

# Magnetism in language and literature, few tips

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## 1 ABSTRACT

In modern Italian dictionaries<sup>2</sup>, the definition of *magnetic* and *magnetism* is generally approached from two points of view: the technical-scientific connotation and the figurative one. Often the meanings of the two connotations are similar in sense, but their use in spoken and written language may be very different. In this brief paper I would like to show the results of a research I've conducted on the *magnetism* concept within modern and ancient dictionaries. I've produced a cloud graphic representation of the frequencies of these terms in the two connotations: technical-scientific and figurative.

## 2 MAGNETISM IN ITS TECHNICAL AND SCIENTIFIC CONNOTATION

In the first cloud are reproduced the words that, in some modern dictionaries, mark the definition of *magnetic* and *magnetism* in a technical and scientific connotation. The graphically largest words are most frequent, while the others appear in smaller and smaller characters depending on their occurrence. Considering the shape of the terms in the clouds, even the least frequent terms belong to the semantic field of science and technology.



Fig. 1 *magnetico* and *magnetismo* as a technical-scientific term in Italian dictionaries' definitions

The words *magnetic* and *magnetism*, and thus the physical phenomenon they define, are attested as far back as antiquity. Magnetism was known, tested, and described although there were no technologies suitable for measuring it, yet. Pliny the Elder, for example, 1st century AD, in his encyclopaedic work *Naturalis Historia*, describes it in these words:

[...] in due course we shall speak of the magnet stone and its affinity with iron. Iron is the only material that derives an evil power from this stone and retains it for a long time and becomes capable of

<sup>1</sup>CNR – IRCrES <https://www.ircres.cnr.it/index.php/it/biorci>

<sup>2</sup> Battaglia Salvatore, Grande Dizionario della Lingua Italiana, UTET, Torino, 1961 - 2002 <https://www.gdli.it>

De Mauro Tullio, Grande Dizionario dell'Italiano dell'uso, UTET, Torino, 1999 (ristampa 2004)

Devoto Giacomo Oli Gian Carlo– Dizionario della Lingua italiana, edizione 2000 – 2001 , Le Monnier Firenze, 2001

Treccani Vocabolario On-line <https://www.treccani.it>

Lo Zingarelli 2005, Vocabolario della lingua italiana di Nicola Zingarelli. Edizione 2005, Zanichelli, Bologna, 2005  
*Encyclopédie, ou Dictionnaire raisonné des sciences, des arts et des métiers, par une société de gens de lettres. Mis en ordre & publié par m. Diderot, ... & quant à la partie mathématique, par m. d'Alembert, ...* Seconde édition enrichie de notes, & donnée au public par M. Octavien Diodati noble lucquois, Lucques, chez Vincent Giuntini imprimeur (1758-1776) <https://www.byterfly.eu/islandora/object/libria%3A103213#mode/2up>

attracting another iron [...] But what is more inert than the stone that is immobile? Yet, behold, to the magnet nature has given senses and hands. [...] What is more tenacious than the hardness of iron? And nature has given it feet and instincts. Indeed, iron allows itself to be attracted by the magnet: that strong material that overcomes everything rushes towards I know not what void and, when it comes closest to the magnet, it leaps upon it, is caught and locked in its embrace. This is why they also call the magnet by another name, 'iron stone', and some people call it 'Hercules' stone'<sup>3</sup>.

In these pages, Pliny affirms that the intrinsic characteristics of mineral *Magnet* are superhuman, and own maleficent and mysterious forces. Its behaviour, he writes, looks like a lovers' hug.

Observing the terms used in this essay, it comes up that they are not strictly connoted as scientific. On the contrary, they are more likely related to images (*feet, hands, embrace*) and to philosophical categories (*evil, power, instincts*). It is stated, indeed, that for many centuries, this work was considered an irrefutable scientific truth, with the today's meaning of *science*.

The issue of magnetism and of the properties of the magnet mineral were well known in the 16<sup>th</sup> Century. Vannoccio Biringuccio, a master in metallurgy and author of the treatise *De la Pirotechnia* (1540)<sup>4</sup> describes the characteristics of the magnet using these words:

And now, in order to shorten this discourse, and to speak to you about the magnet and its properties, I will tell you that the magnet is one of those things that produces its apparent effects on our sight by a particular virtue, which I have so far concealed, that the cause, as far as I know from the most knowledgeable natural speculators, who have spoken of all other things, that they have not yet known, from which, certainly to those who consider it to be in their actions, it cannot be without great wonder, given that in this stone it seems that nature has put a certain spirit of vivacity into it, or rather that it cannot be seen; It seems that it has made, I would say, hands.

During the age of Enlightenment, Denis Diderot and Jean Baptiste Le Rond D'Alembert describe *Magnetism* in their monumental *Encyclopédie ou Dictionnaire raisonné des sciences, des arts et des métiers, par une société de gens de lettres* (1758-1776), the description of the magnetic phenomenon referred to *magnetism* is the following:

*Magnetism*: s.m. (Phys.) It is the generic name given to the various properties of the magnet [*aimant* in French]; these properties, as we know, are principally three: the attraction or virtue by which the magnet attracts iron; the direction or virtue by which the magnet turns towards the poles of the world, with more or less declination depending on the place on earth where the magnet is positioned; finally, the inclination or virtue by which a magnetized needle suspended on supports, tilts towards the horizon, orienting itself towards the pole. Its various properties have been set out in detail under the headings magnet needle, compass, and we refer the reader to those together with the words: *declination, variation, compass*. [...] It is now a question of dealing with the cause of these phenomena, which we promised to discuss under the heading magnet. Philosophers have built great systems on this, but so far have not been able to arrive at any satisfactory [explanation]

and the entry continues with a simplified summary of the theories of various physicists from

Monsieur Euler to M. Halley, who, to explain the declination of the compass, imagined a great magnet at the centre of the earth, a second globe contained within it, as in a node, which, due to rotation on its axis, maintains the declination of the needle in a continuous variation [...]

In French, the term used to denote *magnet* is the word *aimant*. It seems quite unquestionable that in this case the name magnet is the result of an adaptation (semantically and metaphorically marked) of the phenomenon noted in the physics of attraction. It seems quite evident that the morphological

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<sup>3</sup> Plinio Gaio Secondo, *Storia Naturale*, Vol. V, *Mineralogia e storia dell arte*, Libri 33-37, Torino, Einaudi, 1988, p.675

<sup>4</sup> Biringuccio Vannoccio, *Pirotechnia del signor Vannuccio Biringuccio senese...*, in Bologna, per Gioseffo Longhi, 1678, pag. 137. <https://www.byterfly.eu/islandora/object/libria%3A5089#mode/2up>

(and semantic) root *aimer* = *to love* iconographically assimilates the minerals attraction power to human emotions.

The linguistic transmission runs along two parallel paths, in balance between the progress of scientific knowledge and the specialisation of its language. The question seems to be which comes first? Is the new naming of the phenomenon, or the use of an already existing word adapted in order to describe the phenomenon?

In the first case, one starts from the observation of the existence of minerals that have intrinsic properties (for which there is no 'scientific' explanation, yet, but which are systematically observed). These properties are observed and studied, and soon find practical applications. In some extent, they contribute to forming an idea. But in general, anything not immediately explained by practice or science, sounds mysterious. Language is the tool by which a certain concept, phenomenon or idea can be described and transferred to others. Sometimes, though, the terms used are not yet specialised, and refer more likely to metaphoric features. For this reason, the borders between figurative terms and scientific ones are not so separated.

### 3 MAGNETISM IN ITS FIGURATIVE CONNOTATION

A lot of literature has been produced around such sense of mystery, found in situation of unaccounted practices or non-yet-known physical laws.

In the following two clouds are reported the words that in some modern dictionaries give the definition of *magnetic* and *magnetism* in a figurative sense. In the sense, for example, used in utterances within common, literal, and non-specifically scientific discourses. Also in this cloud, the larger the words are graphically represented, the more frequent they appear in the dictionary definitions.

Comparing the content of these latter clouds with the other two more scientifically connoted, it is noticed that here words are marked by important emotional meanings. The sense of the terms composing the cloud is pervaded by a sense of mystery and fascination. The word *attrazione* *attraction*, for example, recurs quite often, confirming the meaning of the impossibility to contrast with the will an inescapable and mysterious force. It is no coincidence that *sguardo*=*gaze* appears so highly in the cloud representation.



Fig. 2 *magnetico* and *magnetismo* as a **figurative** term in Italian dictionaries' definitions

It is noticeable that the use in the language of *magnetic* and *magnetism* in a figurative sense is recent: the first attestations date from the late 17th and early 18th century. In this period, an Austrian

doctor, Franz Anton Mesmer<sup>5</sup> used to claim the theory of *animal magnetism*. He was convinced that certain people, including himself, possessed a magnetic power in their bodies that could have curative effects just by the laying on of his hands. This therapy seemed to be efficient above all on people suffering from various diseases, especially neural or psychological ones. These theories aroused much perplexity among scientists, but also a certain curiosity<sup>6</sup>. A large debate on *pros and against* the Mesmer's theories arose for decades: a huge number of experiments were conducted all around Europe, and a lot of supposed scientific publications were produced as well.

One of the authors against Mesmer's theories was Gianrinaldo Conte Carli. In his book intitled *Sulla Magia*, published in 1785, for example, argues about magnetism in terms of "likes and dislikes", and continues his dissertation on the criticism and refutation of any scientific theorization regarding magic. He first quotes Pliny as distancing himself from any kind of manifestation of magic, calling it "a fraudulent art", and affirms that:

magicians and diviners have brought great insult to humanity as creators of infinite superstition, and allowing nothing to be done in accordance with correct reasoning<sup>7</sup>

But in general, the concept of *animal magnetism* is more likely registered within the figurative connotation of the word *magnetism*. In today's English the quite common verb *mesmerize*, is mostly used in non-technical or scientific contexts, and it means

to have someone's attention completely so that they cannot think of anything else<sup>8</sup>.

#### 4 MAGNETISM AND ITS INVISIBLE EFFECTS IN LITERATURE

The loss of will, and other dangerous effects due to Mesmer's practices used to be one of the main topics in the novels published in France and England among 1780 and 1914<sup>9</sup>. Most of the authors were attracted by the mystery and fascination of all the practices of magnetism, despite the ever-larger knowledge that, at the same time, the scientific studies on the magnetism were conducted in many labs in Europe.

A large part of these novels was concentrated on the power of magnetism among people. The main purpose of the principal characters of the novels, often masters of magnetism practices, was to achieve the complete abandon of their victims. These, losing their will and their free thinking, are compelled to act or feel according to the *magnetiseurs*' power, who usually get personal advantages or incomes, especially when actions could be socially bad or unacceptable. The most common aim of the magnetism masters in these narratives, in fact, was attraction and power to seduce women for romantic and amorous, but especially for erotic purposes<sup>10</sup>.

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<sup>5</sup> Mesmer, F.A., *Mémoire de F.A. Mesmer, Docteur en Médecine, sur ses découvertes*, Paris, Chez Fuchs, 1798 - 1799.

<sup>6</sup> Angelo Colò, *dottore in medicina, Prodromo sull'azione salutare del magnetismo animale e della musica ossia ragguaglio di tre interessanti guarigioni ultimamente ottenute col mezzo del magnetismo animale e della musica: Con un cenno storico sui progressi del primo in Francia e singolarmente in Germania* di Angelo Colò, Bologna, Tipografia Giuseppe Lucchesini, 1815

[https://books.google.it/books/about/Prodromo\\_sull\\_azione\\_salutare\\_del\\_magnet.html?id=RJ08AAAACAAJ&redir\\_esc=y](https://books.google.it/books/about/Prodromo_sull_azione_salutare_del_magnet.html?id=RJ08AAAACAAJ&redir_esc=y)

<sup>7</sup> Gianrinaldo Conte Carli, *Delle opere del signor commendatore don Gianrinaldo conte Carli, Presidente emerito del supremo consiglio di pubblica economia e del Regio Ducal Magistrato Camerale di Milano e Consigliere Intimo \_\_\_ di Stato di S.M.I. e R.A.*, Tomo IX, Nell'Imperial Monistero di S. Ambrogio Maggiore, con approvazione, Milano, 1785, p. 158 159

<https://www.byterfly.eu/islandora/object/libria%3A302229#page/4/mode/2up>

<sup>8</sup> Cambridge Advanced Learner's Dictionary, CUP, 2005.

<sup>9</sup> Feuillebois Victoire, Pézard Emilie (eds.), *Le Réel invisible. Le magnétisme dans la littérature (1780-1914)*, "La revue des lettres modernes 2022- 12", Écritures XIX, Paris, Lettres modernes Minard, 2022.

<sup>10</sup> Pézard Émilie, *Introduction in Le Réel invisible*, cit. p.28 – 30.

Another common topic of the stories on magnetism practices is the seduction of the victims in order to create psychological dependencies or to transform the relationship into agreement, or even to succeed in criminal actions with the involuntary complicity of the victims<sup>11</sup>.

In most literary representations, prevails the identification of magnetism as a mysterious fluid, of which only few professors of this practice, *magnetiseurs*, know virtues, potential, applications, and strength. People become fascinated and victims of this power, of this incantation, and lose the ability to be spiritually and mentally autonomous, remaining bewitched and deprived of the possibility of choosing and deciding. Magnetism is described as an all-round dangerous tool for many of the authors dealing with this topic. It's quite unusual that in these stories hardly any reference is made to scientific theories and results about magnetism and its properties in nature. This phenomenon is a very interesting cue for authors to deal with mystery, to immerse themselves in the complexity of human relationships (love, power, family) through the contrivance of magnetism, which contains the mystery of its inexplicable, yet tangible force of attraction, and is easily transferable to the mystery of human spiritual and emotional life. On the other hand, it supports a scientific justification to explain phenomena otherwise still difficult to interpret through psychological and psychoanalytic knowledge that is still not clinically ratified.

Only few authors mention Mesmer's theories in literature, and they are specifically linked to the application of magnetism as a healing treatment for pathologies like 'hysteria' and 'melancholia'<sup>12</sup>. For this reason, sometimes in the narrations, the magnetism therapy is seen as an overflowing into the practice of circumventing emotionally fragile personalities. Sometimes, in fact, the topics of forceful seductions or 'therapeutic' rape practices are introduced in plots, besides some stories about an occult science that steals the soul. Again, evil, and depraved climax run in parallel with magnetism. The invisible but real continues to frighten human imagination.

Another element emphasizing the mysterious and powerful aura of magnetism is the realisation of the existence of something very real and perceptible that is nevertheless invisible. The very concept of fluid metaphorizes the invisible real by reifying it, when instead, only the effects of this phenomenon are clearly visible and tangible, both in the technical-scientific sphere and in relational and emotional life.

Despite the great qualitative distance between the words that define *magnetic* and *magnetism* scientifically or figuratively, we observe that the two semantic fields have many terms in common. These include *force*, *power*, *attraction*, *strength*, but the most interesting is *fluid*: a noun that defines something non-compressible, something liquid and in motion; a substance that flows smoothly without limitation. At the same time, *fluid* evokes metaphysical contexts in which thoughts and wills may lose their stability and rationality. It seems as if, invested by the power of the magnetic fluidity, humans may become deprived of every capacity of discernment, of thinking autonomously, enslaved of a flowing of suggestions, upsetting emotions and hurtful fascinations by means of magnetic gaze or magnetic voice.

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<sup>11</sup> *Ibidem*.

<sup>12</sup> Enriquez Romain, *Charles Richet et Henry Beaunis. L'hypnose entre psychologie expérimentale et récit expérimentale (1875 – 1900)*, in *Le Réel invisible*. cit. p. 97- 120.

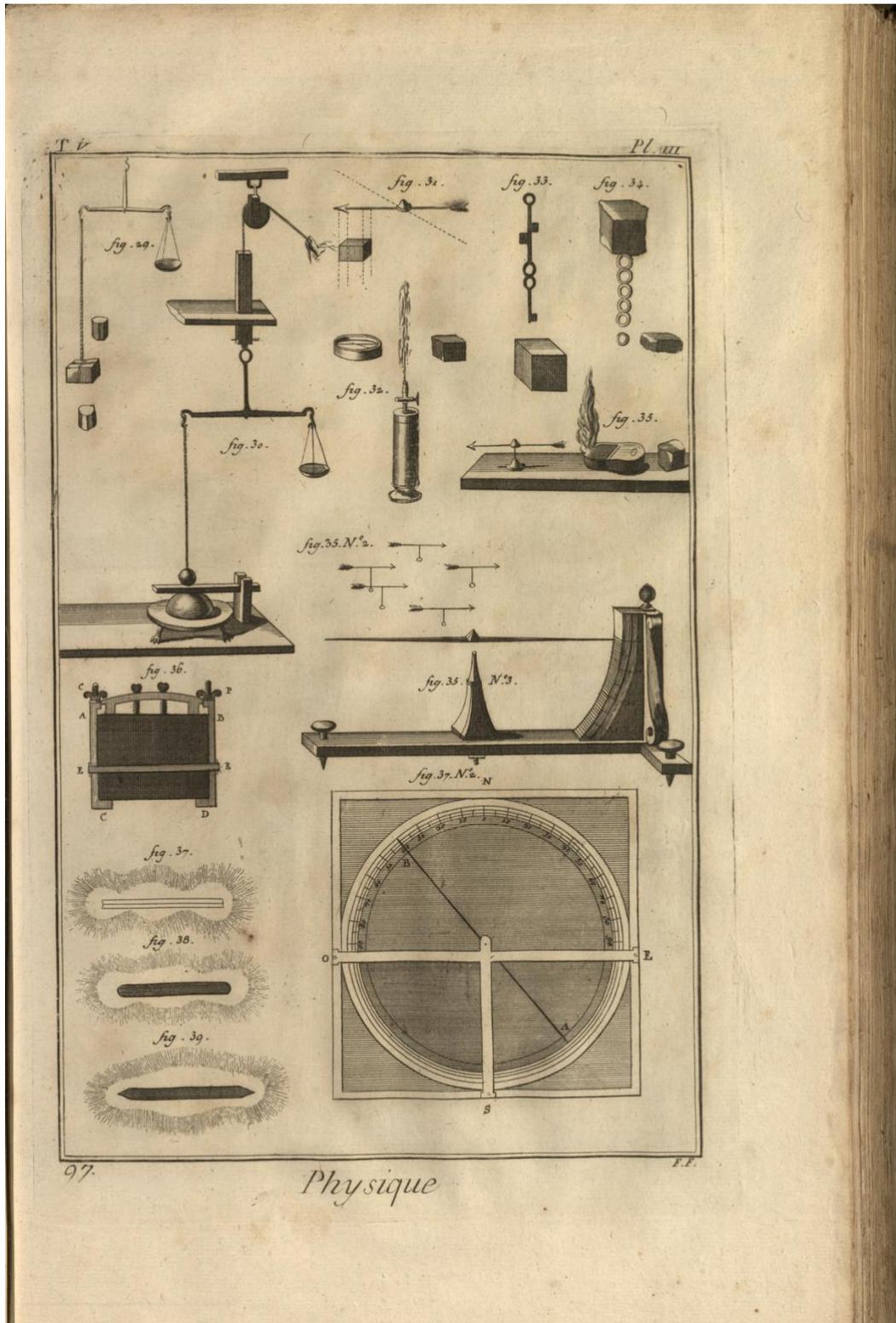


Fig. 3 L'Encyclopédie ou Dictionnaire raisonné des sciences, des arts et des métiers (1758-1776) – Planches pour l'encyclopédie ou pour le dictionnaire raisonne des sciences, des arts liberaux, et des arts mèchaniques, avec leur explication. Tome cinquieme;  
<https://www.byterfly.eu/islandora/object/libria:119574#page/227/mode/2up>

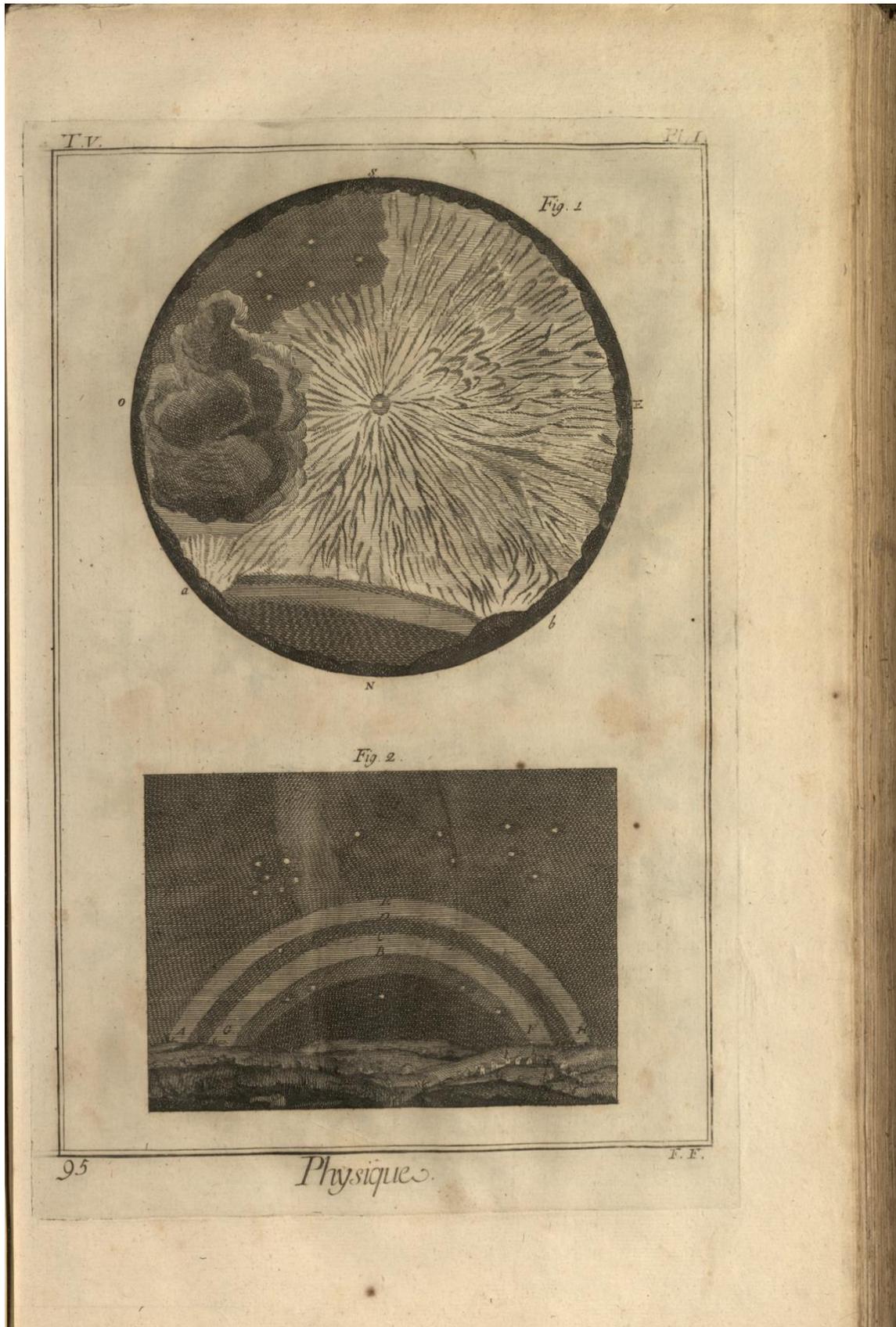


Fig. 4 *L'Encyclopédie ou Dictionnaire raisonné des sciences, des arts et des métiers* (1758-1776) –Planches pour l'encyclopédie ou pour le dictionnaire raisonne des sciences, des arts liberéraux, et des arts mèchaniques, avec leur explication. Tome cinquieme; <https://www.byterfly.eu/islandora/object/libria:119574#page/223/mode/2up>

Sect. II.

2. *Aquarum latentium notæ sunt salix errativa, alnus, vitex; ex herbis ranunculus, nymphæa, pulicaria, cyperus, mentastrum aquaticum & similia, quæ & aquam amant, & sine ea nec ali nec conservari possunt. Accedit hinc haud invidens indicium, stabulantes ranarum coaxantium greges.*

Cretacea terra aquam producit infatigabilem.

3. Sumitur ex qualitate locorum, terrestriusque glebæ natura & proprietate. Ubi cretaceum occurrit solum varia miscella corruptum, ibi nec copiam, nec boni saporis aquam speres. Contrà in argillosa terra ab omnibus quisquiliis desæcata, aqua semper dulcis; frigidior in tophe; dulces enim uterque levesque facit aquas, & colando continet sordes. Glarea incertas, sed boni saporis promittit. Sabulum ex arena carbunculosa certas stabileque, & quod potissimum est, salubres spondet: Rubra quoque saxa optimas speique certissimæ: sub saxosis montium radicibus & silicibus uberiores, frigidiores, salubrioresque.

Bona aqua quæ venas amat.

Atque hæc sunt præcipua signa aquarum latentium; nunc quomodo ex aliis modis experimentisque explorari queant videamus.

## EXPERIMENTUM I.

Locus quispiam in profunditatem quinque circiter pedum defodiatur, tum circa Solis occasum ærea vel plumbea pelvis oleo peruncta in eo collocetur, inverso situ, ita ut concavitas fundum respiciat, fossæ interim orificio arundinibus & frondibus cooperto, humoque desuper congesta; postera die aperiat; & si quidem in ære vel plumbo humor copiosa guttarum aspergine stillaverit, de latentis aquæ abundantia certus sis.

## EXPERIMENTUM II.

Si simili præcedenti fossæ vas siglinum, crudum adhuc & incoctum lanæque vellus laxè junctum imposueris, postera verò die vas contractum & humore evaporante dissolutum, vellus quoque madidum, ita ut aqua inde exprimi possit, repereris, id fanè copiosæ aquæ inibi latentis signum erit.

Idem fiet, si ardens lucerna oleique plena exponatur in eadem fossa frondibus cooperta quam si postera die extinctam videris, nullo olei aut ellychnii defectu, certò tibi persuadeas, aquas inibi latitare non procul a lucerna distitas.

Item si ignem in ea accenderis, terra adusta nebulosum halitum expirabit, latentis aquæ indicium.

## EXPERIMENTUM III.

Aquilex manè Orientem versus, ante Solis tamen ortum pronus in terram prostratus, observet, utrum alicubi humores in tenuem nubeculam se crispent, & tremulo motu aërem feriant; quod ubi comperit, fodiat, de aqua condita securus.

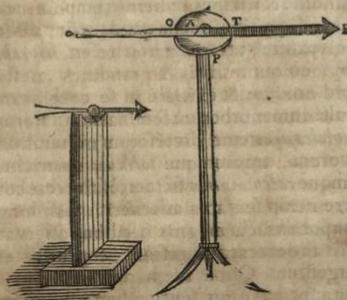
Nonnulli, nescio qua superstitione in Experimento transversum acti, putant id effici posse per cribrum, in quo suspensa forfex, apicibus suis mox ubi venæ latentis imminuerit, infallibili indicio aquam ostendat. Memini me Viterbii hujusmodi ridiculum experimentum à Latomo quodam factum vidisse; sed id uti nullis naturæ principiis fultum subsistebat, ita meritò omnium risu & cachinnis explosum fuit.

Superstitio nonnullorum aquarum queritum.

His ego addam nonnulla multò reconditiora, certissima tamen, quibus aquarum abditarum latentes explorare olim solebam.

## EXPERIMENTUM IV.

Fiat ex ligno quopiam ad aquam sympathicam, cujusmodi Alnus & Salix esse possent, sagitta CB, eo ferè modo quo in magneticis pyxidibus acus collocari solent, ea tamen arte fabricata, ut mediæ C A, ex alio quo-



vis ligno, quantum fieri potest sicco, altera verò mediæ A B, ex alni aut salicis viridi ligno constet, quæ in medio A concavo ex æreo cono simul commissa, perfectè ad æquilibrium nectatur; quo factò, fiat pes in quo instrumentum firmari possit, habeatque in superiori loco obelum, qui æreo cono sagittæ inditus, sagittam non tantum sustentet, sed ita tenuem reddat, ut sagitta nullo negotio nulloque impedimento & resistentia facillimo & lenissimo motu, haud secus ac in magneticis pyxidibus acus, hinc inde agitari possit, & habebis instrumentum præparatum; vel si conulus iste concavus ægrius fieri possit, supra axem versatilem sagittam æquilibrabis, & idem proveniet effectus; ut in Figura apparet.

Inquisitionis itaque alicubi locorum aquæ latentis venam, instrumentum in loco præcedentibus signis conspicuo & umbrato, summo mane ante ortum Solis constitues; & deinde post aliquot horas inspicere instrumenti partem A B sagittæ ex alnino ligno confectæ; quæ si deorsum declinaverit, certus sis, eo loco aquam esse conditam; cum enim dictum lignum maximam ad aquas sympathicam habeat, & humidum ex terra vaporem avidè attrahat, illud necessariò humi-

Sympathia virga alnina cum aqua.

Fig. 5 Kircher Athanasius, *Mundus subterraneus*, Vol. 1, Joannem Janssonium à Waesberge & Filios, Amstelodami, 1678, p. 266; <https://www.byterfly.eu/islandora/object/libria:6999#page/306/mode/2up>

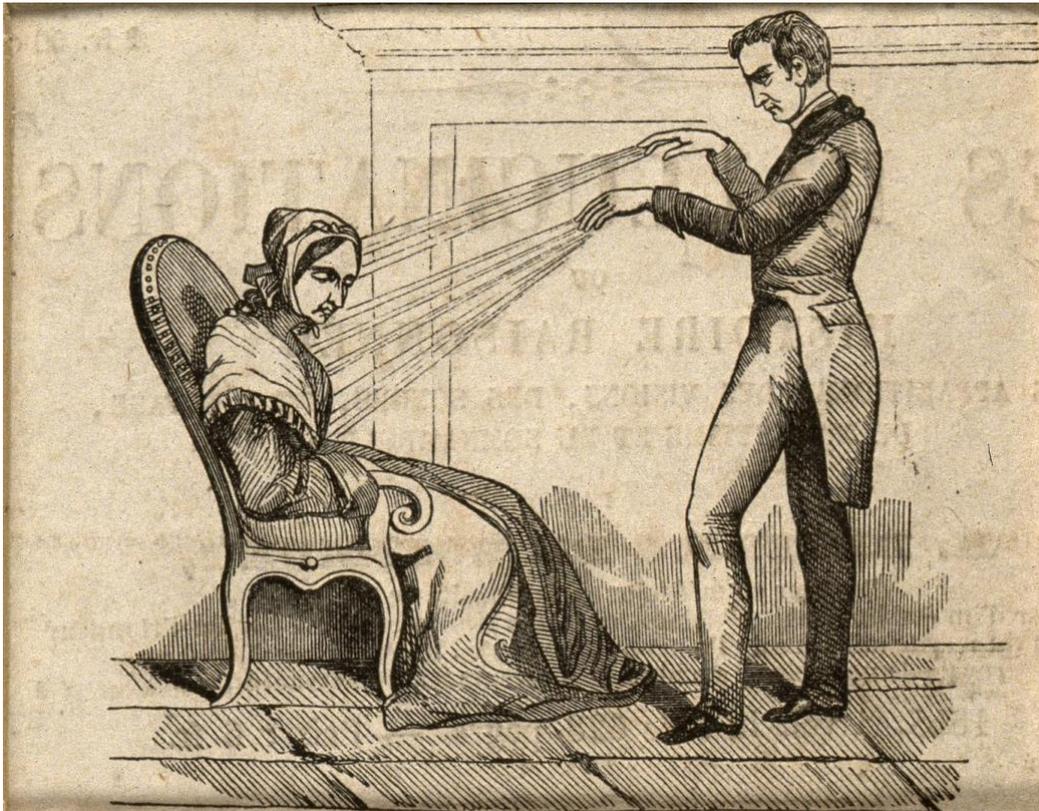


Fig. 6 Mesmerism practitioner in a 19<sup>th</sup> Century print <https://wellcomecollection.org/works/h5cckrf> CC-BY-4.0

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In 2002 she joined the CNR Istituto di Storia dell'Europa Mediterranea and has proceeded with her lexicological studies on sectorial and specialised languages. In 2010 she was involved in the institutional project Migrazioni. Her scientific interests conveyed into the study of metaphors in the migrant literature published in Italy. In 2014 within a CNR reorganisation project, she joined IRCrES. Here she is still conducting research concerning the technical and sectorial languages. She is also conducting DH projects for the valorisation and reuse of the IRCrES bibliographical technical Cultural Heritage.

<https://www.ircres.cnr.it/index.php/it/biorci>

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