to be recorded. This overall pattern was reflected in the number of pages dedicated to each session, which jumped from 8–10 for the first two sessions to an average of 29 for the following five sessions.

Bottazzi's observations will be described under the separate headings of instrumentally recorded and non-recorded events. This choice will hopefully allow an exhaustive account, but will remain short of rendering the flavor of Bottazzi's writing, mixing facts with logical considerations and quiet humor.

Instrumentally Recorded PK Events

The interest in Bottazzi's experiments mainly rests on the successful instrumental recording of PK events. At that time most PK phenomena were described in detail but were not objectively recorded, except for levitations of objects or mediums that were photographed. While this fostered endless discussions in which fraud and collective hallucinations had the upper hand, instrumental recording definitely excluded such interpretations.

The first recorded PK events took place in the *third session*, which was also attended by Mrs. Bottazzi. She had recently met Eusapia, and soon became her best-accepted participant. As shown in Figure 3A, signals were recorded from an activated metronome and telegraph key secured to a support. Full oscillations of the metronome stick did not last long, as strong blows to the instrument, support, and cables prevented further recording. The telegraph key was pressed several times, even at a frequency of 13/s. Additional signals were relayed by a Marey tambour (Figure 3B), a pressure-recording device activated by pressing its membrane.

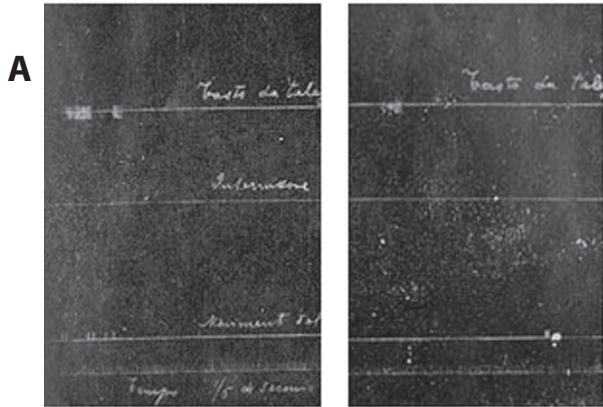
It is essential to note that in this and the following sessions, Eusapia's hands, arms, and legs were constantly monitored by severe controllers during all recorded PK events. Bottazzi himself was often an alert controller who consistently observed and reported Eusapia's muscular contractions, which were highly synchronous with the recorded PK events.

In the *fourth session*, an electric spring key was repeatedly and vehemently pressed, and appeared grossly deformed at the end of the session (not shown). Deformation had presumably occurred early on, as recorded signals were fewer than the number of blows coming from the MC. On the other hand, signals were not recorded from a telegraph key that had been enclosed in a cardboard box presumably not penetrated by Eusapia's anomalous limb. Signals were also derived from a metronome with metal connections and from a small drum connected to a Marey tambour by air-tight rubber tubing (not shown). The small drum had been placed in the MC, in the hopes that it would allow the recording of a brief sonata. Rhythmic beats were actually heard, but the recording cylinder did not rotate, and only single vertical lines were obtained from both instruments. Upon further requests, the metronome was activated again for several seconds (Figure 3C).

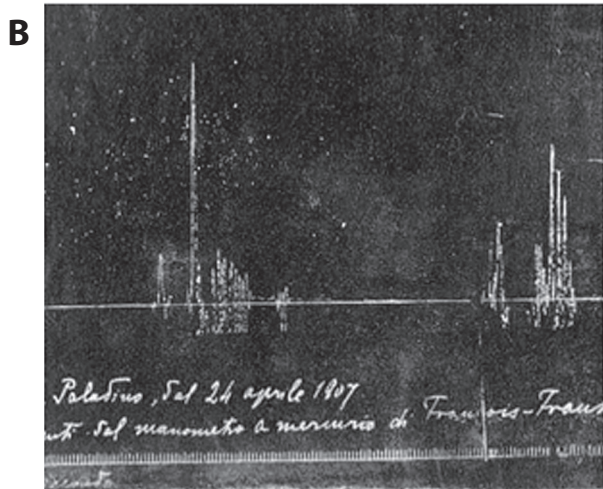
In the *fifth session*, after several attempts by Eusapia, the small drum connected to the Marey tambour was finally played, albeit not with a drumstick but by Eusapia's anomalous limb. Groups of three beats are reproduced in Figure 4A. Signals from pressed bellows are also shown. Interestingly, PK events were also recorded from instruments placed outside the MC, notably

Figure 3.

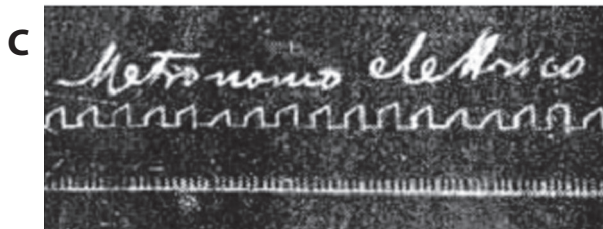
A) Signals from the activated telegraph key (upper trace) and electric metronome (bottom trace) placed in the MC; the right panel displays the followup of the recorded signals shown on the left panel.



B) Signals from a Marey tambour placed in the MC. Its membrane was activated by pressing a wooden disk firmly glued on to it to facilitate its identification by the anomalous limb. Vertical traces of different sizes reflect different pressing intensities. Bottom trace, time scanned by 5/s impulses.



C) Signals from an electric metronome in the MC. Bottom trace, time scanned by 5/s impulses.



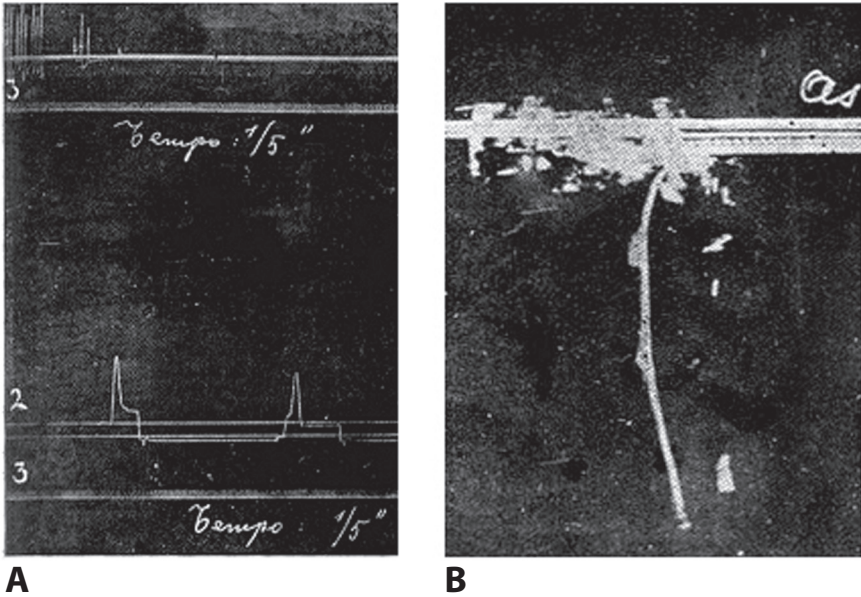


Figure 4. A) Signals from a small drum connected to a Marey tambour (top trace; note series of 3 beats on extreme left) and from bellows (trace 2), both of which were inside the MC. Bottom trace, time scanned by 5/s impulses.
B) Signal from a lowered letter-weighing plate positioned in the MT.

from a letter-weighing scale connected to a recording cylinder. When Bottazzi asked Eusapia to lower the scale plate with the anomalous limb (her natural hands being duly guarded), the pen wrote a horizontal line for several turns before fingers protruding from the left curtain resolutely advanced toward the MT, took hold of the scale plate, and markedly depressed it (Figure 4B) before quickly retracting and disappearing. Controls done the following day indicated that the scale plate was pressed by an equivalent weight of about 370 g.

Signals were also obtained from an electric key placed in a wooden box firmly secured to its support, but what happened was that after several unsuccessful attempts, the wooden box was vigorously pulled out from its support and the key furiously pressed (not shown). As in previous sessions, dishes with clay or mastic were placed in the MC for Eusapia to cast a face or a hand. In this session, Eusapia grabbed Bottazzi's three middle fingers and started rubbing their tips on the MT. She then whispered that something hard was on the chair supporting the clay dish, and asked it to be taken away. When somebody did, three fingertip impressions were found rubbed in the clay (not shown).

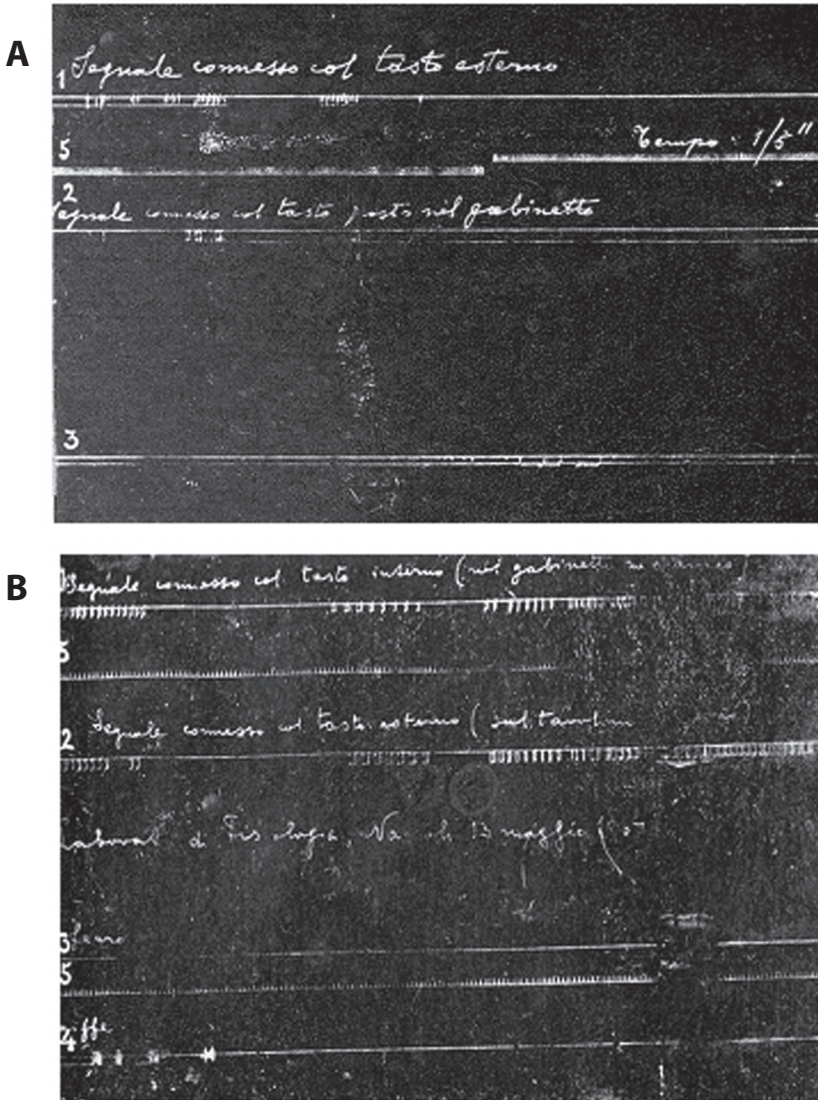


Figure 5. A) Signals from the electric key placed on the MT and operated by Eusapia's natural arm (trace 1), and from the MC key operated by Eusapia's anomalous limb (trace 2). The former signal occurred initially independently but later in synchrony with the anomalous signal. Synchronicity was indicated by either signal occurring at the same time on the rotating cylinder. Isolated and grouped signals were also recorded from the activated metronome (trace 3). B) Isolated and synchronous signals obtained by Eusapia using her natural arm to act on the MT key (trace 2) and her anomalous limb to act on the MC key (trace 1).

In the *sixth session*, something relevant occurred. In previous sessions, Eusapia had proudly demonstrated her PK capacity to knock on two different objects (small drum, electric key in the MC and on the MT). This led Bottazzi, as soon as an MC key started to be pressed, to place a second key on the MT and ask Eusapia to synchronously press both keys using her natural arm for the MT key and her anomalous limb for the MC key. Isolated and synchronous signals were obtained from both keys (Figure 5A). The panel also shows, albeit not clearly, that isolated and grouped signals were also obtained from the activated metronome. While grouped signals could be attributed to blows on the supporting table, isolated signals occurred when the table was still, which demonstrated metronome activation that only a hand could have produced.

In the *seventh session*, two main events were recorded. The first one regarded the repetition of Eusapia's synchronous pressing of two keys using her natural and anomalous limbs (Figure 5B). Signals from a single key were often followed by synchronous signals from the other key. Signals from the two keys differed from each other, the MC signal being consistently briefer and markedly stronger than the MT signal. This difference was acoustically evident. The MC key appeared to receive strong knocks while the MT key received normal beats.

The second main event regarded signals produced by a small Gaiffe's magneto-electric instrument adjusted to behave as a rotatory switch activated by turning a circular handle. Groups of signals from this instrument are shown in Figure 5B (line 4). As the circular handle could not be turned by one hand (a second hand was needed to keep the instrument steady), signals reflected the coordinate action of two hands.

In the *eighth session* that was scheduled for almost two months later, the main event concerned episodes of MT levitation which were photographed (not shown).

Non Instrumentally Recorded Events

PK Events

PK events were numerous in all sessions, and concerned objects placed both inside and outside the MC. Those occurring in the first three sessions will be described in some detail, while those of the remaining sessions will be mentioned where they are worth special attention.

In the *first session*, a heavy table (21.9 kg) was pulled out from the MC and remained tilted by about 10 degrees.

In the *second session*, a glass was hurled 2 m away from the curtains in concomitance with a kick by Eusapia, and a small table moved out about 1.6 m from the MC. In addition, the MT started to roll in concomitance with Eusapia creeping her feet on the floor, and on several occasions it levitated to different extents and durations (up to 25 seconds), usually starting from Eusapia's side. This also happened out of contact with Eusapia's or participants' hands.

Such an event also occurred in the *third session* while Eusapia was standing up. On this occasion, the MT remained lifted a while before abruptly falling to the floor with an uproar. To Bottazzi, such behavior appeared to be produced by a slowly developing muscle tetanus undergoing sudden release. In the same session, a raised MT approached Bottazzi's wife to express Eusapia's warm feelings of friendship. A small MC trumpet was thrown to the floor and kept moving for a while, a small drum was pulled out, and a small brush and scale were brought over to the MT. A mastic dish that appeared high on the front of the left curtain was grabbed by a participant and placed on the MT. Most strikingly, a bunch of flowers flew from the shelf on the left wall and landed on the lap of Bottazzi's wife, dripping water on participants. The mandolin inside the MC was moved and strummed on before ending up on top of the MT where the strumming continued in full light. This also occurred during the *fifth session* when the mandolin was partially lifted from the floor and moved in full light for several minutes.

In the *fourth session*, when Eusapia requested participants to stand up and move around the room, the MT was raised to a height of about 60 cm without being touched by her.

In the *fifth session*, a beaker was hurled to the MT after its dangerous chemical was poured on people, including Bottazzi; soon after, the contents of a second beaker was poured on the floor, presumably in response to protests that its contents were dangerous. In addition, one participant seated on the MT (overall weight about 80 kg) was lifted up a few cm.

In the *sixth session*, an MC chair was lifted and appeared above Eusapia's head. Bottazzi placed it on the floor and felt a strong elastic resistance when trying to move it away from the wall. At the end of the session, one chair started creeping on the floor; grabbed by a participant, it showed elastic resistance and kept moving as if trying to wriggle out.

In the *seventh session*, several objects appeared between curtains, a clay plate appeared over the MT, and drumsticks were hurled over it. When a glass with roses was placed on the MT, a hand enveloped by the left curtain grabbed the flowers and threw them into the face of a participant Eusapia despised

because of his offensive inquisitorial attitude. Flowers from the floor were then offered to Bottazzi and to Mrs. B., who attended the session with her husband. Mimicking the John King voice, Eusapia said “to the friend of my daughter” (Bottazzi’s wife), and soon a rose was inserted in Mrs. B.’s hair. Flowers were also offered to other participants, but not to the unwelcome person. When the small drum appeared between curtains and was grabbed by a participant, something or someone (John King?) opposed it, and the drum was pulled back and forth for a while. Finally, the participant got hold of it and asked it to be played. A hand behind the curtains complied, and clear beats were rhythmically produced. Conversely, when the unwelcome participant tried to grab the small drum, the drum retreated and attempted to reject the participant’s hand. Bottazzi and the chair on which he was seated (overall weight 93 kg) was moved 40 cm.

In the *eighth session*, an MC chair and a small water bottle were brought over the MT, and a heavy MC stool was pulled out, lifted, and banged forcefully and rhythmically on the floor.

Additional events included creakings, beatings and blows, curtain movements and air puffs, apparitions and touchings, and the appearance of flames. *Creakings, beatings, and blows* occurred in all sessions to a different extent. They were often precursors of PK phenomena and always occurred in synchrony with contractions of Eusapia’s fingers or limbs. Curtains moved and touched Eusapia and the MT in all sessions, at times as if pushed by wind, more often by bodily protrusions (fingers, hands, fists, more rarely heads). Air puffs were occasionally felt by participants. *Apparitions and touchings* were seen and felt by participants in all sessions.

In the *first session*, white, childish, diaphanous fingers were noted by a participant who felt touched by them. Tactile contacts were more frequent to participants close to Eusapia. One of them often reacted by screaming, as he was ticklish.

In the *second session*, a black head leaned out high from the left curtain, and quickly retreated, which made Bottazzi quiver. Upon request, fingers pushing the curtains grabbed participants’ hands 1 m above Eusapia’s head.

In the *third session*, pale, diaphanous fingers or hands appeared, at times above Eusapia, often as if coming from between curtains. They were mostly above arms or shoulders of participants close to Eusapia, who felt touched, beaten, pulled out, or caressed. When Bottazzi’s wife was close to Eusapia, she saw a black hand and forearm close to her face, which made her leave her position precipitously. Participants were kissed by a mouth protruding from the curtains while Eusapia made a similar mouth gesture.

Several apparitions were seen in the *fourth session*, including hands and fists between curtains, sometimes 3-fold larger than Eusapia's fist. In addition, a black forearm and a white hand were seen moving from Eusapia to a participant, and a black shape (head or fist) appeared behind curtains above Eusapia's head. All apparitions lasted a few seconds. Bottazzi got his hands fiercely scratched, and received a painful finger poke between nose and eye. A stethoscope surreptitiously taken from the pocket of a participant was disassembled and reassembled. Furthermore, pince-nez glasses that had fallen down to the knees of a participant were graciously placed back on his nose.

In the *fifth session*, the outline of a limb appeared to bud out of Eusapia's body, to quickly disappear. A pulling hand was occasionally seen. Upon Eusapia's request, one participant climbed on the MT and felt his beard caressed by a hand behind the curtains.

In the *sixth session*, Bottazzi was touched while outside the mediumistic chain.

Many relevant apparitions occurred during the *seventh session*. An enormous black fist came out four times from the left curtain, moving toward Mrs. B., who felt touched. On the fourth occasion, the black fist remained outside the curtains for a long time where it was seen by all participants. Two apparitions of a human face displaying natural, but pale (almost diaphanous) color were announced by Eusapia. She attributed the first face to someone called "Peppino." The second face appeared when her forehead rested on Bottazzi's forehead. Mr. B. claimed it resembled John King wearing a turban. When an open hand gently grabbed Bottazzi's neck from behind, his hand felt the hand touching him. He described it as a big, bony, rough hand, neither cold nor warm. Most notably, Bottazzi saw the hand touching his forearm disappear into Eusapia's body, making a circle. Bottazzi's left hand was shaken by a lukewarm hand similar in size to Eusapia's hand. All participants experienced touchings except the one person unwelcomed by Eusapia.

In the *eighth session*, black hands and a huge black forearm appeared on the MT for several seconds. Most notably, one participant saw with the utmost clarity that Eusapia's left arm was doubling. He clearly distinguished the natural arm from the anomalous limb which detached from Eusapia's shoulder to approach and touch Bottazzi's wife before disappearing into Eusapia's body.

Appearances of flames within the MC were observed during the *first session*, but were considered insufficiently genuine.

In the *fourth session*, little flames resembling in size and appearance candle

flames, but violet-like in color, were seen stemming from Eusapia's body, rising up in the air, and disappearing while Eusapia remained immobile.

In the *seventh session*, three large light-blue flames appeared born out of Eusapia's head. They moved upward and waving, and finally disappeared.

Eusapia's Behavior

As Eusapia was left-handed, most of her muscle contractions were in her left limbs, while PK events occurred more often on her right side, as remarked by Bottazzi and other observers. In the spring of 1907, Eusapia was aged and in bad health; urines collected before and after sessions were highly acidic and contained albumin, uric acid crystals, and copious sediment. Eusapia was highly emotional, sensitive to weather changes, and apparently of mediocre intelligence. She was quite proud of her extraordinary capacities and did not appreciate their being doubted. She could forcefully react to unpleasant comments, and intuitively sensed friendly or inquisitorial attitudes.

At the end of the *second session*, she was delirious and uttered incoherent sentences. A hysterical fit caught her at the sudden turning of light. In the *third session* she was in trance during most of the PK events, uttered incoherent words, and gave sighs while her muscles were relaxed and her face transfigured. When the weather was humid and heavy, as in the *fourth session*, she was irritable and in a bad mood, but her mood was good with better weather. The friendly presence of Bottazzi's wife also improved her mood. While in *trance*, she asked to be helped by being touched by someone, but she could also reply to unfavorable comments with disdain or scornful laughing. Interestingly, she showed vivid pain when somebody touched or attempted to remove an object just brought out from the MC, as if the object had remained connected for a while to a very sensitive region or feature of her body. During sessions, Eusapia engaged in conversation with participants, especially with Bottazzi. She spoke most often with her natural voice, but at times her voice resembled that of John King. After sessions, her hands remained oversensitive and painful, notably at their back. They were red and hot, and showed engorged veins.

Eusapia's Failures

In the *second session*, she failed to discharge a gold-leaf electroscope, activate a metronome, lower a scale plate, or press a pear-shaped rubber object. Bottazzi was glad to mention these initial failures, because in later sessions she succeeded in performing comparable operations, which showed that they had been learned.

In the *third session*, Eusapia was unable to move a stool presumably because it was less easy to grab than the table she had moved during the previous session. She also failed to rotate a recording cylinder, impress photographic plates, or discharge an electroscope.

In the *fourth session*, no PK events took place during the first 45 minutes, as a new participant attended the session. She was also unable to stop the metronome she had previously activated.

In the *fifth session*, Eusapia failed to impress photographic plates, operate a switch hurled on the MT, or maintain her promise to materialize a female figure.

In the *sixth session*, a plate with platinum-cyanide did not become luminescent when overlaid by her hands or head in the dark. Furthermore, she was unable to activate a telegraph key placed inside a wired cage. Feeling very tired, she was unable to operate on several objects placed on the MT (a metronome, a balance plate, a small bottle).

In the *seventh session*, she was unable to impress a face on a layer of clay, or to activate a key placed inside a cage that was only partly secured to its support.

Bottazzi's General Considerations and Conclusions

Three main hypotheses were considered by Bottazzi: the fraudulent, the spiritist, and the biological hypotheses. According to the first alternative, PK phenomena were not real but merely the result of a fraud operated by the medium and/or the outcome of collective hallucinations. Conversely, PK events were accepted as real by the last two hypotheses, which respectively attributed them to the intervention of dead people or to the medium's own anomalous capacities.

Bottazzi began his considerations by examining the factual and psychological basis of the fraudulent hypothesis, notably with regard to Eusapia's previous performances, and to the alleged claims of her tendency to operate fraud. He assumed mediumistic events to be a special type of biological phenomena, noting that they displayed comparable variability. Hence, mediumistic events could not be expected to occur with comparable intensity at all times and under different conditions. Just as a few physiological experiments could not be expected to lead to definite conclusions, likewise single mediumistic performances cannot be accepted as the basis for careless generalization. Only repeated and well-controlled observations made by reliable people should be trusted, such as those by distinguished Italian and European professors who witnessed and accepted the reality of Eusapia's performances.

In sessions at Bottazzi's institute, PK events always occurred under conditions definitely excluding fraud. Eusapia's hands, arms, and legs were constantly secured and monitored by him and other watchful participants. Furthermore, the release of Eusapia's natural hands or limbs from their guardian's hold was never observed. In addition, i) moved objects were either too far from the reach of Eusapia's natural limbs or too heavy for Eusapia's declining strength; ii) several objects were seen to move by themselves, at times for minutes. This was clearly observed by several alert participants, thereby excluding collective hallucination; iii) Bottazzi himself and another participant on different occasions had seen anomalous limbs emerge from Eusapia's arm or shoulder before quickly retreating and vanishing into her body. Lastly, PK events were consistently synchronous with Eusapia's muscle contractions.

Bottazzi also remarked that the famous Eusapia's hair she was claimed to have fraudulently used to move objects, had been seen but never retrieved. This remark prompts me to add that novel observations in science (notably in biology) are often doubted, marginalized, or neglected. At variance with them, doubts do not seem to require compelling supporting evidence. Their impact is directly related to the degree novel observations depart from conventional belief. In this regard, let me mention a possible interpretation of reports discussing Eusapia's capacity to free natural hands to perform PK. In one such report (Sidgwick, 1909:520), Ms. Eleanor Mildred Sidgwick "in charge of her [Eusapia's] feet, and consequently lying on the floor holding them," remarked: "As I looked up from that position, the ceiling made a light background, against which I saw silhouetted what looked exactly like Eusapia's right arm and hand lifting a chair and placing it on the table. After the chair was on the table, I similarly saw against the ceiling Eusapia's arm and Lady Stanley's apparently holding each other by the hand . . .". Could these (and comparable) observations be interpreted to be regarding Eusapia's anomalous limbs rather than her natural limbs? After all, in Bottazzi's sessions, a few participants independently reported anomalous limbs emerging and retreating into Eusapia's body (Bottazzi, 1909). Comparable observations had previously been reported (Carrington, 1909, de Rochas, 1906, Courtier, 1908, Dingwall, 1962, Lodge, 1894).

In conclusion, data from Bottazzi's experiments indicate the following:

- 1) PK events were synchronous with Eusapia's muscle contractions, their intensity being roughly proportional to the strength of contraction;
- 2) anomalous movements required to activate simple instruments and induce PK events had to be learned by Eusapia;
- 3) anomalous limbs responsible for PK movements were capable of tactile perceptions;
- 4) PK events did not occur beyond a certain distance from Eusapia;

- 5) anomalous limbs appeared to emerge out of Eusapia's body;
- 6) synchronous movements made by Eusapia's natural arm and anomalous limb were recorded.

On the basis of these observations, Bottazzi concluded that Eusapia was the main actor for the production of PK events. The latter occurred thanks to her capacity to temporarily express anomalous limbs endowed with sensory and motor functions similar to those of her natural arms, and governed by the same brain/mind controlling natural arms. In Bottazzi's own words and capital letters:

Mediumistic phenomena which are not mere hallucinations of those participating in so-called spiritistic sessions, are biological phenomena depending on the MEDIUM's organism. If so, they take place AS if being operated by extensions of natural limbs or by additional limbs stemming out from the MEDIUM's body, returning and vanishing into it after variable time intervals, during which they reveal their existence by the sensations they elicit in us, like limbs differing from natural limbs in nothing essential. (Bottazzi, 1909:249)

This "biological" hypothesis significantly differed from the "spiritist" hypothesis, although the concurrent participation of "spiritual" entities (e.g., John King) was not excluded by Bottazzi. In his own words:

By no means can the spiritist hypothesis be refused and declared absurd, until it will be directly and definitely demonstrated that mediumistic phenomena are produced by a different well-determined mechanism. (Bottazzi, 1909:244)

In such an endeavor, as in his entire scientific career, Bottazzi was well aware of Leonardo's conclusion: "Nature is filled with an infinite number of reasons that were never experienced."

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