**The role of mesmerism in surgical anaesthesia**

by Csaba Nemes, Überlingen (e-mail: csaba@nemes.de)

In my essay I assume the role of the *advocatus diaboli* (devil’s advocate) to approach the life work of Franz Anton Mesmer (1734-1815), pointing out the contradictions and paradoxes in Mesmer and his mesmerism. *First supposition*: Franz Anton Mesmer's theory about animal magnetism is based on mistaken suppositions. To mesmerise, you don't need a magnet. The human body cannot be magnetised. Its mechanism of results is based on suggestion, somnambulism or hypnosis, i.e. hypnoanaesthesia, to induce loss of sensation. *Second supposition*: The discovery of curative magnetism is not Mesmer's achievement but can be attributed to earlier naturalists. *Third supposition*: We can thank Mesmer's followers for the application of mesmerism in surgical anaesthesia. Referring to the suppositions above I'd also like to point out three paradoxes: 1. Despite the mistaken theory of mesmerism, it has proved a successful therapy in surgical anaesthesia. 2. In the heyday of mesmerism there were already some effective and secure narcotics available. 3. The human body can be magnetised after all (magnetic resonance tomography, MRI).

*Mesmer's mistaken suppositions on the existence of 'animal magnetism' and its application in medicine*

It wasn't Mesmer who first introduced 'animal magnetism' to prevent and palliate painful conditions. One of the great paradoxes of medical history is how a basically wrong theory can become the keystone of a therapeutic process of a new era. All the theses of magnetic therapy ('therapeutic magnetism') are based on the mistaken theory of the Galenian humoral pathology. Paracelsus' thesis on the existence of two - celestial and terrestrial - magnetisms was already a mistake. Man is not an organism filled with magnetic fluidum. The force that keeps the universe together is not magnetism but gravitation. The sensory organs of higher beings are unable to perceive the terrestrial (natural) magnetic field. There is no magnetic 'fluidum' either in the ether or in the human body. Neither is any causal connection between the orbit of stars and planets, the periods of the zodiac and the working of our inner organs. There is no radiant magnetic fluidum in the human body. Our health doesn't rely on the harmonic distribution of the corporal magnetism, nor is its disharmony the source of illnesses. The lack of pain (analgesia) achievable through the application of magnetism and the emergence of a hypnotic 'trance' reminiscent of somnambulism have nothing to do with magnets or animal magnetism. The hypnotist (magnetist) doesn't need any tools to force his will on somebody; for this the mere touch of the body (*passés* in French), concentration practice, hypnotic order and optical fixation are sufficient.

*The forerunners of 'therapeutic magnetism:*

Before him, already Paracelsus (1493-1541) and Athanasius Kircher (1602-1680) experienced with magnetic therapies; same as Kircher, William Gilbert (1544-1603)[[1]](#footnote-1) already surmised the role of terrestrial magnetism in the movement of the blood volume. The English physician Robert Fludd (1574-1637) compared the human body to a two-pole magnet. Following their example, Mesmer explained the illnesses by the blockage of the flow of the body's magnetic fluids, which can be solved by a crisis caused by magnetic treatment. After in 1686 Isaac Newton (1642/1643-1726) proved the general validity of magnetism in his gravitational theory, based on the discovery of the similarity of gravitation and animal magnetism (Luigi Galvani 1792), Mesmer was justified to presume in his doctoral dissertation in 1766 that such a magnetic fluidum, distributed in harmony, exists not only in the celestial bodies but, same as in the inorganic and organic world, in the human body[[2]](#footnote-2).

*The application of mesmerim in surgical anaesthesia:*

The effects of magnetism within the human body Mesmer discovered by accident in 1774, eight years after his dissertation, during the successful treatment by iron magnet of a facial neuralgia. Later on, during a phlebotomy, he himself could feel this magnetic effect. Then in his recommendations for therapies he referred to the possibility of easing melancholy, 'brain fever' and periodic pains. This is why it is surprising that he didn't discover the possibilities inherent in magnetic treatment to fight the pain of surgical procedures. However, the theatrical nature of his magnetic therapies proved completely inadequate for easing surgical pains. It was mostly after Mesmer's death (1815) that his followers developed and utilized his method of mesmerism for abolition of sensitivity and pain, state of consciousness and increased muscle tone in surgical procedures. Karl Christian Gmelin (1762-1837) was the first to describe the magnetic therapy used for curing rheumatic aches and psychic disorders in a short news bulletin in 1793 [[3]](#footnote-3).

Ether had already been known for a good 500 years (Paracelsus and Valerius Cordus around 1540), the analgetic effect of laughing gas (Humphry Davy 1800) and morphine (Friedrich Sertürner 1806-1817) for decades, three effective and safe narcotics. Still for several more decades they continued magnetising for easing pain, as though the magnetism, the transmitter of life spirit and 'world ether' [[4]](#footnote-4) could have an effect on any of our senses. At the same time sulphuric ether was used during university seances and laughing gas at circus performances to entertain the students and the general public. To be able to have an effective remedy against surgical and labour pains, first it was necessary to 'secularise' the pain. This was the result of the so called incubationary (or preparative) decades (1800-1842) of the inhalatory narcosis. This era was also the heyday of the medical use of mesmerism; the hypnotic dream, the somnambulism (of the marquis Armand Marie Jacques de Chastenet de Puységur 1784), the London experiments and painless operations of John Elliotson (1838-1843), the heroic interventions of James Esdaile (1808-1859) in India (1845-1850), and finally the use of James Braid's hypnosis in surgical anaesthesia (*Neurypnology* 1845) can all be credited to Mesmer's followers who, either instinctively or consciously, broke with the controversial, speculative theories. Mesmer's pupil, the marquis de Puységur (1751-1825), an amateur scientist, treated his patients in his gardens which he declared to have magnetic effects. The toothaches of his first two patients were cured by a process which he called 'artificial somnambulism' or 'crisis'. His third case, Victor Race, under the influence of magnetism after 7-8 minutes fell into a deep sleep, in which he remained in contact, he gave adequate answers to questions, started dancing to some hallucinotary music, but on waking he didn't remember anything (*retrograde amnesia*). At the end his method was unsuccessful: all the complaints of his patients returned on waking from the state of hypnotic 'trance' [[5]](#footnote-5). During his subsequent experiments Puységur also discovered the phenomenon of suggestion after hypnosis. After he was set free from a two-year prison sentence in 1789 and until his death in 1835, he carried on with his mesmeristic experiments, with such a success that the later believers of magnetism followed his, rather than Mesmer's original process. Puységur's method thus marks the first golden age of mesmerism.

The first successful ('capital') resection (mammal ablation) was carried out in 1829 by the surgeon Jules-Germain Cloquet (1790-1883) in Cherbourg. His patient, Mme Plantin didn't feel any pain during the operation accompanied by mesmerism. The French Academy of Science deemed the operation successful, even though the patient died soon after the operation[[6]](#footnote-6). The routine application of mesmerism during surgical operations is mostly due to *John Elliotson* (1791-1868), physics professor at the university of London, disciple of the phrenologist Franz Joseph Gall (1758-1828). From 1838 onwards, Elliotson carries out his physiological experiments with 'animal magnetism' first in Edinburgh then in London, in Thomas Wakley's surgery in Bedford Square.

In the very same year his mesmeric cures are evaluated by the *Medico-Botanical Society[[7]](#footnote-7)* and published in serial form, with added testimonies, by the Lancet founded shortly before by the English surgeon Thomas Wakley (1795-1865), until at the end of 1838 any further experiments with magnetism are prohibited by the council of the London university. Finally Wakley also stops further demonstrations, thus Elliotson now carries out his experiments, dubbed 'mesmeric humbug', in his own home and popularises his magnetic therapy in his paper *The Zoist [[8]](#footnote-8).*

In the meantime, the news of painless operations carried out by mesmerism also reaches the New World. In 1846, the year of the first ether-narcosis, the *New Orleans Medical and Surgical Journal* states: 'compared to ether, mesmerism could perform a thousand times greater wonders, and without any dangers[[9]](#footnote-9). In 1843 Elliotson publishes his experiences with mesmerist operations in a longer defensive-accusatory document[[10]](#footnote-10). In this 88-page work he justifies through several casuistries the use of hypnotic analgesia in tooth extractions, eye and mammal operations and adhesions of tendon to lyse, and what's mor**e,** in thigh- and leg-amputations, with complete lack of pain or retrograde amnesia. After his successes, in 1849 Elliotson sets up a mesmerist hospital in London. (Elliotson's other merit: he was the first in England to use a stethoscope.) In 1819, in Solingen, the German surgeon J. W. Spiritus uses somnambulism to cut out a carpal ganglion. Between 1826 and 1831, in Paris, Rifa’a al-Tahtawi (1801-1873), a Muslim doctor recounts his witnessing some painless operations carried out by traditional mesmerism, cutting open abscesses, an amputation and Cloquet's mammal operation[[11]](#footnote-11).

James Esdaile (1808-1859), Scottish surgeon, is the first to use mesmerism for a painless operation of hydrocele in April 1845. However, it was not in England but, in the service of the *East India Company,* in India, the homeland of men with suspended animation, fakirs and mystical and occult therapies. In the small Hooghly hospital near Calcutta, Esdaile carried out dozens of operations on the testicle tumours of his clients who were in a bad state. Because of the lack of other equipment and narcotics he used Puységur’s and Elliotson's method, with autosuggestion and in a state of delirium, with the help of hypnoanaesthesia. So far Esdaile had only known magnetism by its reputation, so during the second operation, at his request, the hypnosis was carried out by his assistant. Esdaile proved by statistical examinations that apart from the lack of pain the post-operative healing is also more trouble free. And although the removal of the enormous, sometimes over 50 kilogram tumours in scrotal elephantiasis (!) counted as 'capital' intervention (an expression of that time), he didn't lose any of his patients due to postoperative adverse reactions[[12]](#footnote-12). Since mesmerism was, in many cases, successful at the first try, during the following months he always used hypnotic sleep in operating on scrotal filariasis (elephantiasis), as a result of which the people started calling him a saint. He achieved a completely painless radical extirpation of a maxillary tumour which was destroying the bone and invading the optic cavity. The patient tolerated the 30-minute heroic intervention without the slightest sign of any pain. Esdaile's painless operations and the patients' reports finally convinced the assistant doctors and the enemies of mesmerism that his method was reliable and not dangerous, especially after the mesmerist surgeon George Sandby (c.1769-1852) reported in 1848 the results of 313 painless surgical intervention, among others 178 tooth extractions[[13]](#footnote-13). Esdaile also noticed that the shock following a surgery could be avoided if after the intervention he kept on the analgesia and hypnosis for a while.

The experiments with mesmerism and its medical application were greatly spurred on by the work of James Braid (1795-1860), a Manchester surgeon and miners' physician. It was Braid's merit that he underpinned the mechanism of 'animal magnetism' by experiments, and his observations of his patients were published first in a long letter, later in two monographies in 1842 and 1853 (*Mesmerism Reviewed, Neuropnology).*  In 1843 he rid mesmerism of its spectacular, theatrical elements and created the scientific bases of the process he christened ,hypnosis‘ *(Neurypnology).* In 1841 he recognised the importance of the fatiguing of the eye contact, focussing on a point of light, or, as he later called it, of the 'spiritual eye' - in today's terms the optical centre of occipital neocortex. According to Braid, to achieve hypnotic analgesia with catalepsy it is unnecessary to use the earlier method of verbal suggestion[[14]](#footnote-14). Then he recognises the common neural mechanism of hypnotherapy and ether narcosis and stresses the impossibility of the existence of 'animal magnetism', the 'fluidum' connecting the mesmerist doctor and the patient, of telepathy *(clairvoyance),* thus banishing from medical practice the magical, supernatural, demonic elements so characteristic of the earlier practitioners of mesmerism. Starting in 1889, in Leeds, in the presence of 60 physicians and dentists, John Milne Bramwell (1852-1925) demonstrates the usefulness of hypnosis in surgical and dental practice[[15]](#footnote-15). In Paris, Joseph-Claude Anthélme Récamier (1772-1856) and Jules Germain Cloquet (1790-1868) are already using mesmerism during surgical procedures. In 1836, in Lyon, two French gynaecologists, Grubert and Henri Chapelain assist at a painless birth with the aid of mesmerism[[16]](#footnote-16). The hypnoanaesthesia was also successful later in gynaecological practice. With the help of the mesmerist Sir William Topham (1808-1877), in 1842 William Squire Ward (1789-1847) perform successful limb amputations, among others a knee joint seriously affected by tuberculosis and bone caries. After waking up, the 42-year-old Nottingham workman, James Wombell, confirms that he didn't feel anything during his thigh-amputation, not even at the otherwise extremely painful cutting of the sciatic nerve[[17]](#footnote-17). Afterwards, between 1843 and 1846, regular operations are carried out with the help of 'animal magnetism' in England, France and the United States. Louis Alexander Dugas (1806-1884), professor at the Medical College of Georgia, uses hypnoanaesthesia to remove an enormous breast tumour; thereafter - as a consequence of the recidive of the tumour - he performed two more operations on the patient, both times painlessly and successfully[[18]](#footnote-18). The five physicians present bear witness that during the three interventions the patient showed no sign of any pain and his pulse rate stayed steady. Between 1845 and 1847 in Cherbourg Dr. Franҫois Alexandre Gervais Loysel (1815-1877) carries out 12 interventions with mesmeric analgesia, among others within 19 minutes (!) with bilateral incisions he removes the cervical scrofulous lymphomas. During the operation the patient is quietly asleep, his breathing and pulse are unchanged, while the heroic and bloody sight of the intervention causes several people to run out of the operating room. The success of the operation is certified by 25 witnesses (among them 5 doctors)[[19]](#footnote-19). Just like Elliotson, the mesmerist doctors found it hard to get on in the Victorian era, even though the successful operations had been reported by several mesmerist surgeons in England[[20]](#footnote-20). In Sheffield in 1842 Charles Lafontaine (1803-1892) following the advice of the mesmerist George Calvert Holland (1801-1865) and in the presence of witnesses, painlessly amputates a mangled leg; a similar successful operation is reported by Joseph Durand in France in 1845 during the leg amputation of Marie d'Albanel. During the operation the patients were usually able to keep in contact, their vital functions stayed stable, instead of any pain they only felt some touches and most of the time they didn't remember any details of the intervention.

*The twilight of mesmerism:*

On 16 October 1846, in the operating room the Boston *Massachusetts General Hospital,* William Thomas Green Morton's (1819-1868) successful ether-narcosis also convinces the chief surgeon John Collins Warren (1778-1856): 'Gentlemen, this is no humbug'. Still, when two days later Henry Jacob Bigelow (1818-1890) reports the first painless operation in the Boston *Medical and Surgical Journal,* the critics are doubtfully asking whether this new method is better than mesmerism? Finally, on 21 December 1846 Sir Robert Liston (1794-1847) performs a successful amputation in ether-daze and predicts: 'Gentlemen, this yankee dodge beats mesmerism hollow'. And what’s more, between 1850 and 1860 there are still some clinical surgeons (in Paris Paul Broca, 1824-1880) who would prefer Mesmer's method to using chloroform during operations.

*The wondrous success of inhalatory anaesthesia after 1847 made people forget until recent years that before 1846 mesmerism, as 'the prelude to surgical anaesthesia' (C. D. T. James 1975) was the only usually working method for cutting out the excruciating, wrecking pain accompanying the operations.* However, after 1852 hypnosis is used less and less in surgical anaesthesia and hypnoanaesthesia is slowly added to the antiquated arsenal of pain-killing therapy. Even so, magnetic sleep, hypnotic coma and non-narcotic analgesia still haven't lost all of their charm and popularity, although the range of their recommendation has been greatly reduced. Beside acupuncture and electro-analgesia, today the traditional hypnosis and psychotherapy are used mostly to diminish the anxiety and panic reaction in children before dental treatment[[21]](#footnote-21), as well as using Frédérick Leboyer's (1918-2017) psycho-prophylactic method during births to raise the pain threshold, help muscle relaxation and assist with the correct breathing technique[[22]](#footnote-22).

About 200 years after Mesmer's first report it was found that, after all, the human body *can* be magnetised. The magnet has been given a new role in medical science, even if not according to Mesmer's original conception. The two most well-known methods of operating in a strong magnetic field are the magneto-resonant tomography (MRI) developed by Paul Christian Lauterbur (1929-2007) and Sir Peter Mansfield (1933-2017) between 1972 and 1973 within the vision-enabled diagnostics[[23]](#footnote-23) and the high-energy pulsating magneto-therapeutic annular coil to assist in the development of calluses, indispensable for curing broken bones.

The work of Mesmer and his followers had created enduring values, opened new vistas in the millennia-old history of medicine. Despite his erroneous, empirical theory and expendable instruments, his epoch-changing work, the 'animal magnetism' is the overture to western psychotherapy. During his experiments on himself and his patients Mesmer discovered the role of auto-suggestion and magnetism; later Braid discovered the therapeutic role of hypnosis in the treatment of hysterical and depressive conditions. Following the school of Jean-Martin Charcot (1825-1893), Sigmund Freud (1856-1939) would substitute this later by the ,method of free associations’.Thus mesmerism is not only the prelude to modern surgical anaesthesia, but also the cradle of psychotherapy.

What exactly hypnotic analgaesia means is still not completely clear today. Between 1978 and 1984 Giancarlo Carli (\*1938) and his colleagues experimented with animals to prove that the analgesia resulting from suggestion viz. hypnosis, as well as the body's rigidity similar to narcolepsy can be deepened by morphine and counteracted by the morphine-antagonist naloxon[[24]](#footnote-24). In 1982 Bruce Pomeranz (†2014) experienced a similar connection between the lack of pain due to acupuncture and the increased level of endogenous opioid transmitters endorphins[[25]](#footnote-25).

1. William Gilbert: *Tractatus, sive physiologia nova de magnete, magneticisque corporibus et de magno magnete tellure.* Hallervordius, Stettin-Rostock, 1600 [↑](#footnote-ref-1)
2. Emil Schneider: *Der animale Magnetismus*. Lampert Verlag, Zürich,1950, pp 121-157 [↑](#footnote-ref-2)
3. See Gmelin's newsletter about the magnetic cure of his patient Caroline Heigelin's (1768-1808) schizofrenic insanity. (*Untersuchungen über den Magnetismus und über die Einfache Behandlungsart ihn nach gewissen Regeln zu leiten und zu handhaben,* 1793); in Wikipedia - freie Enzyklopädie: Caroline Heigelin (*Untersuchungen über den Magnetismus und über die Einfache Behandlungsart ihn nach gewissen Regeln zu leiten und zu handhaben,* 1793); in Wikipedia - freie Enzyklopädie: Caroline Heigelin. [↑](#footnote-ref-3)
4. Mesmer derived the term *animal* from the word *animus* (soul, air) thus emphasising the theory of living force (*vis vitalis)* considered earlier as a general characteristic of living beings. The concept of living force is also related to Paracelsus' and Jan Baptist van Helmont's *archeus,* Friedrich Hoffman's „nervous ether“ and Caspar Friedrich Wolff's *vis essentialis.* [↑](#footnote-ref-4)
5. See Phineas P. Quimby: *Marquis de Puysegur* (http://phineasquimby.com/marquis\_de\_puysegur.html) [↑](#footnote-ref-5)
6. Published by the British Medical Journal 35 (1846) 542

7 John Elliotson's monography is also available in facsimile edition in Shervin B. Nuland's book entitled *The Origin of Anesthesia*. The Classic Library of Medicine. Birmingham,1983, pp 5-93

8 Full title of his paper: *The Zoist: a Journal of Cerebral Physiology and Mesmerism, and their Application to Human Welfare*

9 John Elliotson (Wikipedia – the free Encyclopedia: http://en.wikipedia.org/wiki/John\_Elliotson)

10 George Sigmond: *Address delivered before the Medico-Botanical Society of London*, February 14th, 1838, quoted by Shervin B. Nuland: *The Origins of Anesthesia*. Birmingham, 1983, pp 769-776 [↑](#footnote-ref-6)
7. [↑](#footnote-ref-7)
8. [↑](#footnote-ref-8)
9. [↑](#footnote-ref-9)
10. [↑](#footnote-ref-10)
11. 11 Rifa‘a al-Tahtawi: *Ein Muslim entdeckt Europa. Bericht über seinen Aufenthalt in Paris 1826-1831*. Published by Karl Stowasser, C.H. Beck, München, 1989, p 128 [↑](#footnote-ref-11)
12. Alan Gauld: *A History of Hypnotism.* Cambridge Univ. Press, Cambridge, 1992, pp 223-24 [↑](#footnote-ref-12)
13. George Sandby: *Mesmerism and its Opponents.* 2nd ed., Longman, Brown, Green and Longmans, London 1848, p 51-52 and J. Elliotson: *The Zoist* 11 (1853-1854) 216-217. [↑](#footnote-ref-13)
14. James Braid: *Braid on Hypnotism. Neurypnology or the Rationale of Nervous Sleep*. Ed. A. E. Waite, G. Redway, London, 1899, pp 310-311 [↑](#footnote-ref-14)
15. John Milne Bramwell: The British Medical Journal I (1890) 801-802 (quoted by Alan Gauld: *A History of Hypnotism.* Cambridge Univ. Press, Cambridge 1992, p 489), J. M. Bramwell: *Personally Observed Hypnotic Phenomen.* *Proceedings of the Society for Psychical Research*, 12, Suppl.(1896) 176-203.

16 Melvin A. Gravitz: É*tienne Félix d’Hénin de Cuvillers*. Amer. J. of clinical Hypnosis 36 (1993) 7-11 and Alan Gauld, 1992, pp 279-288. [↑](#footnote-ref-15)
16. [↑](#footnote-ref-16)
17. William Tophan, W. Squire Ward: *Account of a case of successful amputation of the thigh during mesmeric state without the knowledge of the patient with remarks by Elliotson*; quoted by M. L. Baur: *Recherches sur l’histoire de l’anésthesie avant 1846*. Janus 31 (1927) 264-270

18 L. Alexander Dugas: *Exstirpation of the mamma of a female in the mesmeric sleep without any evidence of sensibility during the operation.* The Southern Medical and Surgical Journal NS, 1 (1845) 122-125

19 A. Loysel: *Recueil d’opérations chirurgicales pratiques sur des sujets magnétisés*. Cherbourg, 1845

20 Winter Alison: *Mesmerism and the Introduction of Surgical Anesthesia to Victorian England*. Engineering & Science 61 (1998); 2: 30-37 [↑](#footnote-ref-17)
18. [↑](#footnote-ref-18)
19. [↑](#footnote-ref-19)
20. [↑](#footnote-ref-20)
21. 21 In 2013 around 3000 German dentists use hypnosis and carry out minor interventions (e.g. tooth extractions) with the help of hypnotic trance (An interview with Dr. med. Horst Freigang, vice-president of the Deutsche Gesellschaft für Zahnärztliche Hypnose e.V. in a broadcast of n-tv). The Deutsche Gesellschaft *für Therapeutische Hypnose und* Hypnoseforschung *e. V*. is the successor of the 1900s' magnetopathic society (Deutsche Gesellschaft *für Therapeutische Hypnose und* Hypnoseforschung *e. V*.) [↑](#footnote-ref-21)
22. 22 The psycho-prophylactic method of the French Frédérick Leboyer popularised since1974, as well as reducing the level of anxiety before and during birth and raising the pain threshold, mainly recommends the correct breathing technique, since apparently this could also reduce the distress of the foetus viz. the new-born baby. His method is mainly used in German-speaking areas. See: Frédérick Leboyer: *Das Geheimnis der Geburt* (2000; original French edition: *Si l'enfantement m'était conté*, 1996).

23 Paul Chr. Lauterbur: *Image Formation by Induced Local Interactions: Examples Employing Nuclear Magnetic Resonance*. Nature 242 (1973) 190 [↑](#footnote-ref-22)
23. [↑](#footnote-ref-23)
24. 24 Giancarlo Carli: *Animal hypnosis and pain*. In: F. H. Frankel, H. S. Zamansky, eds.: *Hypnosis at its Bicentennial*. Plenum Press, New York, 1978, pp 68-79

25 Bruce Pomeranz: *Acupuncture and the endorphins*. Ethos 10 (1982) 385-393 [↑](#footnote-ref-24)
25. [↑](#footnote-ref-25)