

Vitalism: from philosophy of life to medicine

Vitalismo: de la filosofía de la vida a la medicina

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ABSTRACT

During the “Age of Reason” and part of the “Enlightenment”, vitalism was the most logical explanation for the physical phenomena occurring in nature and life; from today’s perspective, vitalism can be defined as a theory of life in the life sciences. Much of the preservation and diffusion of vitalism was thanks to the Greek physician Galen of Pergamon (129-216 BC, approximately), who, in addition to his work in health, was an eminent philosopher who took features of the ideology of Plato (427-347 B.C.), Aristotle (384-322 B.C.) and the Hippocratic tradition, to generate his doctrinal system based on the union of medicine and philosophy. Georg Ernst Stahl (1659-1734) took up the ancient concept of anima (from the Latin alma) to make sense of regulating health and disease. Contemporaneously, François Boissier de Sauvages de Lacroix (1706-1767) introduced animism (the word *âme*) to the medical school of Montpellier in France (1730), where the theory of vital flux emerged. Due to Napoleonic campaigns throughout Europe and the monarch’s support for science, vitalism was internationally distributed throughout the 18th century. It was not until Bichat approached the study of tissue that brought down the fibrillarist theory giving rise to the application of an anatomico-clinical mentality.

RESUMEN

Durante la “Edad de la razón” y parte de la “Ilustración” el vitalismo fue retomado como la explicación más lógica a los fenómenos físicos que ocurrían en la naturaleza y la vida; desde la perspectiva actual, el vitalismo se puede definir como una teoría de la vida, en las ciencias de la vida. Gran parte de la conservación y difusión del vitalismo fue gracias al médico griego Galeno de Pérgamo (129-216 a.C., aproximadamente) quien, además de sus labores en la salud, fue un eminente filósofo que tomó rasgos de la ideología de Platón (427-347 a.C.), Aristóteles (384-322 AC) y la tradición hipocrática, para generar su propio sistema doctrinal basado en la unión de la medicina y la filosofía. Georg Ernst Stahl (1659-1734) retomó el antiguo concepto de *ánima* (del latín alma) con el propósito de dar sentido a la regulación de la salud y la enfermedad. De forma contemporánea, François Boissier de Sauvages de Lacroix (1706-1767) introdujo al animismo (la palabra *âme*) a la escuela de medicina de Montpellier en Francia (1730), en donde surgió la teoría del flujo vital. Debido a las campañas napoleónicas a través de Europa, así como al apoyo del monarca hacia la ciencia, el vitalismo tuvo una distribución de carácter internacional a lo largo del siglo XVIII. Fue hasta que Bichat abordó el estudio del tejido que hizo caer la teoría fibrillarista y dio pie a la aplicación de una mentalidad anatomoclínica.

INTRODUCTION

During the “Age of Reason” and part of the “Enlightenment”, vitalism was considered the most logical explanation for the physical phenomena occurring in nature and life; from today’s perspective, vitalism can be defined as a theory of life in life sciences (natural philosophy, natural sciences, and medicine).

Although the origin of vitalism as a doctrine is not known, the term is strongly associated with the medical tradition of the Montpellier school during the 18th century, as well as with the ideas of the physician Paul-Joseph Barthez (1734-1806); however, it should be mentioned that its history goes back to Aristotle and his work.¹⁻³ Likewise, within the conceptualization of vitalism between the 17th and 19th

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centuries, it is possible to recognize three phases: animism (end of the 17th century), the conception of vital force or energy (1770-1840), and finally the assumption of “organizing power” (beginning of the 19th century).

Vitalism and its evolution in the sciences

Much of the preservation and diffusion of vitalism was thanks to the Greek physician Galen of Pergamon (129-216 BC, who, in addition to his work in health, was an eminent philosopher who took features of the ideology of Plato (427-347 BC), Aristotle (384-322 BC) and the Hippocratic tradition, to generate his own doctrinal system based on the union of medicine and philosophy.^{2,3} Galen built his biological doctrinal principles on Aristotelian vitalism based on the works “*Historia Animalium*” (around 343 BC), “*De partibus animalium*” (around 350 BC), and “*De generatione animalium*” (4th century BC).⁴⁻⁶

Galen’s doctrinal legacy was accepted as an actual science within the medical field so that no other conceptions were developed during the centuries that it was in force. However, in the 17th century Johannes Kepler (1571-1630), Galileo Galilei (1564-1642), Isaac Newton (1642-1727), and René Descartes (1596-1650) gave impetus to the Scientific Revolution, initiated by Francis Bacon (1561-1626) in the second half of the 16th century and, after the publication of the “*Discourse on Method*” (*Discours de la méthode pour bien conduire sa raison, et chercher la vérité dans les sciences*, 1637) written by Descartes, for most of the 17th century the Cartesian mechanicism dominated the explanation of life through physics.⁷⁻⁹ However, towards the end of the century, the German physician Georg Ernst Stahl (1659-1734), due to his training as a pietist in the Lutheran movement and his inability to accept the medical-philosophical beliefs based on the framework of Cartesian mechanistic work, took up the ancient concept of anima (from the Latin alma) in order to make sense of the regulation of health and disease, such as the duration and course of human life through a somewhat religious vision; however, he dispensed with the ancient element that took

the spirits (animals) as intermediaries between the material and the immaterial.^{5,8}

For Stahl, this soul gives life to matter, although it does not live. Moreover, life cannot be explained by the physical and chemical components that form the body; he did not consider the human body as a mechanism but as “an organism” with a clear distinction between the mind (*res cogitans*) and the body (*res extensa*) that manifested the existence of a vital flow (*tonicus motor*). Thus, animism emerged as an option to the inability of mechanisms to explain certain properties of the human body without including a spiritual element that united reason with the physical aspects of the body.^{5,10-12}

Stahl’s ideas were so influential throughout the next century that countless contemporary scholars gave their opinion, such as Gottfried Wilhelm von Leibniz (1646-1716), John Locke (1632-1704), Immanuel Kant (1724-1804), Denis Diderot (1713-1784), Claude-Adrien Helvétius (1715-1771), among others.

The eighteenth century was characterized by the continuous dispute between both philosophical currents, where each one was reinforced according to concepts implemented by each of the new emerging thinkers. Thus, the mechanistic ideology was strongly hit after being criticized by the French scholar Pierre Daniel Huet (1630-1721), who affirmed that the Cartesian doctrine was a plagiarism of the philosophy exposed in the work “*Antoniana Margarita: opus nempe physicis, medicis ac theologis non minus vtile quam necessarium*”¹³ by the Spanish physician Antonio Gomez Pereira (1500- 1558) published during the 16th century which represented the first modern approach to brain function to the exclusion of the Galenic concepts of soul and spirit, and established a topographical brain model for the functioning of the prefrontal cortex.^{8,9,14} The dispute was further fueled sometime later by Herman Boerhaave (1668-1738) when he spoke of “iatro-mechanics,” expressing the existence of a clear division between soul and body with a connection that could not be explained.^{15,16} All this would form the basis of the philosophy of mind and the conceptualization of mind-body dualism, denoting the non-physical view of mental phenomena.

Contemporaneously, François Boissier de Sauvages de Lacroix (1706-1767) introduced animism (the word *âme*) to the medical school of Montpellier in France (1730), where the theory of the vital flux (formerly defined by Stahl as *tonicus motor*) regulating health, disease, duration, and course of human life emerged.^{3,17} However, with time, Boissier's ideas moved away from the original Stahlian animism by affirming that the main role of the soul is in the emotions, having nothing to do with other physiological phenomena (such as movements or secretions). We can say that vitalism emerged as a conservative and more measured response to mechanistic and atomistic physicochemical reductionism.³

Montpellier's vitalist ideas continued to change due to the thinking of Paul Joseph Barthez (1734-1806), a pupil of Boissier, who preferred to call it "*le Principe Vitale*" or "vital principle", as well as Jean Guillaume Grimaud (1750-1789) who subdivided the *Principe Vitale* into external and internal motor forces (*forces motrices*) and an internal "inferior" vital sense (*sens vital intérieur*).^{3,16-18}

In the mid-18th century, many physicians and naturalists described vital activity as originating in the body parts. Among the most important proponents of this theory were the ophthalmologist Albrecht von Haller (1708-1777) and Théophile de Bordeu (1722-1776); von Haller established, based on microscopic observations and experimental investigations, the basic concept of "fiber", as well as its inherent properties: irritability (contractility), sensitivity and immanent force (*vis insita*).¹⁶⁻¹⁹ He also clarified that these properties are exclusive to animate objects and nonexistent in inert matter. In addition, von Haller distinguished between the irritability of the muscular fiber, which he called contractility, and the excitability of the nervous fiber, which he called sensibility. He called sensitive fiber in man that, by being touched, transmitted to the soul the impression of this contact.¹⁶ He took the skin's sensitivity as a reference to compare with the rest of the organism. These ideas formed the pillar of the vitalism of the Montpellier school, whose major exponents were Louis de La Caze (1705-1765) and Gabriel F. Venel (1723-1775) together with Bordeu.

However, we must emphasize that both Bordeu and Haller described the inherent properties of living beings; Bordeu's vitalistic theory was based on the irritability of the fibers, while Haller emphasized sensibility and immanent force; this is why Marie-François-Xavier Bichat (1771-1802) creator of the experimental method and modern histology, explicitly compared Barthez's vital principle with Stahl's anima, and therefore considered these vital properties similar to gravity and other physical forces.^{3,16-19}

Having said this, due to the Napoleonic campaigns throughout Europe, as well as the support of the monarch towards science, vitalism had an international distribution during the 18th century, giving rise to different variants throughout the continent. Thus, in Germany, the "vital force" (*Lebenskraft*) developed as a rather abstract concept (Medicus, 1774), as a universal "formative impulse" (*Bildungstrieb*) (Blumenbach, 1787) or as an "organizing principle" operating according to a "rational plan" (Müller, 1833-1834). Meanwhile, in Italy, Luigi Galvani defended the idea of the existence of two types of electrical energy: animal energy and "common" energy. Galvani read his lecture "*De Animal Electricitate*" for the first time at the Academy of Sciences of Bologna on October 30, 1786. In addition to presenting his results in the 1791 paper "*De viribus electricitatis in motu musculari. Commentarius*", which changed the medicine of the time after giving rise to a scientific debacle with the Italian physicist Alessandro Giuseppe Antonio Anastasio Volta (1745-1827).^{20,21}

On the other hand, "mesmerism" was born in Vienna and introduced by the physician Franz Anton Mesmer (1734-1815), who affirmed the existence of "animal magnetism", a universal fluid. However, it did not have the support of the scientific community. Mesmerism moved away from the scientific method and medicine. During the following years, it was adopted as an unconventional therapy and was associated with mystical traditions giving rise to the genesis of associated sciences and diverse therapies such as spiritualism, phrenology, clairvoyance, and telepathy; however, vitalism remained in force as an indoctrinated theory for the medical sciences.²²

Vitalism and the scientific method

Despite its wide distribution, vitalism’s main difficulty was to distance itself from the scientific method and the various philosophical currents that derived from it; there was opposition and reluctance towards the practice of experimentation, including experimentation on life and a ‘vitalist’ reaction to this perspective; it was not until Bichat approached the study of tissue that the fibrillarist theory in force since the sixteenth century was demerited and gave rise to the application of an anatomoclinical mentality.²³ Histopathological studies and the conceptualization of the term “tissue” centered on French physiology eventually consecrated a new mechanistic antithesis with the need to resort to the vitalist hypothesis. Bichat defined and enshrined the properties of living systems down to their components through their 21 tissues (Table 1); this made the vital properties assigned to these components opposed to their physical properties, again overthrowing mechanicism. For the above, the French physician François Magendie (1783-1855) provided useful insight through his experiments. Magendie founded the first physiology laboratory in France in 1830, and many of his experiments were aimed at abolishing the vital properties known as sensibility and contractility and “considering them as functions”; however, he recognized that many physiological phenomena remained beyond experimental reach, so it was not possible to explain them in physical terms for the time. While Magendie was not entirely a vitalist, his experiments gave rise to a “rational” view of vitalism and physiological empiricism.^{23,24}

On the other hand, the German Theodor Schwann (1810-1882) proposed two views on organized bodies: the teleological view, which stated that “every organism originates with an inherent power which molds it in conformity with an overriding idea, arranging the molecules in the necessary relation to achieve certain purposes established by this idea”. And second, the physical view: “... the fundamental powers of organized bodies agree essentially with those of inorganic nature, which work together blindly by the laws of

necessity and independently of any purpose”. Schwann’s theory was perhaps the precedent or preamble to the coming changes for the vital force theory.^{25,26}

Sooner rather than later, Claude Bernard (1813-1878), a pupil of Magendie, had to re-establish the methodological hypothesis as a fundamental part of the experimental method; this gave rise to the axiom of determinism. Claude Bernard believed it was necessary to abandon the idea of antagonism between the general external forces and the vital internal forces of organisms, which meant repealing the dogma imposed by the vitalist and mechanistic doctrine.²⁷⁻³⁰

The 19th century gave way to a new way of thinking; the empiricism of Magendie and Claude Bernard evolved towards doctrines in which reason is the fundamental pillar of science: rationalism and positivism.²⁸⁻³⁰

Nowadays, philosophy and medicine are still working hand in hand, although they no longer explain life and the organism’s functioning. Currently, the question lies in the origin of our thinking and the ability to

Table 1: Bichat’s tissues.²³

- | |
|-----------------------------------|
| 1. Cellular |
| 2. Nervous system of animal life |
| 3. Nervous system of organic life |
| 4. Arterial |
| 5. Venous |
| 6. Exhaling |
| 7. Absorbent or lymphatic |
| 8. Bone |
| 9. Medullar |
| 10. Tendinous |
| 11. Fibrous tissue |
| 12. Fibrous-tendinous tissue |
| 13. Muscular of animal life |
| 14. Muscular of organic life |
| 15. Mucous |
| 16. Serous |
| 17. Synovial |
| 18. Glandular |
| 19. Dermal |
| 20. Epidermal |
| 21. Pilous |

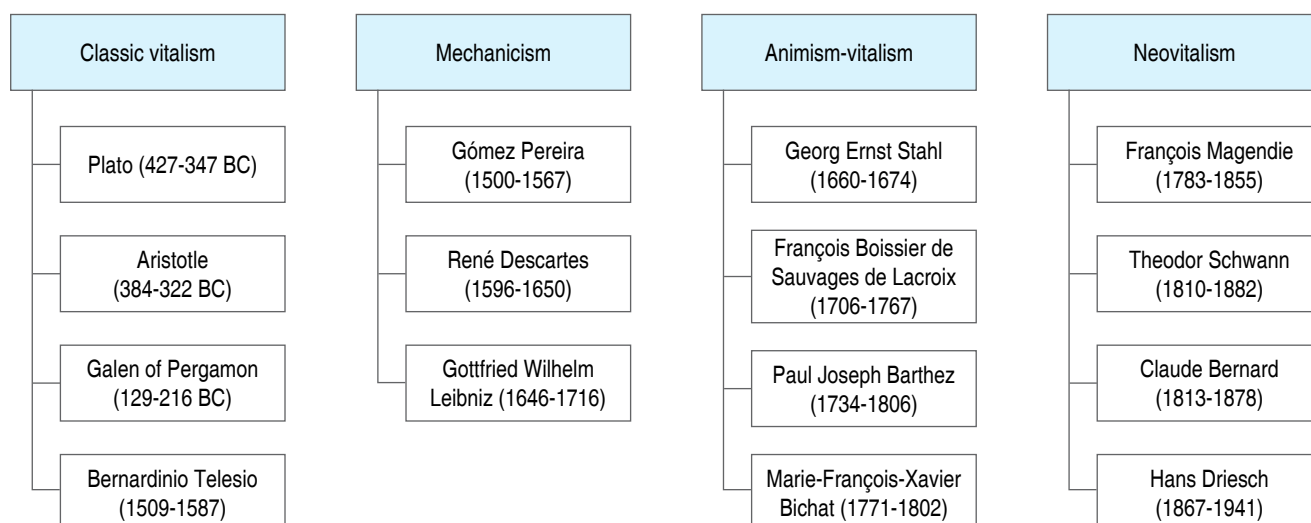


Figure 1: Schematization that exemplifies the philosophical currents related to vitalism and its exponents by epoch.

see ourselves as thinking beings; the medical-philosophical conceptualization allows us to explain some characteristics of human beings of a social nature such as free will, empathy, and emotional states, among others.³¹ In addition, it allows us to rationalize our own consciousness, which, in recent years, has led to the genesis of cognitive neuroscience that allows the explanation and interpretation of emotions around a situational link and the conditions associated with different neurological diseases. *Figure 1* briefly summarizes the philosophical currents related to vitalism and their important exponents.

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