# Visions of Vitalism: Medicine, Philosophy and the Soul in Nineteenth Century France

Sebastien Normandin
Department of History
McGill University, Montreal

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*Abstract*

Vitalism is an underappreciated and often misunderstood idea. This thesis seeks to explore the historical origins and meanings of vitalism in 19th century France; tracing the transition from medical vitalism in the Montpellier School in the late 18th and early 19th century to a largely philosophical vitalism in the late 19th century, emblemized by Henri Bergson.

I argue that the decline of medical vitalism was brought about by the rise of scientific medicine, the experimentalism of physiologists like Claude Bernard and the growing influence of positivism in late 19th century France. I see the seminal moment of this transition from a metaphysical to a scientific world-view in the materialism-spiritualism controversy of the 1850s, which was sparked by the development of modern biology and the experimental life sciences.

Despite its general disappearance from mainstream medicine and science, vitalism continued to have echoes in a number of fields in the 20th century, and remains a concept relevant to our contemporary circumstances.

***Résumé***

Le vitalisme est une doctrine philosophique sous-estimée et souvent mal comprise. Le présent mémoire explore les origines historiques du vitalisme et ses formes dans la pensée française du XIXe siècle, trace la transformation menant du vitalisme médical de l'école de Montpellier à la fin du XVIIIe et au début du XIXe à celui, essentiellement philosophique, de la fin du XIXe, symbolisé par Henri Bergson.

Le déclin du vitalisme en médecine est attribué à l'expansion de la médecine scientifique, à l'expérimentalisme des physiologistes tels que Claude Bernard, ainsi qu'à l'influence croissante du positivisme à la fin du XIXe en France. La controverse entre matérialisme et spiritualisme pendant les années 1850 est perçu comme moment séminal du passage d'une conception métaphysique à une conception scientifique du monde, déclenché par le développement de la biologie moderne et par l'adoption de méthodes expérimentales dans les sciences de la vie.

Malgré l'absence presque totale de notions vitalistes dans la médecine officielle et les sciences, on retrouve des échos du vitalisme dans certains domaines au cours du XXe siècle, et il reste un concept pertinent dans le monde actuel.

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A project of this magnitude and scope takes a long time to come to fruition, and, despite the very personal dimension, it is in many ways a collective endeavor. There are thus innumerable people to thank, and if they have been overlooked in what follows, I hope they realize the fault is entirely mine and in no way diminishes their contribution.

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particular name in this group comes to mind and it is Chris Rogers. I have never met a more disarmingly charming, enthusiastic and patriotic Canadian, and it is my sincere hope that he one day makes his mark on the Canadian political scene.

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Finally, and most importantly, I would like to thank my mother, Richarda Normandin. Her support, love and patience are immeasurable, and I owe to her much of my capability in regards to scholarly pursuits. She nurtured my curiosity and allowed me the freedom to explore thought and ideas to the full extent of my ability. She's also a writer in her own right, and has helped with innumerable editorial suggestions throughout the production of this dissertation. It is to her that I dedicate this project.

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## *Foreward*
## *Is Vitalism Dead?*

In a series of lectures delivered at the University of Washington in 1966 entitled "Is vitalism dead?" Francis Crick, co-discoverer of the double helix, stated that "exact knowledge is the enemy of vitalism."[1] His lectures, which focused on the difficulty of defining what "living" meant, responded to the idea of vitalism with an explanation of how "complexity," the problem he felt motivated the implementation of vitalistic explanations, could be simply understood in terms of evolution and DNA. These "mechanisms" preserved (and even altered) "complexity" from generation to generation. What kind of "exact knowledge" Crick was referring to is unclear, since the origin of life and the "mechanism" of natural selection are not subject to empirical verification. Ironically, in the process of making his point, Crick made a number of inexact assumptions, including the suggestion that vitalists had a tendency towards religious affinity (i.e. Christian, specifically Catholic); and he embraced the notion that the West

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[1] Francis Crick, *Of Molecules and Men* (Seattle: University of Washington Press, 1966), 99. I would suggest that, historically, the death of vitalism is impossible, particularly if one takes to heart the ideas of Arnold Toynbee, who contends that "renascences are a persistent phenomenon." There are cycles of style and rebirth in addition to repression and liberty. Further, those who revive ideas give new meaning to seemingly dead notions, dabbling in the black art of necromancy. A. Toynbee, *A Study in History* (London: Oxford, 1954), 705-17 quoted in Lewis Pyenson and Susan Sheets-Pyenson, *Servants of Nature: A History of Scientific Institutions, Enterprises and Sensibilities* (New York: Norton, 1999), 439. In his cyclical conception of history, Toynbee owes a good deal to the thought of Giambattista Vico (1668-1744) as reflected in the likes of Benedetto Croce and R. G. Collingwood. In *The Idea of History*, Collingwood paints Vico as the first of the "anti-Cartesian" theorists of history. See R. G. Collingwood, *The Idea of History*, ed. Jan Van Der Dussen (Oxford: Oxford University Press, 1994), 63-71. On the idea of linearity versus the cyclical, one traces many trends, the most general being the association of the latter with the thinking style of the Greeks. As this issue relates to science, it would seem most telling to look at the change in the definition of the word "revolution" in the 18th century from a cyclical conception to one which emphasizes a more radical, and thus somehow progressive, break with the past. See I. Bernard Cohen, "The Eighteenth-Century Origins of the Concept of Scientific Revolution," *Journal of the History of Ideas* 37 (1976): 257-288 and Roy Porter, "The Scientific Revolution: A Spoke in the Wheel," in Roy Porter and Mikulàs Teich, eds., *Revolution in History* (Cambridge: Cambridge University Press, 1986), 290-316. Perhaps this was a necessary fiction for those living in the time of the luminaries/Age of Reason to distinguish themselves from the classical revival that was the Renaissance. How all this relates to Nietzsche's notion of the "eternal recurrence" is unclear, since one is unsure whether his idea is more strongly influenced by classical or Christian influences. See Friedrich Nietzsche, *Thus Spoke Zarathustra*, trans. R. J. Hollingdale (New York: Penguin, 1969).

was split into two cultures, one literary and Christian, the other scientific. Crick felt the true flowering of the latter was contingent on the elimination of the former.[2]

Further, it is appropriate to ask what "exact knowledge" these assumptions about vitalist thought were based on, since vitalism has little to do with "exact knowledge" and everything to do with *theory*. To begin with, the notion that vitalism is closely associated with Christianity is mistaken, since core elements of the idea predate this religious era and are found in the writings of the Hippocratic Corpus and Aristotle. In addition, the attendant notion that vitalism is somehow "unscientific" also seems untenable, since it has been used as a term by scientists – biologists, doctors and natural philosophers – in a myriad of ways and for many purposes.

In fact, one could say that vitalism is a *metatheory*,[3] or to use the parlance of Kuhn, a paradigm ('world-view').[4] It is particularly in the sense of a 'world-view' that the idea is interesting, since it stands in opposition to its counterpart, mechanism. Unlike the suggestion by Kuhn that scientific theories (i.e. paradigms) only exist simultaneously for very brief periods, and that one quickly replaces the other in a revolutionary manner,

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[2] This reminds of Jacques Barzun's condemnation of the artisitic and literary culture of mid-century America in *The House of Intellect* (New York: Harper, 1959). Interestingly, however, this transplanted Frenchman also notes that certain aspects of scientific culture were detrimental to the notion of "intellect," and criticizes the rise of specialization and the emergence of a "guild approach." See also C. P. Snow, *The Two Cultures and the Scientific Revolution* (London: Cambridge University Press, 1959) for a more harmonious view suggesting that these two realms need to try, as difficult as it may seem, to engage with one another rather than eliminate one another.

[3] This idea is expressed in Hilde Hein, "Mechanism and Vitalism as Meta-Theoretical Commitments," *The Philosophical Forum* 1 (1968): 185-205 and "The Endurance of the Mechanism-Vitalism Controversy," *Journal of the History of Biology* 5 (1972): 159-188. Though unaware of Hein's work when I adopted this formulation of the debate, I certainly agree with her conclusion that the mechanism-vitalism duality represents a timeless divide that transcends the realm of scientific inquiry, and that many of the positions held with respect to the two sides still possess a certain relevance to modern discourse.

[4] Thomas Kuhn, *The Structure of Scientific Revolutions*, *2nd ed.* (Chicago: University of Chicago Press, 1970). I use the term "paradigm" here in its widest sense, suggesting an overarching theoretical framework or cosmology. In this way I compare vitalism as a paradigm to the distinction Kuhn makes between geocentric and heliocentric world-views. On the many possible interpretations of the word paradigm see Margaret Masterman, "The Nature of a Paradigm," in Imre Lakatos and Alan Musgrave, eds., *Criticism and the Growth of Knowledge: Proceedings of the International Colloquium in the Philosophy of Science, London, 1965, vol, 4* (Cambridge: Cambridge University Press, 1970), pp. 59-89. Masterman links a paradigm to the notion of a "thought style," another term that makes an occasional appearance in this work. On "thought style" see Ludwik Fleck, *Genesis and Development of a Scientific Fact*, trans. Fred Bardley and T.J. Trenn (Chicago: University of Chicago Press, 1979).

the schism between mechanism and vitalism has persisted throughout the entire history of biology and medicine.[5] It is for this reason that I suggest that vitalism be seen as a *metatheory*: that is, an organizing principle that extends beyond a specific theory explaining and providing an answer to a specific question (and already here this is a more mechanistic approach). This *metatheory* orders the way things are perceived in the broadest of parameters. My sense of vitalism as *metatheory* is also dialectical, since it plays an inherently critical role set in opposition to the dominant mechanistic and materialistic "paradigm" of our modern scientific society. Such a notion is difficult to get at in its totality, and thus my more specific focus will be on its use in medicine and, more particularly, in the national milieu of France in the nineteenth and early twentieth centuries. In this context, I see much of vitalist thought as a counter-discourse contrasted to the discourse of the development of modern biomedicine, an emergent idea seminal to science in this period. It is unavoidable, of course, with an idea such as vitalism, that broader historical and philosophical considerations infiltrate the more specific national narrative.

It has been suggested that what was once a basic schism within the medical field, between mechanistic and vitalistic interpretations of life, is made obsolete by the rise of "scientific medicine" in the late nineteenth century.[6] To quote one observer: "Vitalism was almost unknown to the second half of the last century, with all its shining accomplishments in the natural sciences, especially chemistry."[7] That opinion has been echoed since it was first expounded in 1926, so there is a dearth in the historiography and narrative of vitalism as an idea. Vitalism is portrayed as a doctrinaire medical system existing in the late eighteenth and early nineteenth century (and here the notion of vitalism as force is prominent), and as a largely philosophical resistance to the dominance

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[5] The long standing nature of this schism in experimental science is noted, for example, by Edgar A. Singer, "Logico-Historical Study of Mechanism, Vitalism, Naturalism," In *Studies in the History of Science. University of Pennsylvania Bicentennial Conference* (Philadelphia: University of Pennsylvania Press, 1941). Singer would just as soon get beyond this divided theoretical sphere, and proposes a reinvigorated Kantian naturalism as antidote.

[6] A basic survey of this trend is provided in William Bynum, *Science and the Practice of Medicine in the Nineteenth Century* (Cambridge: Cambridge University Press, 1994).

[7] Michael Bahktin, "What is Life?" in Frederick Burwick & Paul Douglass, eds., *The Crisis in Modernism: Bergson and the Vitalist Controversy* (Cambridge: Cambridge University Press, 1992).

of a mechanistic and reductionistic scientific approach in the early twentieth century, with almost no discussion of its existence in between. This thesis seeks to explore this transitional period, linking what have been called "*doctrinaire vitalism*" and "*critical vitalism.*" It also, by further dividing vitalist views into *epistemological* and *ideological* types, seeks to add a level of complexity to the history of the idea of vitalism, and shed some light on its influence outside the strict parameters of medicine and biology.

By showing that vitalism never really disappeared from the theoretical realms of biology and medicine, this historical effort aims to support the idea of vitalism as *metatheory*. In the final chapter of this work, there is a link made between vitalistic thinking and holism, suggesting that in important ways the two labels are largely synonymous, and share many of the same assumptions. In this way, an argument can be made that throughout the history of medicine, from the time of Hippocrates to the present, there existed an undercurrent of dissent to the strictly materialistic and mechanistic approach to understanding life and health. In the 19$^{th}$ century, it became known as vitalism.

## *Introduction*
## *Vitalism, History and the Soul*

*Between Spirit and Science*

Something happened to the European conceptions of the "body" and the "soul" in the 19th century. At the beginning of the period, the soul or spirit was still, arguably, a manifest, ontological reality for many philosophers and men of science. By 1900, the soul was, in an important sense, no longer a real and concrete thing.[1]

It is difficult to pinpoint the source of this transformation, of this loss; yet Max Weber's phrase the "disenchantment of the world" seems particularly apt. This change is inseparable from the concomitant development of modernity and the modern mind and is assuredly linked to the rise of scientific thought, particularly the great leaps in biology and medicine. The very word 'biology' has its origin in the beginning of the 19th century, and it is the far-reaching consequences of its development that will be one of the focal points of this study.[2] Also, not coincidentally, the word 'vitalism' was coined at around the same time. While the term "vital principle" (*principe vital*) first appears in Paul-Joseph Barthez' *Nouveaux éléments de la science de l'homme* (1778),[3] it is not until the early 19th century that the idea came to be associated with a distinct group of thinkers. Roselyne Rey, in her brief historiography of vitalism, traces the initial use of the term "vitalists," first described as a "sect", to Charles-Louis Dumas' *Principes de physiologie*

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[1] There are, however, some fascinating early 20th century examples of individuals who tried to actually 'measure' its presence in the living body, but their results were thoroughly indecisive.
[2] For the first use of the word 'biology' see William Coleman, *Biology in the Nineteenth Century: Problems of Form, Function, and Transformation* (Cambridge: Cambridge University Press, 1977), 1. Most mark the origin of the word in the work of Jean Baptiste de Lamarck, sometime around 1802. Lamarck's disproved theory of "acquired characteristics" has been often mentioned, which in the eyes of many makes Darwin's genius that much more. But when one considers Lamarck's foundational role in both biology and modern theories of heredity, it would be rash to overlook his importance. See also Georges Canguilhem, *Ideology and Rationality in the History of the Life Sciences*, trans. Arthur Goldhammer (Cambridge, MA: M.I.T. Press, 1988).
[3] Paul-Joseph Barthez, *Nouveaux éléments de la science de l'homme* (Montpellier: J. Martel, 1778).

(1800).[4] It is later used in an accusatory and somewhat derogatory manner by the physiologist François Magendie in his famous 1809 polemic.[5]

Today, vitalism is obsolete, a historical curiosity. According to most encyclopedias and dictionaries the word "vitalism" refers to a belief that the living cannot be simply reduced to physical and chemical constituents.[6] Further, vitalists are said to believe in some sort of immaterial "vital force," which has many names – *anima*, soul, *archeus*, vital principle, life force, *entelechy*, *élan vital* – all of which point to an essence in and of the living that is not material (or at the very least not knowable). Vitalism,

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[4] The full title is Charles-Louis Dumas, *Principe de physiologie, ou Introduction à la science expérimentale, philosophique et médicale de l'homme vivant, 4 Vols.* (Paris: Déterville, 1800-1803).

[5] Roselyne Rey, "Lignes de force et tendances actuelles des études sur la vitalisme," in Guido Cimino and François Duchesneau, eds., *Vitalisms from Haller to the Cell Theory: Proceedings of the Zaragoza Symposium, XIXth International Congress of History of Science; 22-29 August 1993* (Firenze: Olschki, 1997), 19-30. Rey suggests vitalism may be more prevalent in medical philosophy than previously thought, and that a wider definition of the idea (beyond a simple critique of physico-chemical reductionism and a distinction between living and non-living) needs to be formulated. She criticizes the notion that vitalists eschew all mechanistic explanations, arguing instead that the core vitalist principle affirms that mechanism is subordinate to the character of the living. An underlying aspect of this position is the idea of holism and the notion that the whole is somehow more than the sum of its parts. Rey provides a short list of the questions that remain to be asked about vitalism, including how one can come to a vitalist conception of disease and illness; what therapeutic possibilities lie in the vitalistic resistance to disease (which, as immunologists clearly know, sometimes manifests as a form of illness); and how environmental factors figure into vitalist ideas. She also asks what the relationship is between vitalism and the medicine of the romantic era, a question that has yet to be fully explored in a historical context, and an issue that this present study will most assuredly deal with.

[6] The *OED* dates the word "vitalism" to 1822, though *vitalisme* certainly has an earlier origin. *The Cambridge Dictionary of Philosophy* refers readers to an entry on "philosophy of biology" when one looks up vitalism and *The Oxford Companion to Philosophy* has a brief yet fairly inspired entry that sees vitalism and philosophical anthropology as closely related. Perhaps the most extensive and compelling English encyclopedia entry is William Bechtel and Robert C. Richardson, "Vitalism," in Edward Craig, ed., *Routledge Encyclopedia of Philosophy, Vol. 9* (London: Routledge, 1998), 639-643, though it is essentially unsympathetic and concludes by saying that "vitalism has no credibility." A recent entry on "Vitalism and Emergence," in *The Cambridge History of Philosophy, 1870-1940* sees Aristotle's *De Anima* as the first vitalist text and ties vitalism to emergence theory, psychology and the ideas of C.L. Morgan and C.D. Broad. In this sense there is a conflation of vitalism and what will be herein described as animism. See Brian McLauglin, "Vitalism and Emergence," in Thomas Baldwin, ed., *The Cambridge History of Philosophy, 1870-1945* (Cambridge: Cambridge University Press, 2003), 631-639. Most specialized dictionaries focus on vitalism's resistance to chemical and physical explanations of life. Two representative examples include those in the *Dictionary of Concepts in the Philosophy of Science* (Westport, CT: Greenwood Press, 1988) and the *Dictionary of the History of Science* (Princeton: Princeton University Press, 1981). Even more interesting is that the word often does not appear in many basic contemporary dictionaries of common usage for the English language.

however, is not to be confused with positions derived from theology, for it was at one time a legitimate scientific and philosophical term. It is not an exaggeration to suggest that the disappearance of the word "vitalism" from the scientific lexicon marks the birth of a purely materialist view of the life sciences, and is the end of "meta"-physics, that is, of a properly acceptable domain of enquiry into nature and existence beyond what we understand of the physical world. In fact, it is even said that philosophy itself largely abandoned inquiries into the nature of things, and of being, that were not rooted in the firm soil of scientific knowledge and understanding.[7] This was the great success of Logical Positivism, and positivism generally, in the 20th century.[8] In this sense, there can be no real vitalism and no real metaphysics in the modern world, since science has spoken and the world has listened.

The hegemony of the scientific secular mind always had its opponents. The many permutations and subtleties of this struggle are fruitfully dealt with in Owen Chadwick's classic *The Secularization of the European Mind in the 19th Century*. The following quote provides part of the framework for the investigations presented in this dissertation:

> During the 1850s German and French scientists conducted a controversy known, more to our grandfathers than to ourselves, as the materialistic controversy. It was specially associated with the names of Vogt, Moleschott and Büchner. These were not men of the Enlightenment like d'Holbach three generations before. They were men of the laboratory, and especially the medical laboratory. They were much more like anatomists who dissect the human body and say that they find no soul therein and therefore there is no soul. But they were no simple anatomists. Usually they were trained as physiologists and zoologists. Comparative anatomy had advanced far since the time, half a century before, when it offered the strongest arguments for design in the universe. What was coming out of it now was kinship; and therefore cousinship; and therefore families, and so descent. Every scientist prominent as a fighter in the materialistic controversy of the fifties was an anatomist, a physiologist or a zoologist.[9]

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[7] There are, of course, exceptions to this increasingly "scientized" form of 20th century philosophy. They clearly, however, stand in contrast to a general trend.

[8] For the Logical Positivist view of vitalism and the idea of "life" see Moritz Schlick, "Philosophy of Organic Life," in Herbert Feigl and May Brodbeck, eds., *Readings in the Philosophy of Science* (New York: Appleton-Century-Crofts, 1953), 523-536. Schlick describes what he calls "neo-vitalism," a view which asserts that organic life has its own irreducible laws, and argues, contrary to this assertion, that "nature does not consist of two realms separated by an unbridgeable gulf but is rather one and the same causality which pervades all its parts." 536.

[9] Owen Chadwick, *The Secularization of the European Mind in the 19th Century* (Cambridge: Cambridge University Press, 1993 [1975]), 165.

In confining the struggle to the 1850s, Chadwick places unduly neat limits on a debate that, like his more general question of secularization, spans much of the 19th century. Still, he presents many of the central issues that this narrative struggles with: materialism and spiritualism; medicine, biology and the laboratory, and the relationship between science and conceptions of the soul.

Proper understanding of vitalism is essential to any meaningful understanding of the history of medicine and biology in France in the mid-19th century. It is, in fact, around the various 'visions' of vitalism that these disciplines, especially biology, bounded their knowledge claims and judged the implications of their findings. More than this, it is through the idea of vitalism that one gets some insight into the ultimate fate of the soul in this period. This work then can also be seen as a provisional 'natural history' of the soul in the 19th century.

*The "Vital Force": Tracing a Historical Arc*

The idea of a vital, or living, force reaches deep into the recesses of the 'primitive' human mind; animal spirits and unseen forces that supported and drove the living were everywhere in the ancient world. Many Polynesian cultures subscribe to a belief in *mana*, a notion of life-energy that can also be harnessed for curative purposes. The Indian idea of *prana* also refers to a life force that can be manipulated to positive effect in healing. The Chinese concept of *ch'i* is now widely known, and though it has many meanings, refers in part to the corporeal, vital energy.

In an entry on "*vitalisme*" written in the 1889 *Dictionnaire encyclopédique de science médicale*, Dr. Brochin argued that one could distinguish two "*grandes classes*" of philosophers and doctors of antiquity that admitted principles of action and movement other than the physical order. These two categories were "those who recognized a soul independent of the body or any inherent substance, to which one ascribes all the phenomena of life" and "those who admit a *third element*, unique or multi-faceted, as the cause of vital movements, unconscious, and opposed to the special functions of the

thinking, intelligent rational soul."[10] This latter notion of the "vital force" in the Western tradition will be the focus here, divorcing the idea from many of the theological and spiritual beliefs with which it is so often associated. In fact, much of the confusion that arises about the word "vitalism" is a result of the conflation of two distinct concepts – "soul" and "spirit." On a superficial level, the two words often evoke parallel responses and similar imagery, but their many affinities conceal important and revealing historical differences.

In cataloguing those who supplanted the strict *psyche-soma* dichotomy with another basic element that influenced and directed the living, Brochin included the ideas of Hippocrates, the "two souls" of Plato, and the rational and vegetative souls of Pythagoras, Seneca, Marcus Aurelius, and Campanela. He also included the thinking soul and the spirit of life of Saint Paul and Saint Augustine; the monads of Leibniz; the "simple substances" of Jordanus Brunus and Gassendi; the "general principle of the independent action of soul," the "secondary principle" of Cudworth (who saw a divide between "plastic" and "vital" natures); the "archée-type" and "subaltern *archeus*" of Van Helmont, Rivinus and Wepfer; "*l'anima brutorum*" of Willis; the "medical soul," the "animating spirit" of Darwin and Gaspard Hoffmann; a "life principle" that is a median nature between body and soul, linked to François Hoffmann, Aepinus and Gaubius; the "vital principle" of Barthez, Glisson and Ray; the "vital principle" associated with the organization of the living as a property of organs; the "*forces vitales*" of Dumas; the distinction between "general life" and "particular life" in Bordeu and Desèze; the vital forces of Bichat, Chaussier and Richerand; the "sensibility" of Fouquet; the "nervous action" of Cullen and Hoffmann; the "irritability" of Haller and Rasori; the "excitability" of Brown and the "irritability" of Broussais.[11]

There is thus little doubt that the idea of a "vital force," whatever its namesake, was as fundamental as it was ubiquitous in the history of Western medicine. It is also clear that there is a good deal of confusion as to vitalism's relationship to theological and religious beliefs. Medical and philosophical vitalism may indeed have made their appearance around the same time. Hippocrates' dynamic conception of nature surely

[10] Brochin, "Vitalisme," in *Dictionnaire encyclopedique de science médicale, Vol. 100* (Paris, 1889): 719-728, 719. Emphasis mine.
[11] Ibid., 719-20.

owes some of its inspiration to the philosophy of Heraclitus (fl. ca. 500 BC) and his idea of flux.[12] Heraclitus's flux philosophy was popularized by Plato and later thinkers and cast a shadow over the work of philosophers with vitalist sympathies who emphasized dynamism and change like Henri Bergson (1859-1941), Alfred North Whitehead (1861-1947) and Gilles Deleuze (1925-1995). Heraclitus's "focus shifts continually between two perspectives – the objective and everlasting processes of nature on the one hand and ordinary human beliefs and values on the other."[13] Heraclitus was also a believer in the idea of an *arché*, a single source of natural substances that he equated with fire – a concept that will be taken up by the likes of Paracelsus and Van Helmont in the early modern period.[14] Heraclitus's critical dialectic between a belief in the consistency of natural law and the variability of human phenomena is a central trope in the Hippocratic Corpus. According to many 19th century vitalists, the foundation of medical vitalism lay in the thought of Hippocrates, particularly the old Hippocratic teachings about the medical role of character, temperament, particular constitution and environment. The Hippocratic Corpus provides the first important set of principles regarding the nature of life in the Western tradition. In Hippocratic thought the origin and beginnings of life lie in the *pneuma* (breath) that causes growth and articulation.[15] The concept of the *pneuma* was very important to the Stoic philosophers, who saw it as essential to creating the integrity, cohesion and basic characteristics of a living being. In plants it was known as *physis* and in animals and man was somewhat akin to the soul.

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[12] Heraclitus (c.540-c.480 BC) was the first ancient Greek to fully elaborate the concept of dualism and the seeming instinctual impulse to see that human language breaks down naturally into dualities, and yet realize the folly of holding to this as a necessary schism. In the process he elaborated a creative, aphoristic philosophy of experience. His conscious attempts to play with language and meaning allowed him to escape the particular linguistic paradigm of his time and lay the foundation for a new age of modern philosophy. Unfortunately, this genius has been distilled down to the theory of flux, of the portrayal of a world in constant change. Perhaps, however, this is his genius.

[13] A.A. Long, "Heraclitus," in Edward Craig, ed., *Routledge Encyclopedia of Philosophy, Vol.4* (London: Routledge, 1998), 364-369; 364.

[14] Daniel W. Graham, "Heraclitus," in Robert Audi, ed., *The Cambridge Dictionary of Philosophy, 2nd ed.* (Cambridge: Cambridge University Press, 1999), 376.

[15] Beate Gundert, "*Psyche* and *Soma* in Hippocratic Medicine," in John P. Wright and Paul Potter, eds., *Psyche and Soma: Physicians and Metaphysicians on the Mind-Body Problem from Antiquity to Enlightenment* (Oxford: Clarendon, 2000), 16.

The means by which the concept of the *pneuma* has come down to us, namely through the Galenic theories of medicine that remained relevant to medical thought till the 17th century, meant that it had largely scientific and secular (or at least atheistic) connotations. As such, the *pneuma* is best divided from ideas like the *anima* or the soul, which tend to be caught up in religious explanations of life.[16] With time this initial meaning has evolved, and *pneuma* was eventually regarded as a close synonym to the word 'spirit,' or *psyche*, lumped together with animist ideas by mid-19th century vitalists who sought to divorce vitalism from any spiritual symbolism. In his *Examen de l'animisme théocratique et de l'hippocratisme moderne* (1854), for example, the Parisian clinician Hermann Pidoux says that "today, as in the time of Thales and Anaxagoras, animism and *pneumatism* still keep physiology in infancy."[17]

Vitalism also owes its heritage to the notion of a regulating *archaeus* in living things, an idea whose origin is usually attributed to the mysterious and occluded figure Basil Valentine (*Basilius Valentinus*).[18] A mystic and alchemist monk supposedly born in Mainz in 1394, it is doubtful whether Valentine was an actual historical figure, although authorship of important, even canonical, works in the history of early modern chemistry are attributed to him.[19] Valentine's masterwork, the *Triumph Wagen Antimonii* (1604), is

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[16] This is somewhat more complicated, however, since the Latin equivalent of *pneuma* is *spiritus*, which was the word used by Descartes and from which the English word 'spirit' is derived. In C.S. Myers, "Vitalism: A Brief Historical and Critical Review," *Mind* 9 (1900): 218-233; 319-331, the division between the *anima* and the Galenic *pneuma* is attributed to Fernelius (1497-1558), otherwise known as Jean François Fernel. Interestingly, Fernel has also been credited with being the first to make a distinction between "physiology" and "pathology."

[17] Hermann Pidoux, *Examen de l'animisme théocratique et de l'hippocratisme moderne.* (Paris: Félix Malteste, 1854), 17. Emphasis mine. In this light it is interesting to note the relationship between *pneuma* and *psyche*. The word 'pneumatology,' for example, was a 17th century precursor to the word 'psychology.'

[18] L. Meunier, "Le Vitalisme en Médecine (Aperçu historique)," *Bulletin de la société francaise d'histoire de la médecine* 10 (1911): 366-87, 369 and Countanceau, "Archée," in *Dictionnaire de médecine, Vol.2* (Paris, 1833), 575.

[19] Allan G. Debus, "Basil Valentine," in C.C. Gillespie, *Dictionary of Scientific Biography, Vol. XIII* (New York: Charles Scribner's & Sons, 1976), 559. What this basic biography neglects is the roots of this strange pseudonym, surely derived from the two great Christian gnostic thinkers of the early 2nd century, Basilides (ca. 120-40 A.D.) and Valentinus (100-65 A.D.). Their gnostic doctrine of "Valentinianism" was fundamentally dualistic and proposed that knowledge provided the means to transcend the material, where lies the source of evil. The gnostics, influenced by a neo-Platonic cosmogony, placed an emphasis on the Greek concept of *nous*, a 'higher' mind, as a kind of intellect which could instinctually conceive of the Pleroma, the Godhead. The gnostics, who will be discussed at certain points in this work, were also quite advanced in their ideas about

not only important as an early source of the iatrochemical medicines used by 17th century physicians, but also as a text with interesting Paracelsian analogies of macrocosm-microcosm and assumptions regarding the quest for vital essences in the practice of medicine. In *The Place of Pathology Among the Biological Sciences*, the late 19th century German pathologist Rudolf Virchow credits Paracelsus with helping create the framework for later vitalist thought.[20] But it is unclear, as suggested by Belgian Jan Baptist Van Helmont (1577-1644), if Valentine's work, foundational in the development of a medico-alchemical tradition, precedes Paracelsus by over a half century.[21] What is

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the equality of women. Gnosticism is an admittedly elusive concept, but one might begin with a recent work with a compelling bibliography. See Karen L. King, *What is Gnosticism?* (Cambridge, MA: Harvard University Press, 2003). See also Elaine Pagels, *The Gnostic Gospels* (New York: Random House, 1979).

[20] "To Paracelsus, nature was alive, and the basis of this life was that very *archaeus*, a force different from matter and separable from it, a spirit (*spiritus*), as he himself expressed it, in accordance with the Arabs. In the complex human organism, the 'microcosm,' each part, in his opinion, had its own *archaeus* and the whole was governed by the *archaeus maximus*, the *spiritus rector*. On this basis originated the long succession of vitalistic schools, which, in ever-changing forms, and with constantly new terminology, have introduced into the minds of physicians the notion of a basic life-principle." Rudolf Virchow, *Disease, Life and Man*, trans. Lelland J. Rather (Stanford: Stanford University Press, 1958), 154.

[21] Theophrastus Bombastus Von Hohenheim (1493-1541) – known more famously as Paracelsus – was a revolutionary medical figure. In his *Paragranum*, Paracelsus asserts that medicine should rest on the four pillars of philosophy, astronomy, alchemy and ethics. Resistant to the traditional Galenic and Aristotelian modes of medical thought which emphasized the elemental (that in medicine were obviously expressed through the humoral) and a rote memorization of basic anatomical constituents, Paracelsus was instead a devotee of observational and dynamic experimental approaches, though the latter were rooted in a neo-Platonic, hermetic and alchemical perspective. Despite this, his highly innovative, bombastic and non-academic approach would echo through the 16th and 17th centuries, having a lasting and profound influence on the growing iatrochemical methods of medicine and the life sciences. On this influence see Allen G. Debus, *The English Paracelsians* (London: Osbourne, 1965) and *The French Paracelsians* (Cambridge: Cambridge University Press, 1991). Dubus sees a division between two paths; the Aristotelian, rational, mathematical, "scientific" approach, and the neo-Platonic, mystical, holistic, "hermetic" approach. With this dialectic in mind, Dubus argues that Paracelsian doctrine was an influence only for its emphasis on experiment and its iatrochemistry. The occult aspects of Paracelsus were thus rejected, whereas his chemical remedies were eagerly accepted. Still, one must argue for the profound influence of Paracelsus in the realm of the philosophy of medicine, which is particularly relevant to the context of this work. The work of Walter Pagel, which Debus explicitly builds on, is foundational on the subject of Paracelsus. See Walter Pagel, *Paracelsus: An Introduction to Philosophical Medicine in the Era of the Renaissance* (Basel: Karger, 1982 [1958]). Pagel adopts and then develops a consciously historicist interpretation of Renaissance science, which he considers essential in order to place the myriad esoteric works of this era in their proper context.

clear is that Valentine's works became classics in the history of chemistry (and alchemy), and were frequently published and translated in the 17th and early 18th centuries.[22]

For Van Helmont, the *archaeus*, or as it is known in French, the *archée*, was the guiding principle of the living. Neither material body nor rational soul, it was a *third element* that was the key source of living function and regulation. In the *Dictionnare de médecine* (1833), Dr. Coutanceau notes the use of the word *archée* by both Valentine and Paracelsus, but credits Van Helmont with widening its explanatory framework and possessing the most sophisticated theoretical system. To Van Helmont, the *archée* was essentially the "spirit of life," and yet was distinct from other observable physical and chemical forces.[23] Coutanceau defines it as follows: "The *archée* is an immaterial principle, a subtle and invisible spirit, that emanates from the living body, that exalts and elevates, that exists in all of nature, and in living beings plays the role of architect and healer."[24] This "force," for lack of a better word, was not, however, to be confused with the immortal soul, and was a kind of being apart, distinct from the body or soul, but nonetheless the "supreme regulator of life."[25]

The *archée* was seen to operate through the vehicle of subaltern entities, and exercised its power through what Van Helmont called ferments, ("*ferment*"). Thus there was an interesting affinity here with the stomach and the epigastric region, which was conceived as the center of the *archée* complex. This led to the development of an idea of what Coutanceau calls the "*phrénique du diaphragme.*"[26] One of the first of the Montpelliérains to discuss these kinds of ideas and provide a framework for future developments was Louis La Caze (1703-1765). His book *Idée de l'homme physique et moral* (1755) laid out an idea of the "general external organ," a sensible construct made up of skin and nerves that was connected in a vitalistic triumvirate with the brain and epigastric region.[27] La Caze saw stimulation of the senses as an essential aspect of health

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[22] Debus, "Basil Valentine," 559.
[23] Countanceau, "Archée," 575.
[24] Ibid., 576.
[25] Ibid.
[26] Ibid., 578.
[27] Roselyn Rey, "Vitalism, Disease and Society," in Roy Porter, ed., *Medicine in the Enlightenment* (Atlanta: Rodopi, 1995), 274-288.

(and the primary defining characteristic of living things), where a balance of sensory input and the avoidance of excess was key.[28]

While closely synonymous to the "sensitive" soul, in his *Dictionnare* entry Countanceau wanted to be clear about the unique nature of the *archée*. He was critical, for example, of Georg Ernst Stahl's (1660-1734) attempt to universalize the same principles in his idea of an all-pervading spiritual soul, or *anima*, of which Countanceau was much more skeptical.[29] In the end, Coutanceau prefers the concept of the *archée*, suggesting that in "Van Helmont's system," can be found "the germ of all of modern physiology."[30] Clearly, the *archée* was an important historical antecedent to vitalism and, along with the soul and the vital principle, was frequently invoked by physicians engaged in the mid-19th century discourse. The root-metaphor and etymology of the word 'arc' – a trajectory that spans the space between two realms – establishes the importance of a fundamental concept in vitalist thought, serving the role of median between body and mind, *soma* and *psyche*, material and immaterial, immanent and transcendent. Like Heraclitus centuries before, there were those who evoked a third, 'spiritual' element in the living in order to engage in a complex discourse that struggled to move beyond the natural dualities of thought and language, expressing a belief in broader, more pervasive harmonies.

*Materialism, Spiritualism and Vitalism: Ways of Being and Thought*

The mid-19th century medical and philosophical debate around which this story revolves requires a familiarity with certain basic assumptions. Foremost, perhaps, is the Cartesian division between body and mind. The use of the term 'mind' here is admittedly deceptive, since Descartes' contemporaries saw mind and soul as inseparable.[31] The

[28] This reminds of the humanist philosopher Michel de Montaigne's famous claim of "moderation in everything, even moderation."
[29] See Coutanceau, "Animiste," in *Dictionnaire de médecine, Vol. 2* (Paris, 1833), 428-436.
[30] Countanceau, "Archée," 578.
[31] Some of this confusion is the result of a problem of translation, as suggested in the following perspective on the issue: "It is interesting to consider...the claim often made in the anthropological and philosophical literature about the 'Cartesian' split between body and mind, dominating Western ethnopsychology and ethnophilosophy as a whole. Dualism is, no doubt, a characteristic feature of traditional "Western" folk philosophy insofar as Western culture has

Cartesian mind was a reasoning soul, an *anima rationalis*, less imbued with mystical meaning than Aquinas' scholastic distillation of Aristotle, but nonetheless something insubstantial (in that it was not part of the *res extensa*, the physical world). The struggle to deal with this mind-body dualism, and the related question of what was the locus of the soul is central to our discussion.

The importance of this duality should come as no surprise, as Cartesianism was among the principle foundations of French thought. The medical men included in this debate's first exposure to philosophy would have been through Descartes, often as young schoolboys. In a sense, the discussions of fervently held ideological positions like materialism, vitalism and spiritualism represent responses to the Cartesian paradigm long before it was all but shattered by Henri Bergson.[32] Reason, and the idea of pure reasoning, had yet to fall on hard times. It had really only begun to be credited as the tool *par excellence* of human understanding in the writings of the Enlightenment and its *philosophes*.

Materialism, vitalism and spiritualism were also tributaries of the history of philosophy. Democritus, the atomists, and the Epicureans were seen as materialists, believing essentially only in matter (atoms) and the void. All sources of understanding came from sensate experience, transcendent knowledge was illusory, and belief in a higher power or 'something above' the material was assumed to be a form of self-delusion. All things could be reduced to their basic, indivisible, physical constituents; materialism was thus synonymous with a thoroughgoing reductionism. This understanding of Epicureanism became foundational in science as well, and was also a

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been, traditionally, a Christian culture. But this traditional dualism has to do with the distinction between body and soul, not between body and mind." Anna Wierzbicka, "Soul and Mind: Linguistic Evidence for Ethnopsychology and Cultural History," *American Anthropologist* 91 (1989): 41-58, 46. Wierzbicka goes on to say that "Descartes opposed body, *corps*, to *âme*, and the concept of '*âme*' as used by Descartes was no doubt derived from the folk concept encoded in the French word *âme*, as it was used in the 17th-century French. It was certainly different from that encoded in the modern English word *mind*." 47.

[32] Perhaps this is why one commentator has suggested that "*la philosophie est science à la manière des mathématiques selon Descartes, à la manière de la biologie selon Bergson*," and that, for all intents and purposes, Bergson's philosophy signifies the end of "*l'ère cartésienne*." Henri Gouhier, "Introduction" in Henri Bergson, *Oeuvres* (Paris: Presses Universitaires de France, 1970), xii.

crucial source of inspiration for the most successful *philosophes* like Voltaire, Diderot and D'Alembert, who earned the label *sensibiliste* in part because of this association.

Spiritualism had many sources, not the least of which was Plato.[33] The ideal Platonic form is, in effect, a transcendent structure existing – if that is the right word – beyond the material realm.[34] The ideas of Pythagoras and, more particularly Pythagoreanism and its geometric mysticism, are forms of spiritualism, albeit cryptic ones. Christian theology was a further source inspiring the many and various permutations of the soul seen as foundational to Western religious doctrine.

If it relied on elements of classical history and philosophy, vitalism was unique in the degree to which it was rooted in medicine. It is theories about the nature of life and its relationship to disease and healing that push vitalism, time and again, to the fore. Mid-19th century medical men – practicing physicians and 'pure' physiologists – were both fascinated and preoccupied by the history of medicine and philosophical theories about the nature of life. As the laboratory and its methods extended their influence, canting the medical sciences forward in leaps and bounds, the theoretical foundations of these sciences remained uncertain. This explains why vitalism continued to be invoked – at least up to the time of Claude Bernard's (1813-1878) *An Introduction to Experimental Medicine* (1865) – as a response to the simple, flawed and yet increasingly dominant materialism that loomed over the mid-century medical world.[35]

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[33] This initial association makes it clear that 'spiritualism' and 'idealism' can be seen as largely synonymous. The word 'spiritualism' has been chosen at certain points in this work because it extends beyond the philosophical term 'idealism' to encapsulate wider expressions of anti-materialist religious and esoteric thought.

[34] The most extensive Platonic 'theology' is to be found in the Neoplatonist Iamblichus (ca. 245-325). In an introduction to his fragments entitled *De Anima*, the editors argue that "With Iamblichus and his advocacy of theurgy as a necessary complement to theology, Platonism also becomes more explicitly a religion. Before his time, the mystery imagery so popular with Platonist philosophers (going back to Plato himself) was, so far as can be seen, just that – imagery. With Iamblichus, there is an earnest emphasis on ritual, enabling the Emperor Julian to found his church on this rather shaky rock." John F. Finamore and John M. Dillon, eds., *Iamblichus De Anima: Text, Translation, and Commentary* (Leiden: Brill, 2002), 3. This introduction also makes some interesting comments about Iamblichus' dualistic conception of the human soul as a median between Intellect and the "animal" instinctual body, an idea with powerful resonance in later vitalist theories. See Ibid., 15-16.

[35] Arguably, vitalism resides in history generally, and there are echoes of its principles in the dialectics of subjectivity and objectivity, qualitative and quantitative, contingent and absolute, contextual and universal. Historical theory in the person of Marc Bloch and Jacques Barzun, for example, resounds with a kind of vitalism resistant to attempts to 'scientize' a fundamentally

*The Dialectical Face of Vitalism*

What was vitalism? A difficult question to answer, for the term was used in myriad ways and for a variety of purposes.[36] It was an idea that was malleable and unstable over time. Vitalism is usually paired with its opposite, mechanism. What is meant by this dialectic? To begin with, it is a question of symbols and metaphors.[37] The vitalist view avoids seeing living things as machines. Machines are artificial, constructed, man-made. Life is real, growing, natural. Vitalism is a "doctrine of an autonomy of life."[38] In principle, vitalism is an operative stance that emphasizes the unknown over the known. The most

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humanistic and somewhat 'messy' discipline. The entire idea of history as a discipline or field, something compartmentalized and reduced to basic principles and law-like essences, seems anathema to most thoughtful historians. History is, at least when done well, synthetic rather than analytic. The complex, holistic reality of a given historical circumstance is also fiercely anti-reductive. This inclination can be seen within the pages of Bloch's *The Historian's Craft*, trans. Peter Putnam (Manchester: Manchester University Press, 1954), where there is a clear criticism of positivism as applied to history. In addition, Antoine-Augustin Cournot is featured prominently, and quoted as saying that "the impossible physical event," "is nothing but an event whose probability is infinitely small." 133. Bloch also marshals the great 19th century French historian Jules Michelet, quoting a rather vitalist description of history (154), and concludes his argument with statements like "is not man himself the greatest variable in nature." 197. See also Jacques Barzun, *Clio and the Doctors: Psycho-History, Quanto-History and History* (Chicago: University of Chicago Press, 1974), a book which is actually interesting if seen as a somewhat vitalistic (i.e. intangible, a-mechanistic, humanistic, methodologically diffuse and chaotic) description of the necessities of good history.

[36] Consider, for example, Jacalyn Duffin's interesting synopsis: "Vitalism is a word with currency in many disciplines, but its meanings are myriad and possibly meaning*less*. Vitalism is mind, free will as opposed to determinism; conversely, it has also been equated with determinism, intuition or teleology; it is the recognition of a moral soul that influences physical being; it is holism or monism and an attack on Cartesian dualism; it is Aristotelain or Dreischian *entelechy*; it is the opposite of mechanism; the opposite of materialism; and the opposite of existentialism; it is both endorsed and refuted by Darwinian evolution; it is bioelectricity; the biological cognate of gravity; it is the opposite of scientific arrogance; it is scientific heresy." Jacalyn Duffin, *To See With a Better Eye: A Life of R.T.H. Laennec* (Princeton: Princeton University Press, 1998), 299. Of vitalism, Coleman says that "No expression in the language of biology is so ambiguous and open to misuse or abuse." Coleman, *Biology in the Nineteenth Century*, 145.

[37] On a rough conceptual level, vitalism and mechanism are a duality that lend themselves to an instinctual series of oppositions; between the living and the dead, the animated and the inert, the holistic and the reductionistic, the chaotic and the orderly, the flexible and the rigid, the spontaneous and the structured, the liberating and the constraining, the active and the passive, the analog and the digital, the immaterial and the material, the soft and the hard, the open and the closed, the unique and the uniform (universal) and even to an important degree, between the individual and the collective.

[38] Fred Feldman, "Vitalism" in Jaewong Kim and Ernest Sosa, eds., *A Companion to Metaphysics* (London: Blackwell, 1995), 508-9; 508.

interesting thing about life to a vitalist is not its apparent similarity to the function of a known machine, but the ways in which it defies understanding in these terms. What of its origin? Its ultimately unknowable complexity? Its unpredictable nature?

For the sake of clarity, vitalism can be divided into two rough, but useful, categories: *epistemological* and *ideological* vitalism. These can also be seen as *soft* and *hard* commitments to the vitalist ideal.

The epistemological vision is the vitalism of the scientist. It is essentially a categorical qualification, suggesting that the living cannot be understood in strictly physico-chemical terms. Living things, in other words, cannot be understood fully by referring to physics or chemistry. From this, one can also derive a critique of reductionism.[39] Things, and particularly living things, are not better comprehended by breaking them down into their constituent parts, moving steadily from the large to the small. Originating in the 18th century, this epistemology argues that while the Newtonian approach to metaphysics is valid, understanding the living in mechanistic, Newtonian terms is unsatisfactory. 'Newtonian metaphysics' is arguably a loaded term, but it really amounts to the idea that one must limit scientific inquiry to the observable and focus on phenomena, shying away from speculation about first causes. Still, living things are, somehow, categorically different from the non-living, atomistic world. This idea has part of its origin in the French chemist Nicolas Lemery's (1645-1715) categorical distinction between organic and inorganic substances. The classic broad groupings of animal, vegetable, and mineral owe their origin to Lemery's thoughtful researches.

Vitalists of the epistemological stripe evoke notions of vital "force" but also subscribe to the view that living things conform to a certain set of laws. The basic function and character of life is law-like yet does not mirror the law of nature as conceived of by the physical scientist (i.e. physicists, chemists, etc.). Biology stands apart

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[39] The question of reductionism as a key to understanding had been central in the philosophy of biology for most of the last century, but perhaps even more acutely since the 1960s. No wonder, given the ideas and problems raised by the DNA "revolution" in molecular biology. Rarely has the conversation about reductionism in science left specialist hands with a popular destination in mind, but a valuable example exists in the 1968 Alpbach Symposium. See Arthur Koestler and J. R. Smythies, *Beyond Reductionism: New Perspectives in the Life Sciences* (New York: Macmillan, 1970 [1969]). See also Evandro Agazzi, ed., *The Problem of Reductionism: Colloquim of the Swiss Society of Logic and Philosophy of Science, Zürich, May 18-19, 1990* (Dordrecht: Kluwer Academic, 1991).

from physics, chemistry or even mathematics by virtue of its own internal coherence, its own irreducible paradigmatic nature. It is a science with a logic all its own.

Among those espousing such views were the Montpellier vitalists like Théophile de Bordeu (1722-1776) and Paul-Joseph Barthez (1734-1806), the Englishman John Hunter (1728-93) who expressed the notion of *materia vitae*, and the German J. F. Blumenbach (1752-1840), whose idea of the *nisus formativus*, or formative force, was, like gravity, observable in its effects but elusive in its ultimate reality. This epistemological vitalism also best describes the outlook of the French physiologist Claude Bernard. This is the position referred to by Joseph Chiari when he characterizes Bernard's view as "physical vitalism."[40] It is a vision of vitalism born of the problems associated with experimental research and is focused on the character of the living and, particularly, questions related to development. It is, in a sense, the very essence of biology. Bernard's distinction between problems of function and form, and the questions raised by early inquiries into developmental biology, are seminal examples. Epistemological vitalism can be linked to Kantian philosophies and, at times, is difficult to distinguish from the most conventional forms of 18th and early 19th century naturalism. As mentioned, there is in this view a clear division between scientific knowledge and metaphysical knowledge and its practitioners believe it best to keep the two areas distinct and divided. This does not prevent them from occasionally engaging in metaphysical speculation, but they inevitably keep these observations separate from their research insights. Epistemological vitalism has close affinities with the 'classical' empirical (experimental), agnostic scientific outlook. It is, however, distinct from 'scientistic' atheism or strict materialism.

The Montepellier vitalists embraced this formulation in response to the ideas of Georg Ernst Stahl (1660-1734), whose *anima*, the immaterial, non-corporeal "force" permeating all living things and clearly distinguishing them from the inanimate, makes

[40] Joseph Chiari, "Vitalism and Contemporary Thought," in Frederick Burwick and Paul Douglass, eds., *The Crisis in Modernism: Bergson and the Vitalist Controversy* (Cambridge: Cambridge University Press, 1992), 248.

the most universal claim in this period regarding vitalistic ideas.[41] In fact, Stahl's theory so differs from the epistemological vitalism integrated into conventional medical systems of the time that it qualifies as an entirely different concept: animism.[42] It also verges on and shares many affinities with spiritualism. For this reason, considerable attention will be paid to Stahl in later chapters, in an effort to clarify what I see as his immense influence on French medical vitalists in the mid-19th century.

The tradition of Montpellier, epistemological vitalism, blends with animist ideas in the thought of Marie-François-Xavier Bichat (1771-1802), best remembered today for his advances in pathological anatomy, particularly his conception of tissues and tissue pathology. In *Recherches sur la vie et la mort* (1800), Bichat makes a clear distinction between living and non-living, citing as the greatest difference between them the ability of living things to resist the forces of decay. He describes the living body as an "island constantly assailed by the destructive forces of its surroundings." For Bichat, the "vital force" lay within the body's tissues, the various types of which he describes in his *Anatomie général* (1801), and it was the "sensibility" and "irritability" of these tissues that was central. This idea was adapted from another Montpelliérain, J.C.M. Grimaud, who altered Barthez's *principe vitale* into a system involving a series of forces: the external motor animal force (*force motrice animale*), the internal vital animal force (*force motrice vitale*) and the vital sense (*sens vital intérieur*), which regulated the others. This Aristotelian formulation is adopted by Bichat, who accepts the external and internal divisions of Grimaud, making a clearer distinction between organic sensibility (automatic) and animal sensibility (conscious). To Bichat, organic sensibility and contractility was contained within the tissues themselves, ensuring that Bichat's view has

[41] I have used the words '*anima*' and 'force' here in an attempt not to oversimplify Stahl's metaphysics, but if the way he came to be read in the mid-19th century medical context is any indication, one could, as will be seen, just as easily employ the word 'soul'.

[42] François Duchesneau, "G. E. Stahl: Antimechanisme et Physiologie," *Archives internationale d'histoire des sciences* 26 (1976): 3-26. For a 19th century description of Stahlian animism from a French perspective, see É. Littré, "Animisme" in *Dictionnaire encyclopedique des sciences médicale, Vol. 5* (Paris, 1866), 170-4. Hans Driesch's *The History and Theory of Vitalism*, trans. C. K. Ogden (London: Macmillan, 1914), 35-6, praises Stahl for the completeness of his system, despite its dogmatism.

been labeled by some as a kind of "vital materialism."[43] Though Bichat's description of tissue types was readily adapted by anatomists, his notions regarding their properties was abandoned.[44]

Bichat also exemplifies the increasing acknowledgement of the importance of experiment, characteristic of early 19th century medicine. This is shown in his *Recherches*, divided into two sections: a literary, scholastic and vitalistic treatment of life, and a much more surgical, anatomical investigation of death. Bichat combines experimental method with vitalistic theory to show, for example, how the heart supports the function of the brain by stimulating cerebral tissues to "movement" through blood flow, or how "black blood" has a poisoning and decaying effect on living tissue. He distinguishes between animal and organic systems and further divides organic systems between sensible and insensible, a distinction informed by a contemporary understanding of the physical sciences.[45]

As the century progresses, many of the problems first pointed to by the epistemological view of vitalism come to be seen as essentially 'solved'. The great leaps delivered by the laboratory amount to so many slings and arrows in the materialist arsenal. For many, the end of vitalism was marked by Wöhler's chemical synthesis of urea in 1828. The "Wöhler Myth" was a key symbolic event in the foundation of the discipline of organic chemistry[46] and is viewed as a defining moment even today. Mikhail Bahktin wrote "vitalism was almost unknown to the second half of the last century, with its shining accomplishments in the natural sciences, especially in chemistry."[47] An event of perhaps even greater importance was the production of acetic acid, a basic organic substance, from its constituent elements, by the German chemist Adolph Wilhelm Hermann Kolbe in 1845. The rise of organic chemistry was a formidable challenge to

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[43] "Vitalism" in W.F. Bynum, E.J. Browne and Roy Porter, eds., *Dictionary of the History of Science* (Princeton: Princeton University Press, 1981), 440.
[44] Elizabeth Haigh, "The Roots of the Vitalism of Xavier Bichat," *Bulletin of the History of Medicine* 49 (1975): 72-86.
[45] Geoffrey Sutton, "The Physical and Chemical Path to Vitalism: Xavier Bichat's *Physiological Researches on Life and Death*," *Bulletin of the History of Medicine* 58 (1984): 53-71. Sutton also mentions the influence of the newly discovered electric/galvanic force on Bichat's thought.
[46] Peter J. Ramberg, "The Death of Vitalism and the Birth of Organic Chemistry: Wöhler's Urea Synthesis and the Disciplinary Identity of Organic Chemistry," *Ambix* 47 (2000): 170-195.
[47] Mikhail Bakhtin, "What is Life?" in Burwick and Douglass, *The Crisis in Modernism*, 80.

vitalism, but the idea that its appearance marked the death of vitalism needs revision. To begin with, vitalism continued to have a far-reaching impact in the trenches of medicine as opposed to the more exalted realm of the laboratory.

While the Montpelliérains (Bordeu and Barthez, particularly) wanted to avoid "systems" – the iatromechanism of Böerhaave, the animism of Stahl and especially the organicism of Paris – by the time of Frédéric Bérard's (1789-1828) *Doctrine médicale de l'École de Montpellier* (1819), vitalism was already taking on a systemic, ideological quality.[48] Around the same time, it came to be associated with Catholic traditionalism through Lordat, Barthez' first major biographer, and its proponents struggled to distinguish vitalism from animism.[49] By mid-century, vitalism was an idea linked to many intellectual trends – romanticism, neo-Hippocratism, Catholicism, eclecticism, spiritualism, and occultism. Deconstructing and decoding this bewildering ideological mélange will be one of this work's principal ambitions.

Bérard, one of the voices in this ideological chorus, was professor of hygiene at Montpellier in the early 19th century and one of the most respected physicians in France. Although he was a fine clinician, his most original work was in the realms of medical philosophy and education. In 1823 Bérard published *Doctrine des rapports du physique et du moral*, illustrative of the continued interest among vitalists in the physical-moral dialectic so characteristic of romantic medicine.[50] How this physical-moral schism evolves into a body-mind connection as the century wears on will also provide important clues about the changing conceptual meaning of the "soul" and its increasingly secular symbolic form.

As mainstream medicine moved steadily towards organic localism and experimental reductionism, vitalism's claims about the holistic, qualitative, constitutional and 'character'-based conceptions of health were expressed in increasingly marginal

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[48] F. Bérard, *Doctrine médicale de l'École de Montpellier et comparaisons de ses principes avec ceux des autres École, anciennes et modernes* (Montpellier: Martel, 1819).
[49] Jacques Lordat, *Expositions de la doctrine médicale de P.-J. Barthez, et memoire sur la vie de ce médecin* (Paris: Gabon, 1818).
[50] See F. Bérard, *Doctrine des rapports du physique et du moral, pour servir de fondement à la physiologie dite intellectuelle et à la métaphysique* (Paris: Gabon, 1823).

ideological tones.[51] Vitalism remained a deeply theoretical concern, despite these changes in the nature of practice in the late-19th century. This long tradition of medical and philosophical understanding does not disappear overnight. Vitalist thinking, however, and philosophical concerns generally, did slowly move out of the domain of medicine, with its increasingly practical, applied, operative character, and entered the realm of biology and the life sciences. Concern about the moral influence on the physical, so typical of the "*science de l'homme*" approach, kept the idea of the soul alive on the fringes of medicine and was manifested most intensely in the Stahlian animist revival, which made the broadest claim in this regard. And yet, the increasingly sophisticated findings of basic neurophysiology were slowly challenging elements of vitalism and pointing to a mind-body (or more to the point, brain-body) connection that made the ephemeral soul an obsolete concept.

This ideological conception of vitalism opened the parameters of the idea and led to questions about the very nature of scientific inquiry and the role of science in society. Ideological forms of vitalism were a challenge to all the cherished notions of a modern scientific society – its entire positivist, mechanistic, materialistic and reductionist vision of the world. Those who explored this ideological aspect of vitalism placed their emphasis on the spiritual, vitalistic and holistic aspects of modern thought, taking to task the whole enterprise of science and its associated "world-view." In French medicine, this oppositional stance amounted to the creation of a wholly distinct and separate medical "paradigm" – alternative medicine was, in a sense, built around this scaffolding of vitalism as an ideology.[52] This transformation in vitalist thought also brought to bear a host of related political issues. This is a position with powerful political undertones – being as it is a view that sees vitalism (or, at the very least, a central appreciation of the vagaries and variations of life that need to be embraced in a larger social order) as crucial

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[51] Consider the following quote by Elizabeth Williams: "By 1850 it was evident that an omnibus, general, anthropological medicine rooted in vitalist holism would not flourish in an era dominated by positive philosophy, reductive and experimental methodology, and professional specialization." Elizabeth A. Williams, *The Physical and the Moral: Anthropology, Physiology, and Philosophical Medicine in France, 1750-1850* (Cambridge: Cambridge University Press, 1994), 19. This thesis seeks to challenge Williams' characterization, and show the many and various expressions of vitalism that continued to remain relevant on into the late 19th century.

[52] This story is ably recounted in Matthew Ramsey, "Alternative Medicine in Modern France," *Medical History* 43 (1999): 286-322, and Ramsey's themes will be expanded on in what follows.

to reinforcing communitarian (Rousseauian) over individualist (Lockean/Voltairian) political organization and social values which emphasize a harmonious/symbiotic rather than a confrontational/dominant relationship to the natural world. Ideological vitalists would also likely be more inclined, in their understanding of late 19th century evolutionary theory, to prefer Lamarkian over Darwinian explanations of society. The political context of vitalism was by definition open-ended, but it certainly had a more specifically rooted meaning in the French context of the late 19th century.

From a broader perspective, there are examples of ideological vitalism that will also figure into the final chapter of this thesis, as in the work of the embryologist turned philosopher Hans Driesch and the holistic theories of Jan Christian Smuts, whose 1926 book *Holism and Evolution* marks the first elaborated instance of the appearance of "holism" in the English language. Others critics of modernity, from philosophers like A.N. Whitehead (1861-1947), to psychologist like Carl G. Jung (1875-1961), Wilhelm Reich and the Gestalt thinkers, can also be seen as expressing elements of this more ideological form of vitalism.

The outlook of an ideological vitalist further bridges the gap between mysticism and environmentalism (from the transcendental views of the 19th century to the "flower" children of the 1960s). This is romanticism (or more properly, neo-romanticism) in its most extreme form. Expressivism, subjectivity and individual experience are highlighted over and above the apparently rational, objective and universal certainties of science. Ideological vitalism in the French context will be seen to include the many and various turn of the century occultists with theories of "vital" force, neo-Thomism, personalism and generally religious (i.e. Catholic) thinkers like Jacques Maritain (1882-1973) and Pierre Teilhard de Chardin (1881-1955), and critics of "technique" and technocratic society like Jacques Ellul.

*Vitalism and Politics: Social Undercurrents*

In a recently published introduction to French mathematician and philosopher Antoine-Augustin Cournot's (1801-1877) *Materialisme, vitalisme, rationalisme* (1875), the editor perceptively notes the following:

> The "great problems" of a century ago will not be complete in their true history if the historian parenthesizes the power of passion, polemic intensity and will which sustained the antithetic dualities of determinism and free-will, faith and reason, materialism and spiritualism, church and state, mechanism and vitalism.[53]

Indeed, it would be folly to dismiss the political and ideological consequences of scientific ideas in this era. At this later point, vitalism becomes largely incomprehensible as a concept distinct from its social and cultural moorings.

Vitalism and its polar opposite, mechanism, have been described as "meta-theoretical commitments," and a legitimate duality in biological thought.[54] While the character of these "commitments" was complicated in mid-19th century France, since there were, for one, other "commitments" like animism or organicism, they were centrally important to medicine, providing a framework for many of this era's disciples. Mid-19th century debates on ideas like vitalism and experimentalism were couched, like so many other aspects of life, in the language of ideology and politics. Essentially, these were debates about values. One argued the relative merits of positivism and spiritualism, of materialism and idealism, of republicanism and monarchism, as related concepts. Comte's positivism, for example, was not just abstract philosophical musing, but an elaborate system, which, through mythologized universality, sought to usurp the Catholic tradition that provided the backdrop for many a Frenchman's understanding of the basic principles of life.[55] It has been persuasively argued that positivism achieves invisibility in our contemporary world largely because of its successful integration into our "scientific" culture. "The triumph of the positive spirit consists in the reduction of quality to quantity in all realms of existence."[56] Comte's cardinal virtue was his system's universality, which gives the impression of a slow, progressive march towards positivism's general acceptance. This pattern is revealing also of the increasingly comprehensive and,

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[53] A.A. Cournot, *Oeuvres complètes, Tome V, Matérialisme, vitalisme, rationalisme. Étude sur l'emploi des données de la science en philosophie* (Paris: J. Vrin, 1987 [1875]), x-xi.
[54] Hilde Hein, "The Endurance of the Mechanism-Vitalism Controversy," *Journal of the History of Biology* 5 (1972): 159-188.
[55] Comte is quite explicit about his system as a surrogate for religion. In the *Preface to the Early Writings* (1854), he describes "positive philosophy as a universal religion." See Gertrud Lenzer, ed., *Auguste Comte and Positivism* (New Brunswick, NJ: Transactions, 1998), 3.
[56] Ibid., xxxv.

arguably, totalistic tendencies of positivism, whose principles can be seen as the structural inversion of vitalism.

This point requires a cautionary addendum, for while positivism would eventually gravitate to a position that bore very close resemblance to scientism, Comte himself often situated the limits of scientific understanding in biology. Still, insofar as vitalism was an essential theoretical component of alternative views of health and medicine, it clearly played an antipositivist and anti-materialist cultural and political role.[57] This view stood in opposition to the growing power of materialism, both in its philosophical guise and in its more mundane, concrete acquisitive sense, both of which were emerging as the general ethic of the mid-19th century *bourgeoisie*. While it is difficult to directly link the rise of popular materialism to its philosophical counterpart, one can certainly claim that these views were converging while they became increasingly formidable ideological forces.

For better or for worse, positivism was evolving into the *de facto* secular faith of republicanism. Those who resisted this universalizing impulse gravitated to a host of alternative views, some deeply traditional and thoroughly conservative, some forward-looking, exotic and dynamic. Aspects of the ideological variant of vitalism appealed to both groups. It is thus difficult to simply associate vitalism with Catholics, royalists and conservatives, for it can just as easily be rooted on some level in esoteric, socialist and libertine thought. One thing is certain: vitalism was opposed – at times quite fiercely – to the comfortably evolving progressive rationality and bureaucratic institutionalism of the *bourgeoisie, petite* or otherwise.

Vitalism and its many visions also proved continually inspirational to the philosophical *spiritualisme* of Victor Cousin (1792-1867) and the other dominant intellectual lights of France's mid-19th century institutions.[58] Because it provided a potently contentious perspective from which to critique mainstream scientific

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[57] Matthew Ramsey, "Alternative Medicine in Modern France," *Medical History* 43 (1999): 286-322; 290.

[58] Cousin's eclecticism surely owes a good deal to the varied medical philosophies of the early 19th century, and his thought is only the beginning, as we will see, of the resonance that exists between academic philosophy and medicine in the 19th century context.

materialism, vitalism's widespread popularity made it a constant challenge to the grand plans of the early Third Republic.[59]

*The Historiography of Vitalism*

Because the word "vitalism" was coined around the turn of the 19th century, and discussions of "vital forces" and "vital principles" are at the very center of Enlightenment discourses of biology, vitalism's history has also been centered on the late 18th and early 19th century. Classic works by Elizabeth Haigh in the 1970s are focused on this Enlightenment period, though her specific focus is on the triumvirate of Barthez, Bordeu and Xavier Bichat. Her essays culminate in a book on Bichat, published in 1984.[60] Elizabeth A. Williams in *A Cultural History of Medical Vitalism in Enlightenment Montpellier* picks up on the theme of vitalism and the *Encyclopédistes*, an idea that is first explored by Roselyn Rey. Rey's University of Paris *thèse d'état*, written in 1987 and entitled *Naissance du développement du vitalisme en France de la deuxième moitié du dix-huitième siècle à la fin du premier empire*, follows the chronological signposts that delineate most of what has been written in this Enlightenment aspect of the history of medical vitalism.

Historiographically, one of the most tantalizing and least explored aspects of vitalism is its link to romanticism. French "romantic" vitalist François-Pierre Maine de Biran (1766-1824) is portrayed by François Azouvi as a thinker who applied vitalism in a "complex" manner.[61] Azouvi argues that Biran's vitalism derives from transcending the

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[59] For some interesting examples of this phenomenon see Philip Nord, *The Republican Moment: Struggles for Democracy in Nineteenth-Century France* (Cambridge, MA: Harvard University Press, 1995).

[60] See Elizabeth Haigh, "The Roots of the Vitalism of Xavier Bichat," *Bulletin of the History of Medicine* 49 (1975): 72-86; "Vitalism, the Soul, and Sensibility: The Physiology of Theophile Bordeu," *Journal of the History of Medicine* 31 (1976): 30-41; "The Vital Principle of Paul Joseph Barthez: The Clash between Monism and Dualism," *Medical History* 21 (1977): 1-14; *Xavier Bichat and the Medical Theory of the Eighteenth Century*. London: Wellcome Institute for the History of Medicine, 1984.

[61] Maine de Biran elaborated a new theoretical construction of the human mind wherein the basic fact is effort. Consciousness is thus the apperception of effort. Descartes' principle "I think, therefore I am" is replaced by "I will, therefore I am". Voluntary effort creates consciousness and uplifts the mind from sensation to perception and on to higher operations of the mind, and furnishes the notion of force, causality, unity, identity, and liberty. Beneath that properly human

Baconian method. Biran uses physiology to gain insight into his anthropological and philosophical work, and it is the notion of *sensibilité* that undermines his experimentalist and Baconian ideas. Biran does for psychological thinking what Stahl did for physiology, rendering a complex and immaterial core of the living. Biran, for example, conceives of the "will as 'hyperorganic' force which nevertheless discovers its instrument and point of application in the organism."[62] It is through this animistic lens that one can understand important aspects of his notions of the *sens intime* and the *lumière intérieure*. Strangely, Biranian vitalism remains fundamentally dualistic, and at times is opposed to both materialism and spiritualism.[63] Biran speaks to how the reality of the self consists of a curiously "objective" self-perception, and the importance of understanding perception in physiological terms, anticipating aspects of Bergsonian vitalism.

The characterization of a thinker such as Biran as a vitalist, when he never employs the term, raises interesting questions. In trying to typify and assess the nature of vitalism, E. Benton's panoramic survey of the subject in the 19th century provides a tentative answer. Benton begins by admitting the complexity and variety of vitalistic positions and argues that, to better understand the role of vitalism, it is necessary to consider the whole position of someone labeled as a vitalist.[64] Of France, Benton says that the early-19th century presents an anti-systematic milieu that followed the "epistemological skepticism" of figures like Condillac.[65]

Benton creates a further divide between "phenomenalist" and "realist" vitalism,[66] essentially a schism between those who believed that "first causes" were beyond the purview of scientific inquiry, and those who felt they were a necessary part of a complete

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life of conscious effort there is the animal life that is the realm of habit, elementary emotions, and instincts, a life that continues below consciousness and is manifested in sleep and somnambulism. Later in his life, Maine de Biran came to assert that above the properly human life of voluntary effort there was a third spiritual and religious life. See François-Pierre Maine de Biran, *Nouvelles considérations sur les rapports du physiques et du moral de l'homme* (Paris: Ladrange, 1834). See also François Azouvi, "Le vitalisme de Maine de Biran," in Cimino and Duschesneau, eds., *Vitalisms*, 111-125.

[62] S.I.M. Du Plessis, *The Compatibility of Science and Philosophy in France, 1840-1940* (Capetown: A.A. Balkema, 1972), 18.

[63] Azouvi, "Le Vitalisme de Maine de Biran."

[64] E. Benton, "Vitalism in Nineteenth-Century Scientific Thought: A Typology and Reassessment," *Studies in the History and Philosophy of Science* 5 (1974): 17-48.

[65] Ibid., 20.

[66] Ibid., 21.

picture of the world. This simple characterization is problematic. Benton, for example, compares Bichat's ideas of first causes, properties and phenomena with those of Newton, who felt there were two separate sets of relations between these elements; the relation between cause and force (gravitational attraction in the case of gravity), and the relation between the force and the phenomena that were subsequently observable as a result of this force. Essentially, ultimate causality was beyond the pale as far as Newton's science was concerned. Yet Benton admits that Bichat did not completely deny that knowledge of first causes was possible in his research, as Newton most certainly did.[67]

*Bergson and Vitalism: La Crise de L'Élan Vital*

A long, unusual darkness falls over the historiography of vitalism. Vitalism after the mid-century is largely ignored by medical historians, and only taken up again in the many and various discussions of Henri Bergson's vitalism.[68] This *bergsonisme* is discussed across a wide trans-disciplinary spectrum, eclipsing the provincial focus of medical vitalism that remains the purview of the historian of medicine. Perhaps the best example of this type of work in recent years is the collection edited by Frederick Burwick and Paul Douglass, entitled *The Crisis in Modernism: Bergson and the Vitalist Controversy.*[69] Most of the essays in this collection focus on the literary and philosophical precursors (and followers) of Bergson's thought, seeing vitalism as the core of a challenge to modernity across a broad cultural spectrum, and including thinkers like Jean-Jacques Rousseau, Samuel

[67] Ibid., 28-9.

[68] The lone exception to this dearth of writing on the mid-19th century period is a series of papers on vitalism presented at the 19th International Congress on the History of Science, of which only a few deal with France and the 19th century. See International Congress on the History of Science, *Vitalisms from Haller to cell theory: Proceedings of the Zaragoza Symposium, XIXth International Congress of the History of Science* (Firenze: L.S. Olshiki, 1997). William Coleman's classic *Biology in the Nineteenth Century* sees vitalism as a central concept in 19th century biology, but is exceptional again by being unique in this respect. See William Coleman, *Biology in the Nineteenth Century: Problems of Form, Function, and Transformation* (Cambridge: Cambridge University Press, 1977 [1971]). See also M.T. de Andres, *Francisque Boutillier et le vitalisme animiste au XIXe siècle en France, 2 Vols.* (These de Paris I, 1989).

[69] Frederick Burwick and Paul Douglass, eds., *The Crisis in Modernism: Bergson and the Vitalist Controversy* (Cambridge: Cambridge University Press, 1992).

Taylor Coleridge[70] and Jean-Paul Sartre. *The Crisis in Modernism* has been quite inspirational in the framing of this project, especially in respect to its argument that the importance of the dualism between Enlightenment and modern views is fundamentally rooted in the scientific, biological understanding of nature. The collection's attempt to bridge the divide between the 'doctrinal' (epistemological) vitalism of late 18th century biological science and the "critical" or ideological vitalism, that came to be the foundation of *bergsonisme* has also been adapted in this work. It is a transformation that this thesis will strive to describe and explain in greater detail.

Surely, the source of Bergson's thought owes much to the development of the medical and biological discourse that grew out of the 19th century in France. The ideologically charged nature of this discourse lent it a character that had deep moral and philosophical consequences. Clearly, Bergson's philosophical ambition includes a desire to transcend the long-standing influence of Cartesianism. That these Cartesian categories became problematic is very much a function of the findings of the physiological laboratory and the discussions these discoveries engendered.

*The Crisis in Modernism* presents a number of other tantalizing avenues for inquiry that this thesis will elaborate upon. In P.A.Y. Gunter's essay "Bergson and Sartre: The Rise of French Existentialism," Bergson's "philosophy of life," is presented as a precursor to French existentialism and a "philosophy of existence."[71] Gunter sees Bergson and Sartre sharing a deep sense of free will and a belief in the inevitability of

[70] Coleridge was an important critic of the materialistic philosophies of life associated with the Enlightenment, and his holistic, transcendental ideas about life are a reflection of the romantic sentiment in more universal terms. While Coleridge's centrality in romantic thought has been reiterated *ad nauseum*, his role in romantic science has been largely ignored. Some discussion of his thinking about biology can be found in George Rousseau, "The Perpetual Crises of Modernism and the Traditions of Enlightenment Vitalism: With a Note on Michael Bakhtin," in Burwick and Douglass, *The Crisis in Modernism*, 42-44 and Jack H. Haeger, "Samuel Taylor Coleridge and the Romantic Background to Bergson," in Ibid., 98-108. In France, the perception of the therapeutic potential of Franz Anton Mesmer's *animal magnetism* – certainly a form of universal, vitalistic "force" – greatly increased in the early-19th century climate of romanticism. This is demonstrated by the positive response the practice received in an Academy of Medicine Commission in 1831. In contrast, the "Franklin Commission," an Academy of Science investigation organized in 1784, was skeptical of the technique's reality and therapeutic potential.
[71] P.A.Y. Gunter, "Bergson and Sartre: The Rise of French Existentialism," in Burwick and Douglass, *The Crisis in Modernism*, 231.

human freedom. The source of Bergson's critique is a realization that human diversity as captured by science is only as a pale shadow of its real self. To quote him:

> These [scientific] concepts placed end to end will never give us anything more than an artificial recomposition of the object of which they can symbolize only certain general, and, as it were, impersonal aspects: Therefore it is vain to believe that through them one can grasp a reality when all they present is its shadow.[72]

The idea that medical or biological science only describes the "general" or "impersonal" aspects of life further links Bergson's epistemological skepticism to the probing historical investigations of epistemology developed by Georges Canguilhem, and a few thoughts about his vitalist legacy are found in the conclusion.

*Vitalism, France and the Schools: Visions and Voices*

This thesis seeks to present vitalism in a totally different light from earlier works. By focusing on the mid-19th century, it will show that vitalism was a key concept in medicine, philosophy and the life sciences in France, one that remained relevant to that milieu for a number of reasons. The first reason is the most patent, and revolves around debates between the schools of Montpellier and Paris as to the nature of medicine – its principles, its objectives, its history and its relationship to philosophy. Secondly, vitalism was central to the widespread arguments about the relative merits of materialism and spiritualism in the mid-19th century – these were debates that focused mostly on the life sciences and the nature of the living, but also clearly had an impact on medicine and medical understanding. Finally there was vitalism's role in the larger social and political sphere, where the two opposed poles of positivism and Catholicism were fiercely at odds, and where many saw elements of vitalist thought as a possible mediating middle ground between the extremes of atheistic, mechanistic materialism and dogmatic spirituality. In the process of exploring these deep distinctions between Paris and Montpellier, materialism and spiritualism, positivism and Catholicism, the idea of vitalism will have many faces and many masters.

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[72] Henri Bergson, CM 167 in P.A.Y. Gunter, "Bergson and Sartre" in Burwick and Douglass, *The Crisis in Modernism*, 238.

Chapter One attempts to further refine what has been said about vitalism in this introductory chapter by placing the idea within the broader context of the early 19th century and taking into account the powerful romantic impulse in the *zeitgeist* of the period. This chapter argues that romanticism and vitalism share an important relationship as ideas and belief systems, and that, in essence, the romantic approach to medicine and biology is fundamentally vitalistic.

The first devotees of vitalism were the Montpelliérains. In an important sense vitalism and Montpellier are indivisible. Thus the second chapter focuses on vitalism's origins in the Montpellier school, the evolution of these ideas from the 17th to the early 19th century, and the elaboration and codification of the principles of Montpellier in the mid-19th century period. From Barthez's *principe vital* in the late 18th century to the strident defenses of the principles of Montpellier in the early 1860s is a lengthy journey, but the chapter stresses the consistency in the Montpellier vision. This was a view of vitalism that emphasized a few key themes, like the importance of environmental, regional and cultural particularities in health, forming the foundation of a uniquely anthropological approach to medicine. This outlook was also based on a notion of the unique, individual and irreducible nature of living beings. Further, the Montpelliérains were often fierce advocates of the dialectic between the moral and the physical in medicine, which in addition to claiming the complex, indivisible interactions between mind and body, also made a strong case for the importance of morality and spirituality in any complete understanding of health. This view had many resonances with the thought and ideas of the romantics and their 'modernist' conception of self. In finding a 'third way' between mechanism and animism, the Montpelliérains also in effect fleshed out the legitimate *terrain* for the study of biology, lying in the 19th century as it did somewhere in the broad interstices between physics and moral philosophy. Thus, foundationally, the Montpellier school was of the opinion that medicine was a discrete and unique art, not always subject to the principles of the physical sciences, and that the idea of a vital force spoke to the characteristically irreducible character of living things, and human beings in particular.

Chapter Three examines the elements of vitalism that took root in Paris during the early to mid-19th century. This chapter argues that vitalism had an important role to play

in the medical theories and philosophies of the Parisian practitioner, despite the growing influence of organicism, materialism and an anti-systemic model of the clinic. Focus will be on the writings of clinical theoreticians like Hermann Pidoux (1808-1882), who saw vitalism as a synonym for Hippocratism. Further, the relationship between Hippocratism and naturalism (and the healing power of nature) will also be featured. In fact, a certain "proto-holistic" vitalism was an important formative framework for the widespread revival of Hippocratic thought in mid-19th century Parisian medicine, a revival that played a role in the public health debate that took place in this period. Thus, these members of the 'Parisian School' were in essence Hippocratic vitalists. The chapter concludes with a discussion of the work of Paul-Émile Chauffard (1823-1879), the foremost proponent of vitalist ideas in Paris in the 1850s and 1860s.

Chapter Four explores the profound impact of the thought of Claude Bernard and his philosophy of experimentalism as elaborated and elucidated in his masterwork *An Introduction to Experimental Medicine.* It is argued that Bernard's far-ranging theoretical impact on medicine and biology marks the end of conventional vitalism and the elusive notion of a "vital force" as a legitimate scientific concept. In creating the framework for experimental medicine, Bernard also argued for the necessity of an experimental epistemology in which *a priori* assumptions were to be strictly constrained. Bernard's theories put an end to the "systems" approach to medicine, ironically by replacing all previous medical systems with the all-embracing "system" of experiment. While "vital forces" fade after Bernard, vitalism still flourishes. Even in Bernard's very own epistemologically sophisticated work, there is the realization of the unique character of living function, what one commentator, as we have seen, calls a "physical vitalism."

Chapter Five focuses on the continuing influence of medical and philosophical vitalism in Montpellier and Paris after 1865, showing how vitalist themes became essential to properly understand, for example, the French resistance to the Darwinian conception of evolution. Vitalism was also a crucial adjunct to many aspects of late 19th century philosophical and scientific thought. One witnesses a general migration of vitalism out of the realm of experimental physiology and into many diverse fields, such as embryology, dynamic psychology and philosophy. In one sense, vitalism becomes a "thought-style", unburdened by some of the heavy metaphysical baggage of its late 18th

and early 19th century permutations. It may be said that vitalism evolves into a diffused critique of the increasingly mechanistic biological paradigm, finding places to sprout and blossom in among the bricks and steel girders of a positivistic, optimistic, industrious, and mechanical age. Also, since the French landscape was dotted a little more liberally with sources of dissent among the masses, the claims about the culmination of a universally positivist *bourgeois century* seems a little harder to accept.[73] This is important to note, since this chapter will also show that it is on both margins, the far right and the far left, that one finds manifestations of vitalist thought, which in this late 19th century resound in increasingly ideological and even boldly political tones. This chapter will also feature some treatment of the idea of animism and its confrontational relationship to vitalism. Animism was initially little more than a synonym for the philosophy of Stahl, but by the mid-19th century came to be associated with claims about the integral, unified character of the rational human soul and its central importance to understandings of mind and health. Animism contributed to the growth of dynamic psychology, and helped lay the foundation for psychological theories that were opposed to behaviorism and functionalism. We see concern with the concept of the *anima* and animism in important early psychological theorists in France, and the term is also prominent in the work of thinkers from other national contexts, like William McDougall (1871-1938) and Carl G. Jung.[74] Once animism faded from psychology, soul and mind were completely divided,

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[73] Roger Magraw, *France, 1815-1914: Bourgeois Century* (Oxford: Oxford University Press, 1986). The are, however, important addenda to the mainstream narrative Magraw provides. On the right, see William D. Irvine, *The Boulanger Affair Reconsidered: Royalism, Boulangism and the Origins of the Radical Right in France* (Oxford: Oxford University Press, 1989). On the left, see Patrick H. Hutton, *The Cult of the Revolutionary Tradition: The Blanquists in French Politics, 1864-1893* (Berkeley: University of California Press, 1981). This wide-ranging late 19th century political sphere and the middling sort who struggled to navigate their way through it is ably described in Philip Nord, *The Republican Moment: Struggles For Democracy in Nineteenth Century France* (Cambridge, MA: Harvard University Press, 1995).

[74] McDougall, for example, developed what he called the "hormic theory," a kind of de-spiritualized conception of living force. In his 1911 book *Body and Mind: A History and Defense of Animism*, he portrayed animism as a belief that a non-corporeal principle animated the bodies of human beings. McDougall embraced this notion of animism with qualifications, holding that the acceptance of animism did not imply a belief in specific metaphysical entities such as the soul. It was, for him, the only sound conclusion, and the only way to account for paranormal phenomena like telepathy, which he studied with significant interest throughout his career. See William McDougall, *Body and Mind: A History and a Defense of Animism* (London: Methuen, 1911). Jung's interest in the idea of the *anima* has also been well documented, and also in part derives from his researches into the farthest reaches of the *psyche*.

much in the same sense that psychology became a fully secular interlocutor for religious belief and moral philosophy.[75]

The Conclusion deals briefly with the development of vitalist thought both inside and outside the context of medicine. As this introduction has shown, vitalism was an important philosophical influence on many thinkers in the French tradition, from Canguilhem to Deleuze. The story of this important 20th century intellectual trend will be the subject of some of the final comments. For while it was peripheral (and very often opposed) to the dominant conceptual paradigms that developed in the last century, like positivism, technocracy, universality, specialization and rationalization, vitalism nonetheless proved to be a "voice in the wilderness" whose very essence challenged the right thinking of our modern age.

[75] For a fascinating discussion of this subject see Edward S. Reed, "The Separation of Psychology from Philosophy," in C.L. Ten, *The Nineteenth Century: Routledge History of Philosophy Vol. 7* (London: Routledge, 1994), 297-356.

## *Chapter 1*
## *Vitalism and Romanticism: Science with Soul*

In an essay outlining the historiography of an elusive subject, Roselyn Rey notes that, contrary to conventional wisdom, vitalism and mechanical metaphors and modes of thought are not necessarily antithetical. This seems counterintuitive, for most oppose vitalism to mechanism. And yet, Rey makes a case for more subtlety if one hopes to understand the full meaning of vitalism. She further refines this notion, arguing that rather than eschewing all mechanical explanations, vitalists see mechanism as subordinate to the unique character of the living. This view leads naturally towards a holistic perspective, wherein the whole constitutes more than just a simple sum of its parts.[1]

Rey also briefly probes the relationship between vitalism and what she calls "the medicine of the romantic era," suggesting that there are intimate and important links. For her, this is an unexplored relationship, one that she believes would provide insight into the nature of vitalism.[2] As I see it, this question needs to be framed within an even wider perspective, beyond the narrow confines of medicine. It seems clear to me that the relationship between these two controversial and elusive notions is both intimate and revelatory. In other words, I believe that a detailed exploration of the theoretical and conceptual links between the two ideas of vitalism and romanticism can help reveal nuances and important defining characteristics of both.

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[1] In fact, the idea of holism was originally conceived in relation to living development and evolution. The English word holism was initially elaborated in the Jan Christian Smuts' 1926 book *Holism and Evolution*. Smuts sought to redress the mechanistic emphases in 19th century scientific thought, searching for a more dynamic conception of science. He challenged conventional notions of cause and effect made popular by the mechanical approach to physics, which were increasingly in question with the emergence of a "new" relativistic and quantum physics growing in influence in the interwar years. See J.C. Smuts, *Holism and Evolution* (London: Macmillan, 1926). Smuts' thought owes a good deal to Henri Bergson's famed text – *Creative Evolution* (1907).

[2] Roselyne Rey, "Lignes de force et tendances actuelles des études sur la vitalisme," in Guido Cimino and François Duchesneau, eds., *Vitalisms from Haller to the Cell Theory: Proceedings of the Zaragoza Symposium, XIXth International Congress of History of Science; 22-29 August 1993* (Firenze: Olschki, 1997), 19-30. There is some discussion of this relationship in a limited context in Hermoine de Almeida, *Romantic Medicine and John Keats* (Oxford: Oxford University Press, 1991).

In attempting to define what he calls "the heart of romanticism," the great historian of ideas Isaiah Berlin suggests that it is contained in two distinct but not unrelated propositions. The first is a belief in the power of the "indomitable will" – the unrestrained, generative force of creation. This is often seen in terms of moral, aesthetic and artistic creativity but also has its roots in a vitalistic notion of the simple, ever flowering creation and creativity of life. The second proposition, linked in a sense to the first, is "that there is no structure of things." Berlin elaborates on this notion as follows:

> There is no pattern to which you must adapt yourself. There is only, if not the flow, the endless self-creativity of the universe. The universe must not be conceived of as a set of facts, as a pattern of events, as a collection of lumps in space, three-dimensional entities bound together by certain unbreakable relations, as taught to us by physics, chemistry and other natural sciences; the universe is a process of perpetual forward self-thrusting, perpetual self-creation, which can be conceived of either as hostile to man, as by Schopenhauer or even to some extent by Nietzsche, so that it will overthrow all human efforts to check it, to organize it, to feel at home in it, to make oneself some kind of cozy pattern in which one can rest – either in that way, or as friendly, because identifying yourself with it, by creating with it, by throwing yourself into this great process, indeed by discovering in yourself those very creative forces you also discover outside, by identifying on the one hand spirit, on the other hand matter, by seeing the whole thing as a vast self-organizing and self-creative process, you will at last be free.[3]

Clearly, not only is this a view – a cosmology – that many vitalists could understand, it is also one that, in their basic denial of the totalistic reductions of physico-chemical science, they helped to create.

*The Vital and the Romantic: Common Ground*

A discussion of the importance of the 'mood' of romanticism in the early 19th century gives shape to the social context in which vitalism grew and thrived. At first glance, vitalism and romanticism share many affinities. Chronologically, the romantic era begins around the 1780s, ending by some accounts in the 1830s, or by mid-century at the latest.[4]

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[3] See Isaiah Berlin, *The Roots of Romanticism, The A.W. Mellon Lectures in the Fine Arts, The National Gallery of Art, Washington, D.C. Bollingen Series xxxv:45* ed., Henry Hardy (Princeton: Princeton University Press, 2001 [1965]), 118-120.

[4] As to Romanticism's chronology, it has remained fairly fixed. Consider three relatively arbitrary examples, spanning four decades of scholarship; R.W. Harris, *Romanticism and the Social Order, 1780-1830* (London: Blandford, 1969); David Aers, *Romanticism and Ideology: Studies in English Writing, 1765-1830* (London: Routledge & Keegan Paul, 1981) and Stefano Poggi and

Vitalism also has its origins in this period. Though the idea of a "vital principle" (*principe vital*) first appears in Paul-Joseph Barthez' (1734-1806) *Nouveaux éléments de la science de l'homme* (1778), it is not until the early 19th century that the term 'vitalist' comes to be associated with a distinct group of thinkers.[5] The origin of the word (vitalism) has already been discussed in the introduction, suffice it to say here that it appears with increasing regularity in the early 1800s, and is perhaps even more widespread by the 1820s and 30s.

The origins of vitalist thought reflect the *zeitgeist* of the romantic period, and particularly the criticisms leveled by many romantics at the bold assumptions of the Enlightenment – the power of reason (and, by extension, science) to solve all problems, universality, and the individual freedom derived by divorcing humanity from the constraints of religious, social or political tradition. Like romanticism, the Enlightenment is also a historical construct, used by historians (and other scholars) as symbol, as archetype, as intellectual shorthand. But its definition and meaning is elusive, and there are, in a sense, many "Enlightenments."[6] Conventionally, the Enlightenment and its principles are contrasted with the irrationality and superstition of the "dark age" that preceded it. It was further viewed as a true and rational revival of classical themes, not a dark distortion clouded by theological and religious impediments, but an improvement over the arid scholasticism that supposedly permeated early modern thought.

Enlightenment was, above all, the triumph of reason. It is synonymous with the classical characterization of the "Age of Reason," and the watchword of Enlightenment is *sapere aude*, dare to know. Associated with this liberal spirit of rational inquiry was a notion of both individual and social perfectibility. It was felt that all questions, if they were properly framed, could, through the use of judicious and careful reasoning, be

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Maurizio Bossi, eds., *Romanticism in Science: Science in Europe, 1790-1840* (Dordrecht: Kluwer, 1994).

[5] Paul-Joseph Barthez, *Nouveaux éléments de la science de l'homme* (Montpellier: J. Martel, 1778).

[6] One of the most seminal works of Enlightenment scholarship is Max Horkheimer and Theodore W. Adorno, *Dialectic of Enlightenment*, trans. John Cumming (New York: Continuum, 2002 [1944]). The Frankfurt school (Horkheimer, Adorno, Habermas, etc...) devoted significant energy to creating a critical reading of the legacy of the Enlightenment. A classic historical treatment of the Enlightenment that includes an extensive bibliography is Peter Gay, *The Enlightenment: An Interpretation* (New York: Knopf, 1966-69). See also Peter Hulme and Ludmilla, eds., *The Enlightenment and Its Shadows* (New York: Routledge, 1990).

answered. Questions that defied knowable answers were seen as, in all likelihood, illegitimate – they were not really questions.[7] The answers to all these questions should also be compatible with one another, such that put together they constitute a model (one might say utopian) world.[8] Thus the age was infused with a belief in perfectibility and human progress. Further, the assertions about the power of reason, unfettered by tradition, local custom or religious law, were seen as universal, and were foundational to the proper functioning of a polity founded on equality.

The romantics were, generally speaking, more circumspect about many of the rationalist claims. They argued for the value of feeling, emotion and instinct, challenging the all-encompassing dominance of reason as a means of insight and understanding. Instead of universality, many romantic thinkers championed the unique individual and his abilities, suggesting that exceptional individuals were one of the principle wellsprings of progress.[9] Much of romantic thought, as in the works of Johann Gottfried von Herder (1744-1803) for example, maintained a belief in the value and irreducibility of context, and particularly of the important cultural and traditional influences that distinguished human groups from one another. This was in stark contrast to the Enlightenment suggestion of a universal human nature.[10] More than this, Herder and many other romantic thinkers felt that peoples, 'nationalities' for lack of a better word, had collective 'souls,' united by a common language that encoded a common history, way of life, and set of traditions.

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[7] The classic question "what is life?" was particularly contentious in this regard.

[8] This notion of the Enlightenment as founded on a belief in the idea of an (in principle) answerable, collectively consistent set of questions is taken from Berlin, *The Roots of Romanticism*, 21-22.

[9] In France (as in much of the rest of Europe, for that matter), the archetype of this idea of the great man was Napoleon. Even after the First Empire there are echoes of his influence and the romantic cult of Bonapartism is quite widespread in the mid-century. In 1833 the government placed a statue of the man on the *Vendome* column, and in 1836 one witnesses the completion of the *Arc de Triomphe*, commemorating Napoleon and the Napoleonic conquests. Finally, in 1840 the emperor's remains are moved from Saint Helena to their final resting place at *Les Invalides*.

[10] *The Cambridge Dictionary of Philosophy* describes Herder's thought as "involving elements of naturalism, organicism and vitalism," further mentioning that he "often wrote in a way that suggested the dynamic process of life itself as the basic metaphor undergirding his thought." Robert Audi, ed., *The Cambridge Dictionary of Philosophy, 2nd ed.* (Cambridge: Cambridge University Press, 1999), 377.

Romantic thinkers also struggled, often painfully, with concepts like 'nature' and 'life', seeing them as keys to a greater understanding of the self.[11] The nature of the living was thus a central issue, and its unique, irreducible character even more so. Vitalists also emphasized the importance of these concepts as unique categories, suffused with philosophical meaning and theoretical relevance. For both romantics and vitalists, biology was an essential framework, much as the mechanical physics of the 17th century became crucial to philosophical, political and even cultural understanding in that time.[12] According to the German philosopher Friedrich Wilhelm Joseph Schelling (1775-1854), "the fundamental category of *Naturphilosophie* is that of an organism." This was, for Schelling, a holistic/vitalistic view, and he "extends this metaphor to all of nature, so that we should regard all of nature as one vast organism, and mechanism itself as only an appearance of it."[13] Schelling was only the most outspoken of the German romantics who saw a kind of pantheistic vitalism as the most appropriate answer to the perennial question "what is life?" One of the best ways to understand this relationship is to think of it in the following terms – the romantic conception of biology was fundamentally vitalistic. In the introduction to *Romanticism and the Sciences*, Andrew Cunningham points to the archetype of "Goethe's Faust," who "spurns knowledge 'extorted with levers and screws', longing instead for a grasp of Nature's secret elements, her active forces, the harmony of her whole and parts."[14] This transcendental understanding of nature was one of the oft-expressed ambitions of vitalists as well.

Much of what the vitalists claimed about health and the nature of the living also reflected certain romantic assumptions. And, in a sense, vitalist thought in turn also helped to constitute important elements of the romantic mind. Barthez, for example, with

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[11] Through much of the 18th century the words 'nature' and 'life' were essentially synonymous. Vitalism, in fact, helped distinguish between the two.

[12] As an example of this one is reminded of the interesting blend of politics, physics and metaphysics in Thomas Hobbes' *Leviathan* (1651). See *Hobbes's Leviathan: Reprinted from the Edition of 1651* (Oxford: Clarendon, 1967 [1909]).

[13] Frederick Beiser, "Romanticism, German" in Edward Craig, ed., *Routledge Encyclopedia of Philosophy, Vol. 8* (London: Routledge, 1998), 348-352; 351. The author of this entry goes on to say that "In his 1798 *Von der Weltseele* (Of the world-soul) Schelling explicitly revived the ancient Stoic doctine of a single soul pervading all of nature. His general vision of nature could be described as a vitalistic monism or as a monistic vitalism."

[14] Andrew Cunningham and Nicholas Jardine, eds., *Romanticism and the Sciences* (Cambridge: Cambridge University Press, 1990), xix.

his *science de l'homme* approach, created the framework for a contextual, constitutional and character-based understanding of human health and well being, laying the foundations for holistically and anthropologically inspired approaches to medicine. In fact, it became the essence of the "school" that he helped found, the Montpellier school, to believe that life was unique, individual and irreducible in its many manifestations. This principle is echoed in the thought of the sometime anti-Enlightenment Humean and romantic philosopher Johann Georg Hamann (1730-88), who is described as drawing "a kind of Bergsonian conclusion, namely that there is a flow of life, and the attempt to cut this flow into segments killed it."[15] This perspective was in stark contrast to the pathologies and anatomies of the Paris clinic, which viewed patients as universally similar, broke down the body into discrete organ systems each requiring their own specialist understanding, and sought broad analogies as to the course of disease through the use of statistics and the study of large numbers of essentially "docile" bodies.[16]

While France was scarcely an egalitarian and universally rational society at the time of the Enlightenment, the views of the newly emerging literary and philosophical class, the *philosophes*, are certainly recognizable. They were emblematic of a visionary elite, who saw beyond the petty concerns of many less fortunate contemporaries. These Enlightenment *philosophes* – Diderot, Voltaire, D'Alembert – were the self-appointed vanguards of a new age of light and reason.

In an important sense, reason became the ideology of the Enlightenment, and very quickly after the *philosophes* began to find an audience (or even, arguably, simultaneously), reason gave way to the ideology of rationalism. It was this arid, structured rationality that romanticism challenged most fiercely. Rather than insight gained through logical arguments and 'objective' reason, many romantics emphasized the value of intuition and instinct, and in many cases simply denied that applying a rational

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[15] Berlin, *The Roots of Romanticism*, 42.

[16] See William F. Bynum, *Science and the Practice of Medicine in the Nineteenth Century* (Cambridge: Cambridge University Press, 1994) and Ivan Waddington, "The Role of Hospitals in the Development of Modern Medicine," *Sociology* 7 (1973): 211-24. The classic treatment of Paris medicine is Erwin Ackerknecht, *Medicine at the Paris Hospital* (Baltimore: Johns Hopkins University Press, 1967). Recent debates on the idea have been much more subtle and multi-faceted. See Caroline Hannaway and Ann La Berge, eds. *Constructing Paris Medicine* (Amsterdam: Rodopi, 1998) and George Weisz, "Reconstructing Paris Medicine," *Bulletin of the History of Medicine* 75 (2001): 105-119.

order to things was even possible. Or, at the very least, they suggested that the application of this order (emblemized by the physical sciences) to the living killed it; left it dry, desiccated and lifeless. One is reminded here, for example, of English poet William Wordsworth's (1770-1850) line in "The Tables Turned" (1798): "We murder to dissect."

In spite of its critics, this rationalism rapidly pushed its way into every area of human endeavor, including medicine. In seeking an Enlightenment ideology in medical terms, one finds a series of central themes: systems, nosology, "medical policing", an interest in childbirth and childcare, the popularization of medical knowledge, and the birth of the hospital as a formal medical institution.[17] These are the ordering, rational, universalizing hallmarks of a particular medical age. But were these ideas to wash over humanity unopposed?

The institutional anonymity of disease, which the emergent phenomena of "medical policing" and hospital systems were largely responsible for creating, did not always clearly help ease the suffering of individual patients. This new medical situation was often perceived as hindering the recovery from illness. In stark contrast to this institutionalized, proto-technocratic response to disease, romantic medicine offered a sophisticated discourse of passions and characters; great suffering alongside great triumph. But above all, it offered an intense awareness of the individual patient – unique, not powerless in the face of large-scale clinical rationality, but rather boldly facing the struggle to triumph over disease in a complex, self-conscious and, sadly, often tragic manner.[18] In short, romantic medicine continued to place the particular patient in a central role, as had been the case in the medicine of the pre-Revolutionary era, before the power and authority of the doctor expanded dramatically with the arrival of the Paris

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[17] Guenter B. Risse, "Medicine in the Age of Enlightenment," in Andrew Wear, ed., *Medicine in Society: Historical Essays* (Cambridge: Cambridge University Press, 1992), 149-95.

[18] Medical romanticism definitely included an effort to emphasize this individualist aspect of healing in the face of an increasing anonymity. As one commentator notes: "Individual human beings were now objects of medical attention, not participants in their own struggles in life. What was happening to them was not always something they could understand. Indeed, in one sinister interpretation of nineteenth-century medicine, what was happening to them was not always something that they ought to understand." W.F. Bynum and Roy Proter, eds., *Companion Encyclopedia of the History of Medicine, Vol. 2* (London: Routledge, 1993), 1528. That the outcome of a patient's encounter with this rationalized system was often tragic would also seem to suit the romantic mind.

clinic and modern hospital practice.[19] This aspect of romantic medicine was, in some ways, a kind of rear-guard action. Doctors who ascribed to this conception of health and healing were engaging in a form of medicine that continued to place significant power in the hands of the patient, allowing him or her to define and delineate aspects of medical experience by paying tribute to the importantly personalized aspects of illness.

Romantic medicine was reliant on vitalist principles, but it also more generally represented a certain medical sensibility and 'mood'. A focus on the passions and on the emotive aspects of health and illness were the essence of romantic medicine. The fluidic and magnetic theories of Franz Anton Mesmer (1734-1815) and his animal magnetism followers reflected the romantic preoccupation with the will and with the often surprising, seemingly unlimited capacities of the human mind. A growing interest in the specific and gendered aspects of disease, often somewhat superficially characterizing womanhood as overly delicate and sensitive, fit into the Rousseauian elements of romantic thought, as well as emphasizing the close association between the moral and the physical. In 1823, Julien-Joseph Virey, already a venerable vitalist of the Montpellier school, wrote *De la femme sous ses rapports physiologique, moral et littéraire.* At the outset of his text Virey mentions the influence of Theophilé de Bordeu's disciple Pierre Roussel, who had also written an anthropological study of women in the late 18th century, as well as Rousseau, before providing a quintessentially romantic ode to the feminine. Virey speaks, for example, of "her tender and expansive soul."[20] There are some elements of his work that would seem ridiculous to our modern sensibilities, such as his suggestion that the word *femme* is derived from fetus, "*parce que sa destination naturelle est d'engendrer.*"[21] Virey builds a somewhat one dimensional but also primal socio-biological argument, arguing that reproduction is at the center of the organization of the female body. In 1800 Virey wrote another classic work of anthropological medicine, *Histoire naturelle du genre humain ou recherches sur ses principaux fondmens physiques*

[19] See Waddington, "The Role of Hospitals in the Development of Modern Medicine." Waddington perhaps overstates the case of patient anonymity and therapeutic nihilism, but nonetheless points to a general trend. There is no question that Hospital doctors, in developing their combination of reductionist and statistical research methods, pushed individual patient power increasingly to the margins.

[20] Julien Joseph Virey, *De la femme sous ses rapports physiologique, moral et littéraire* (Paris: Crochard, 1823), vii.

[21] Ibid., 2.

*et moreaux*, that was also typical for the time in its generalizations of the types of man, customs, religion, psychology, language, infancy, women and social organization.[22] This text also included "*une dissertation sur le sauvage de l'Aveyron*," demonstrating another romantic theme – fascination with the primitive.

While one could level a critique at Virey for his anachronistic approach, what is perhaps far more interesting here is the way his work is emblematic of such a creative blend of themes – science, history and culture. This was the anthropology and medicine of the romantic age – speculative, open-ended and trans-disciplinary. As one observer notes: "In the romantic period, natural science could still be fun."[23] By this he surely means that it had yet to be constrained by all the rigors of the laboratory and its stringent procedure and was still a much more integrated process requiring knowledge of history and philosophy as much as the ability to manipulate scientific instruments. In this sense there was no meaningful separation of science from other aspects of culture. It is thus no wonder that romantic themes thrived in this age, for the 'science' of the time was thoroughly implicated in and inseparable from the most essential moral and philosophical questions.

*Early 19th Century Medical Romanticism and Vitalism*

The fascinating blend of romantic and vitalistic elements of science and medicine present around the turn of the 19th century are apparent in a humble, seemingly innocuous 1804 medical thesis written by N.C.J. Godelle, entitled *Propositions sur la force vitale.* Godelle begins by viewing sense and desire as the basic faculties that distinguish the living from inert matter: "The animal is endowed with two principle faculties that constitute its nature, and by which it differs from all other material beings: it feels and it

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[22] Julien-Joseph Virey, *Histoire naturelle du genre humain ou recherches sur ses principaux fondmens physiques et moreaux; précédées d'un discours sur la nature des êtres organiques, et sur l'ensemble de leur physiologie, 2 Vols.* (Paris: Dufart, An 9 [1800]). On the darker expressions of this phenomena in the early 19th century see Martin S. Staum, *Labeling People: French Scholars on Society, Race and Empire, 1815-1848* (Montreal: McGill-Queen's University Press, 2003).

[23] David Knight, "Romanticism and the Sciences," In Cunningham and Jardine, eds., *Romanticism and the Sciences*, 13-24; 22.

wants." He further says that "these two faculties are intimately linked one to the other, and preside together over the preservation of the living being."[24]

For Godelle, the vital force resided in the "nervous fluids", a somewhat materialist notion he traces back to the ancients:

> The ancients, believing that two opposites, such as soul and body, can only be joined by a *milieu*, imagined this *milieu* in several ways. Platonists called it *a spirit*; Peripatetics *a form*; Dicaearchus, Pythagoras and others, conceived of harmonies, temperaments that made the body susceptible to feeling and activity. According to the Stoics, this principle was fire; an ethereal element. This was the opinion of Democritus, Heraclitus, Epicurus, Lucretius, and all the other atomists; it was adopted by Hippocrates and Galen; it was none other than the nervous fluid of the moderns.[25]

Although the romantic medical philosophies embodied in quasi-materialist conceptions of nervous fluids and brain function were dominant in Godelle's time, this young medical student was cautious about their validity and usefulness. To Godelle, the idea of nervous fluid described a thing that was somewhat imprecise and inexact. Also, of the nervous fluids, he says that "they were more harmful than useful to the progress of our knowledge of the science of man." In other words, while this type of holistic or emergent materialism had a certain purpose, it was also very vague.[26]

What was clear to Godelle, however, was the distinction between the physical laws guiding the living and those guiding the non-living: "In the physical *living*, nature has its proper principles and laws, as in the physical *dead*."[27] Like many others who

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[24] N.C.J. Godelle, *Propositions sur la force vitale* (Paris: Didot, 1804), 5.
[25] Ibid., 7.
[26] The idea of nervous fluids continued to remain relevant to mainstream physiology and psychology till the mid-19th century, as demonstrated by the work of neurological pioneers like P.J.B. Buchez in his 1843 work, *Théorie générale des functions du système nerveux, ou Démonstration de la loi de génération des phénomènes nerveux*. See P.J.B. Buchez, *Théorie générale des functions du système nerveux, ou Démonstration de la loi de generation des phénomènes nerveux* (Paris, 1843). Buchez insisted that the brain, by virtue of self-consciousness, was a divided, dualistic organ. His theoretical framework was somewhat animist in orientation, since he felt that madness was not a malady of the "spirit" (*esprit*), because the immaterial 'soul' could not be corrupted by any physical means. For Buchez, madness was a purely cerebral phenomenon. For a summary of Buchez' ideas see Ott, "La doctrine de Buchez sur le système nerveux et sur les rapports de l'esprit avec l'organisme," *Annales médico-psychologiques* 7 (1866): 1-24; 23. This increasingly materialized view of nervous fluids and mental function went on to become foundational to experimental psychology, as well as to the theoretical principles of hypnotic and electrotherapeutic healing in the late 19th century.
[27] Godelle, *Propositions sur la force vitale*, 7

discussed vitalist themes in this period, he made this distinction – foundational to the *epistemological* view of vitalism and to the Montpellier approach – a source of a fairly clear skepticism about the certainty of scientific theories applied to the function of the living:

> The human spirit is undoubtedly destined to err for a long time in the vast field of hypotheses, before arriving at the discovery of the true system of nature. The essence of the forces that produce nervous or muscular movement will probably remain hidden forever.[28]

Godelle sees the "vital force" as the principle that instills, regulates and structures this living movement: "The vital force is this principle of action, this ceaselessly agitating cause, that develops in organized beings a series and a harmony of movements that results in the phenomenon of life." For Godelle, this force is expressed in two general directions, from interior to exterior and from exterior to interior. A harmony and balance in these forces results in health, their alteration consists of the state of sickness and/or disease, and their complete cessation produces death. This vital force is further affected by irritants, rises and falls, is modified by all our affections, our passions, and is impacted by everything that touches the senses. It is, Godelle concedes, not always known as the "vital force" *per se*, and has been labeled irritability, contractility, motor force, movement and "sensibility" in the nerves.[29]

Godelle divides his vital conception into two broad realms, one dealing with *sensibilité*, the other with *motilité*. "Sensibility" and "motility" could both further be divided, according him, into unconscious and conscious elements, what he called "organic" and "animal" responses.[30] Godelle describes "sensibility," as something that is very strong at birth, but diminishes more or less rapidly to the point of death. Sensibility is essentially akin to a form of awareness or responsiveness to stimulus and external conditions – it is the quality of 'soul' or character that was once so central to the Stoically inspired Galenic medical system. For Godelle, "sensibility" is susceptible to being concentrated in one organ and, after a fashion, abandoning the others:

> It is in the execution of this law that a man, absorbed in profound meditation, seems to live only in his head: this was the case of Archimedes, when a soldier

[28] Ibid., 8.
[29] Ibid., 9-10.
[30] Ibid.

> from Marcellus delivered the deathblow. It is still the case of melancholics, maniacs, cataleptics, etc...[31]

Godelle in fact constructs an entire conception of humanity around the idea of "sensibility." He sees it as influenced by climate, such that it is more exalted in those who inhabit warm regions than in people of the north; it is more exquisite in women and in children; it is diminished in sleep; it is inconstant and variable, its vicissitudes of accumulation and diminution cannot be calculated and, finally, it varies according to the individual.[32]

In an interesting passage on *sensibilité* and music, one can see in Godelle a clear sense of an interest in the passionate, emotive effects of the spirit on the physical (physiological):

> It is surely to this tendency that one must attribute the extremely varied effects of music on the animal economy. It inspires courage in Ossian warriors and makes them a heroic army; it unfurrows the sage's brow; it charms tender hearts; it excites or calms passions at its will. When Achilles was enraged, Chiron calmed him with a guitar. Timothy could send Alexander into the most violent fits of fury, which he later calmed by changing his style.
>
> I have seen women who could not listen to dance music without being able to resist its rhythm, as though it were an irresistible force.
>
> It is also in this tendency that one can find the cause of natural inclinations that generate imitative movements in people. These are stronger in women and children, in certain cultures, and in people with weak intelligence. One yawns, retches, cries, laughs when seeing someone yawn, retch, cry or laugh; one coughs, spits, when one hears coughing or spitting, etc...
>
> Is it not this magical force of imitation that, in the Revolutionary war, sent French youth to the battlefield boiling with courage and brilliantly heroic?
>
> Our physiognomy, our gestures, our ideas are made up of the people who surround us.
>
> One can say that humans in society are instruments of unison, and one chord played makes the others resonate with the same tone.[33]

One could hardly imagine, in tone and content, a more romantic conception of health and in particular its visceral, emotive dimensions. The examples provided, for instance, are mythic motifs, rife with a clearly romanticized and epic quality. This passage by Godelle is also typical of the time, and expresses two emblematic romantic/vitalist themes – the importance of the passions in health, and the centrality of

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[31] Ibid., 11.
[32] Ibid., 11-12.
[33] Ibid., 12-13. One can see at the end of this quote a clear expression of the idea of a Hegelian *volksgeist* as well.

character (age, gender, nationality, even occupation). Furthermore, it is a view that is in harmony with the development of a notion of psychology, of the realm of the *psyche*, as dependent on an ensemble of linguistic, literary and intellectual signals. In essence, this discourse reflects a protean form of social psychology. This is a 'constitutionalism' that had many advocates in the early 19th century medical sphere, and certainly not all of them could be seen as vitalists.[34] Those who saw the roots of this character as lying in an ephemeral *spirit* or soul, however, were clearly echoing vitalist views. From our contemporary perspective, much of this reads as a kind of social anthropology with medical overtones, but we would be remiss to overlook how the assumption of vital principles and the general focus on sensibilities was shaped by a particular discourse of clear vitalist origin.

As Godelle continues to develop his 'sensitivist' conception of health and the living in his discussions of "motility," what clearly emerges is a fascinating body-mind, physical-moral correlation. It is a theme that Godelle emblemizes that will be carried through the century by a host of vitalist thinkers. It will also, however, come to be challenged by the mental materialists of the mid-century, who increasingly argued for the irrelevance of the rational soul and the mind's complete dependence on the physical body.

Godelle emphasizes the profound effect of the emotions and one's state of mind on health, proposing an idea of a *mouvement tonique*, again recalling the essential vitalist focus on the dynamism of the living, and the fundamentally supportive and defensive nature of vitality. This vital healing force, called various names from "*nature medicatrice*" to "*resistance vital*," will appear, as we shall see, again and again in vitalist discourse.

Godelle also straddles the classical, humoral (Galenic) and environmental (Hippocratic) conception of medicine in one passage, when he says "the passions and certain morbidifying miasmas appear to incite in the animal substance the same mode of action. Anger resembles the heat of a fever, and fear the cold."[35] This view also has

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[34] On medical 'constitutionalism' generally, framed in the American context, see Charles E. Rosenberg, "The Bitter Fruit: Heredity, Disease and Social Thought," in *No Other Gods: On Science and American Social Thought* (Baltimore: Johns Hopkins University Press, 1997), 25-53.
[35] Godelle, *Propositions sur la force vitale*, 17.

echoes in the 'neo-humoral' discussions of the period, which also brought mind-body, *psyche-soma* relationships to the fore as a central concern in medical thought. The great clinician François Joseph Victor Broussais held a similar view of the parallel between physical and 'moral' forces and their effect on the body, and noted how "the pleasures and pains issued from moral causes are felt in the same organs as the pleasures and pains of a physical origin: all are genuinely physical for the physiologist for he sees a modification of the living tissues as resulting from all of them."[36] And yet Broussais's conclusion was more materialist, emphasizing the physical similarities that derived from these causes; vitalists, in contrast, would emphasize how very different the causes were.

Godelle is also clearly conscious of the developments of the laboratory, and of a much more delineated 'scientific' physiology in this period, and sees great promise in the new experimental method: "The felicitous impulse taken in our century towards experimental physiology promises us discoveries that will surely enlarge the domain of this science, already rich in findings and general results."[37] It is this fascinating mix between classical elements of a holistic moral and natural philosophy combined with a growing appreciation for the findings of modern science that makes a simple characterization of Godelle's discourse, and romantic medicine generally, so elusive. According to one critic, "...the Romantic movement, in part reflected by the idealism of the *Naturphilosophie* school, encouraged metaphysical thinking on many fronts including medicine, where it was common for physicians to explain medical phenomena solely on the basis of speculative theorizing, while failing to pursue opportunities for positivistic lines of inquiry."[38] In spite of this critique, the attempt to find a middle ground between science and philosophy, or between the increasingly empirical, experimental and fact-based approach and the propensity for systems and theory, emerges as one of the main objectives of both the romantics and the vitalists.

Godelle here provides a representative example, and of course is not alone in making these sorts of claims, and in emphasizing the passions in medicine. Another classic work on the emotional aspects of physical and mental disease was produced by

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[36] F.J.V. Broussais, *Traité de physiologie appliquée à la pathologie, Vol. 1* (Paris, 1834), 171.
[37] Godelle, *Propositions sur la force vitale*, 17.
[38] Norman Gevitz, "Unorthodox Medical Theories," in W.F. Bynum and Roy Porter, eds., *Companion Encyclopedia of the History of Medicine, Vol. 1* (London: Routledge, 1993), 605.

Clément Joseph Tissot (1750-1826) in response to a request for an inquiry by the Academy of surgery in Paris. Tissot believed that tickling to evoke the "emotion" of cheerfulness and laughter in children suffering from rickets had a curative effect. He also thought, echoing Godelle, that playing music would produce curative emotions in discouraged patients impeded by low spirits in the process of recovery. Tissot's 1794 *De l'influence des passions de l'âme dans les maladies* is a classic romantic-era medical text replete with vitalist undertones.[39]

Another medical thesis, written in 1805, a year after Godelle's work, further reflects the romantic interest in the passional and psychological effects on health. E. Esquirol's *Des passions considérées comme causes, symptômes et moyens curatifs de l'aliénation mentale* is one of the earliest instances of a thesis which emphasized the emotions as a source of psychological illness. At the same time, Esquirol, a pioneer of psychiatry, was one of the first Parisian clinicians to apply statistical methods to his clinical studies. He tabulated what were then called psychological causes, that is to say, disappointment in love, financial worries, and similar factors that we now see as largely precipitating factors and not generally true psychological causes of mental disease. Esquirol pointed out that in the Bicêtre 409 out of 1,578 men and in the Salpêtrière 580 out of 1,940 women became mentally ill as a result of psychological factors.[40]

*Romantic Medicine and the Mind: New Frontiers*

The romantic conception of medicine continued to have an influence on thought well into the 19th century. Even physicians in ostensibly pragmatic disciplines were attracted to the theoretical and metaphysical aspects of medicine. Here the influence of philosophically minded physicians like P.J.G. Cabanis (1757-1808) continued to loom over the French

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[39] C.J. Tissot, *De l'influence des passions de l'âme dans les maladies et des moyens d'en corriger les mauvais effets. Ouvrage approuvé par l'Académie de chirurgie de Paris en 1786* (Besançon: Briot, 1794).

[40] E. Esquirol, *Des passions considérées comme cause, symptômes et moyens curatifs de l'aliénation mentale* (Paris: Didot, 1805). One of Esquirol's students, A. Brierre de Boismont, actually produced an important early work on suicide, focusing on historical, social and legal issues, which pre-dates the work of Emile Durkheim by almost three decades. See A. Brierre de Boismont, *Du suicide et de la folie suicide considérés dans leurs rapports avec la statistique, la médecine et la philosphie* (Paris: Baillière, 1856).

medical sphere. Consider the work of J.L. Alibert, one of the leading dermatologists in Europe in the early 19th century. Though he very rarely wrote on subjects outside of dermatology, we still find in him a significant interest in the realm of medical philosophy. In 1825 Alibert wrote *Physiologie des passions ou nouvelle doctrine des sentimens moraux*, in which he expounded on the physiological aspects of the emotions, using many historical and contemporary examples. Alibert argued that to comprehend the nature of man one must first understand the soul. He also believed that a true understanding of the material and spiritual world around us is impossible if we rely only on the five physical senses. His work begins with a preliminary consideration of what he calls the "*système sensible*," by which he essentially means the functions of intelligence. Alibert further distinguishes between four primitive and innate instincts: those of conservation, imitation, relation and reproduction. All in all, the tone of his medical philosophy is of a distinctly vitalistic bent.[41]

Another important early 19th century medical thinker whose work resounds with romantic/vitalistic tones was François-Pierre Maine de Biran (1766-1824), a pioneer in psychology and the science of mind. In many ways Biran's 'will'-based psychological theories are a French analogue to the philosophy of Arthur Schopenhauer (1788-1860), and like Schopenhauer, he eventually gravitated towards a belief that human life was only fully comprehensible by seriously taking into account spirituality as a factor. Biran published little in his own lifetime, and yet his influence was wide-ranging. A collection of his works, *Nouvelles considérations sur les rapports du physique et du moral de*

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[41] J.L. Alibert, *Physiologie des passions ou nouvelle doctrine des sentimens moraux, 2 vols.* (Paris: Béchet, 1825). One of the most famous early French figures in this medical philosophy tradition is P.J.G. Cabanis (1757-1808). His *Rapports du physique et du moral de l'homme* (Paris: Crapart, 1802) is the classic work. Cabanis applied medicine to philosophy and philosophy to medicine from a purely theoretical point of view. As a philosopher, Cabanis sought in medicine an instrument for the analysis of ideas, that is to say, for the reconstruction of their genesis. His *Rapports* is presented as "simple physiological resources." In his work, Cabanis sets forth a psychology and an ethical system based on the necessary effects of an animal's organization upon its relationships with its environment. See also M.S. Staum, *Cabanis: Enlightenment and French Medical Philosophy in the French Revolution* (Princeton: Princeton University Press, 1980). There are clear examples of the philosophical enterprise as applied to medicine in the German context as well. See Guenter B. Risse, "Kant, Schelling and the Early Search for a Philosophical 'Science' of Medicine in Germany," *Journal of the History of Medicine* 27 (1972): 45-58 and "'Philosophical' Medicine in Nineteenth Century Germany: An Episode in the Relations between Philosophy and Medicine," *Journal of Medicine and Philosophy* 1 (1976): 72-92.

*l'homme* was published in 1834, and his influence continued on into the mid-century, with re-editions of some of his works appearing in the 1840s and 1850s.[42]

Interestingly, Biran's 1834 book *Nouvelles considérations* was published with the support of Victor Cousin (1792-1867), who considered the philosopher-psychologist's thought important to his own work. Cousin is most closely associated with the cult of the "*juste milieu.*" This was the popular term for the eclectic philosophy of *spiritualisme* – rooted in an 'atheological' belief in the soul's survival of bodily death – that was a fine balance between non-dogmatic spiritual concerns and what were felt to be perfectly valid and enthusiastically embraced scientific explanations of natural phenomena.[43] *Spiritualisme* became something of the official institutional philosophy in France in the mid-1850s, and an alternative to the emerging creed of scientific materialism and skepticism. After being battered around by political winds in the 1820s and 30s, Cousin found himself appointed Minister of Education under Thiers in 1840, a position that led to him having a direct influence on higher education in France for the next two decades.[44] Though Cousin was forced to retire from the Sorbonne in 1848, his book *Du Vrai, du beau et du bien* (*Of the True, the Beautiful, and the Good*) – which was originally published in 1836 from lectures delivered as early as 1818 – went into an edition in the mid-1850s that was then finally removed from the Papal index. Charles Renouvier (1815-1903) and Felix Ravaisson (1813-1900) were two other important French thinkers who held to the philosophical position of *spiritualisme.*[45]

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[42] François-Pierre Maine de Biran, *Nouvelles considérations sur les rapports du physique et du moral de l'homme. Ouvrage posthume publié par M. Cousin* (Paris: Ladrange, 1834). See also François-Pierre Maine de Biran, *Oeuvres inédites publiées par Ernest Naville avec la collaboration de Marc Debrit, 3 vols.* (Paris: Dezobry, 1859).

[43] See the argument put forward in Hermann Pidoux, *Le Spiritualisme organique* (Paris: Asselin, 1869), 6-10.

[44] This fact is pointed out in Edward S. Reed, "The Separation of Psychology from Philosophy: Studies in the Sciences of Mind, 1815-1879," In C.L. Ten, ed., *The Nineteenth Century: Routledge History of Philosophy Vol. 7* (London: Routledge, 1994), 297-356; 300. This article includes an extensive bibliography of primary sources from the period.

[45] Though there were certainly *vitalist* elements in the philosophy of Charles Renouvier and Felix Ravaisson. See Jean Cazeneuve, *La Philosophie médicale de Ravaisson* (Paris: Presses Universitaire de France, 1958). There are interesting discussions of the influence of Renouvier and Ravaisson in a recent book on the origins of 20th century French philosophy. See Alan Schrift, *Twentieth-Century French Philosophy* (London: Blackwell, 2005).

In his history of French experimental physiology, John Lesch notes that while Bernard eventually brings a new and innovative approach to the discipline, many aspects of medicine, particularly in the realm of psycho-physiology, are marked by the mid-century debate between materialism and spiritualism mentioned in the introduction.[46] Lesch makes particular reference to a series of articles on nervous disorders in the *Annales médico-psychologique* in 1843.[47] One figure of importance in these debates is Pierre Flourens (1794-1867), a pioneering neurologist who was, according to one author, significantly influenced by the Montpellier school.[48] In his quest to understand the nervous function and its source, he made important use of vitalist ideas.

Flourens and his criticism of some other prominent early 19th century neurological thinkers reveals interesting juxtapositions. In 1863 he published a book entitled *De la phrénologie et des études vrais sur le cerveau.* Flourens praised most of the researches of Franz Joseph Gall (1758-1828), but was critical of his student Johann Kaspar Spurzheim (1776-1832). Spurzheim was often accused of trying to improperly popularize Gall's

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[46] This schism was immensely important in mid-19th century France, where the materialism-spiritualism divide was exacerbated by debates around the power of religion (the Catholic church) and the state (which was an increasingly secular force). Patrick Vandermeersch, for example, looks at the "myth" of psychiatry's mid-19th century triumph over superstition, brought on, he argues, by a particularly French struggle between religion and the state. His focus is on demonology, and the explosion in the publication of anti-demonology tracts in the mid-19th century. Thus, one is presented with a very particular example of the many strident attempts to "rationalize" religious ideas in the mid-century period. See Patrick Vandermeersch, "The Victory of Psychiatry over Demonology: The Origin of the Nineteenth-Century Myth," *History of Psychiatry* 2 (1991): 351-363. This general move towards the "secularization" of psychiatry is completed in the late 19th century through the process of professionalization, as the two phenomena become essentially synonymous. See Jan Goldstein, *Console and Classify: The French Psychiatric Profession in the Nineteenth Century* (Cambridge: Cambridge University Press, 1987). In a thinker and poet like Alfred de Vigny (1797-1863), rationalism is reconciled with religious faith in "*le scepticisme pieux.*" This shaded further into the realm of rationalism (and positivism) in the thought of Ernest Renan. A rational *esprit* born of a crisis of faith led to Renan's *The Future of Science*, a positivist manifesto written in 1848 with his close intellectual companion Berthelot.

[47] John E. Lesch, *Science and Medicine in France: The Emergence of Experimental Physiology, 1790-1855* (Cambridge, MA: Harvard University Press, 1984), 202. In fact, the content of this journal and its general "character" in the 1830-1870 period suggests affinities with a vitalist outlook, or at the very least a Montpellier influence – anthropological concerns and a fierce sense of regionalism and localism predominate.

[48] Guido Cimino, "Propriétés ou Forces Nerveuses Selon l'Oeuvre de Flourens," in Cimino and Duscheneau, eds., *Vitalisms From Haller to the Cell Theory*, 135-64. See also G. Legée, "Influence du vitalisme Montpelliérain sur la neurophysiologie de Pierre Flourens," *Histoire et Nature* 21 (1982): 13-47.

views on cerebral localization of mental functions; he was responsible for making them into a complete and popular system of phrenology and teaching it widely. Spurzheim accepted the basic assumptions of this theory of mind, brain and behavior, which eventually ended up being a bizarre mix of materialist interpretations of mental function, badly applied reductionism and a panacea-like philosophy that promised that the new science of phrenology was capable of ameliorating most of the social ills of his day.

Flourens' *De la phrénologie* was not just critical of the then already fairly outdated theories of brain localization (Gall) and phrenology (Spurzheim), it was also a defense of his own interestingly holistic view of neurology. Flourens made significant contributions to the study of neurology, where he was in the forefront in the realm of theory and as an experimentalist. His *Recherches expérimentales* became a classic in the field.[49] In his masterwork, *De la vie et de l'intelligence* (1858) Flourens discusses the nature of life and intelligence, creating a clear divide between the phenomenon of intelligence and the more general phenomena of life (what he calls the "*facultés intellectuels*" and the "*facultés vitales*"). Flourens also demonstrates a sophisticated appreciation for the history and tradition of neurological research more generally.[50] Flourens saw intelligence as a unique, irreducible and emergent function, anticipating thinkers like C. Lloyd Morgan (1852-1936), who doubted that psychological processes could be carried through the animal kingdom. His philosophy of emergence, or methodological holism, argued that despite our knowledge of initial conditions, there are some systems that are emergent, that it to say that emergent systems (like life or intelligence) develop and realize themselves in ways that are not apparent based on what is already given. Like Flourens, Morgan thought there were certain unique psychological characteristics of man, such as the capacity for introspection, which had no analogue anywhere else in the animal kingdom, and allowed for a certain freedom from the determinism of simple behavioral responses.

As mentioned in the introduction, Biran developed a notion of the *sens intime*, a quasi-vitalistic idea carried forward by many thinkers in the nascent fields of dynamic

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[49] See Pierre Flourens, *Recherches expérimentales sur les propriétés et les functions du système nerveux dans les animaux verétbrés, 2nd ed.* (Paris: Baillière, 1842).
[50] Pierre Flourens, *De la vie et de l'intelligence* (Paris: Garnier, 1858).

psychology and psychiatry.[51] One of them was the animist Joseph Tissot, the grandson of the above-mentioned Clément Joseph Tissot, who continued his romantically inspired theories on into the 1850s and 60s. Two articles in the *Annales médico-psychologiques* serve to illustrate this interest – one, "Le Sens Intime et le Sens Vital," offers a complex discussion of the nature of sensation and perception.[52] The other, "Les Passions: Influence du Moral sur le Physique," is an example of the continued interest in the classically vitalist physical-moral dichotomy in the study of sensation and psychological theory.[53] In 1863 Tissot published a defense of animism, *L'Animisme et ses adversaires*, in which he argued for the resurgence and theoretical importance of animist principles in the understanding of psychological and physiological phenomena:

> Among those who agree is almost the entire school of medicine at the University of Bologna; it professes a belief in animism with admirable unity and clarity. One of its principle organs does not distain to associate with his thinking, his spirit, even to consider as an authority, a psychologist who would be sufficiently honored to have the approval and encouragement of such great masters. Many facts lead us to believe that even in France, where animism has been asleep for a long time, a breath of spiritualism still gently lifts the spirit, but with a success that will soon get the attention of the most obstinate adversaries. May the author of this article have had an effect on this regenerating movement of the science of man! Inspired by Aristotle, illuminated by discoveries of psychology, by the almost new study by psychology of an order of facts abandoned until now to medical pathology, I am referring to sensitive, intellectual and emotional states that accompany neuroses, by the comparative study of the morals of humans and animals, I would dare to believe that what we call *the seat of the soul is no less*

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[51] On the history of "dynamic" psychiatry and its relationship to a host of eclectic and esoteric influences see Henri F. Ellenberger, *The Discovery of the Unconscious: The History and Evolution of Dynamic Psychiatry* (New York: Basic Books, 1970). In his 1889 encyclopedia entry on "vitalisme," Dr. Brochin finds many of the same faculties in the vital force as in the idea of a "*sens intime*" and this includes "*l'unité* (le *consensus unus* d'Hippocrate); *l'égoïsme vital* (which is to say the limit between the aggregate of the collection and the rest of the universe); the principle of a vital personality that prevents any one individual from being so penetrated by another as to be forged into one; susceptibility (the *sentire vitalier* of the ancients); the force of reaction, internal activity, spontaneity, *l'affectabilité morbide*; *la puissance économique ou de préservation*, instinct, *la force plastique, le tempérament, qui est à la force vitale ce qu'est le charactère au sens intime, la force de l'habitude, etc...*" Brochin, "Vitalisme," in *Dictionnaire encyclopedique des sciences médicales*, Vol. 100 (1889): 719-728; 722. The idea of vitalism as the "force of habit" is a passage Brochin likely takes from Ravaisson. See Jean Cazeneuve, *La philosophie médicale de Ravaisson: Ravaisson et les médecins animists et vitaliste* (Paris: Presses Universitaires de France, 1958). Cazeneuve sees particular importance in Ravaisson's book *De l'habitude* (1838).

[52] J. Tissot, "Le Sens Intime et le Sens Vital," *Annales médico-psychologiques* 4 (1864): 157-171.

[53] J. Tissot, "Les Passions: Influence du Moral sur le Physique," *Annales medico-psychologiques* 6 (1865): 157-171.

> *than the broad sympathy of the brain and its dependants*...This point of view, a natural if not necessary consequence of animism, is rich with new and curious observations that physiology and psychology, inseparable as they are, could profit from.[54]

*Romanticism, Vitalism and Naturphilosophie: Debates in France, Germany and America*

Traceable through earlier trends in Germany, romanticism flourished in mid-century France. The revolution of 1848 is, for example, infused with a spirited, even spiritual, romantic aspect.[55] French romanticism had a distinctly political flavor, whether it was the reactionary and conservative religious thought first extensively expressed in *Le Génie du Christianisme* (1802) by Chateaubriand, or the liberalism of Mme De Staël and her pupil Benjamin Constant. In many ways, De Staël brought important elements of German romanticism to France. The political writings of the 1848 revolutionary Alphonse de Lamartine (1790-1869) can also be identified as exploring romantic themes.[56] Even the development of history as a distinct field of study in the mid-19th century also owed a significant debt to romanticism.[57] While elements of romanticism in medicine have been

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[54] J. Tissot, *L'Animisme et ses adversaires* (Paris: V. Masson, 1863), 119-120.

[55] See, for example, Edward Berenson, *Populist Religion and Left-Wing Politics in France, 1830-1852* (Princeton: Princeton University Press, 1984).

[56] Consider the following description of the romantic spirit of 1848 in the words of the French historian Maurice Agulhon: "The spirit of 1848 was passionate, eloquent, emotional, somewhat wild. We smile indulgently when we speak of those 'old romantic beards' (*ces vieilles barbes romantiques*). The expression is as inaccurate as it is over-used. The fact is that those 'romantic beards' were only truly 'old' under the Third Republic. On the eve of 1848, the non-conformists who allowed their beards (and hair) to grow were chiefly young people who did so in defiance of the close-cropped heads and smooth-shaven faces of the respectable gentlemen of the time, whether bourgeois or even republican. (Of the eleven members of the provisional government, the only one who was truly bearded was the youngest and poorest of all, the worker Alibert. Armand Marrast sported an elegant goatee of a very 'imperial' kind and Flocon had a moustache; the other eight were clean-shaven.) It was only gradually that beards became characteristic of military revolutionaries, of those in opposition and eventually even of their doctrines, to the point of being banned in the university, as we mentioned above. Was it a question of romanticism? No doubt it was, to some extent. At the level of educated militants the Romantic influence was clear. These were men whose political convictions had been colored by their reading of writers such as Lamartine, Victor Hugo, Michelet and George Sand. But there was also a spontaneous, popular kind of Romanticism and that may have been even more important." Maurice Agulhon, *The Republican Experiment, 1848-1852*, trans. Janet Lloyd (Cambridge: Cambridge University Press, 1983), 190.

[57] See Ceri Crossley, *French Historians and Romanticism: Thierry, Guizot, the Saint-Simonians, Quinet, Michelet* (London: Routledge, 1993).

explored here, there is admittedly an undeniable difficulty in defining it as a cohesive concept, though there is little difficulty understanding its source. Romanticism was born as a response to a world in chaos when it seemed as if all social, cultural and political models were being questioned.[58] There is certainly no denying the polarized nature of French political and intellectual thought during this period. One can even suggest that this schism was only part of a wider and deeper religious crisis, an interpretation that takes on greater meaning when the ideas of the socialists – Utopians, Icarians, Owenites, Marxists – are seen as a panoply of 'secular religions.'

And yet what is clear is that romantic thought surely extended beyond the literary and the political, as we have seen. Romanticism was also important in realms conventionally deemed somewhat immune to ideology. Romanticism's connection to vitalism is the key to understanding this link. This is particularly true of the mid-century period, for as romanticism continued to flourish in the political and literary realms, it also furnished a backdrop to the strident debates of philosophers and medical men.

As we will see in the next chapter, by the early 1850s the Montpellier school becomes immersed in the larger, European-wide materialism-spiritualism controversy, and many defenses of vitalism were made in an effort to curb the most aggressive assertions of the mechanistic-materialists, who were also often tarred with the brush of

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[58] This use of the term romanticism in this context is rife with difficulties, but a fruitful definition would begin with the effusive idealization of the capacities of man evident in the works of the utopian socialists. A spirited humanism infuses pre-Marxist ideologues, particularly in the French context. It was still a moment of trans-and anti-'disciplinism', before the economic juggernaut of capitalism forced the conflation of the economic and the revolutionary, a time to exalt in possibilities rather than grimly recount the growing influence of materialist realities. Perhaps the best living example of this sentiment was Charles Fourier, and the reception of his political alchemy, as well as the ideas of the other utopian socialists. His doppelganger, Auguste Comte, stands in stark contrast to Fourier, who often resounds with a recognizably vitalist tone. One is reminded of the grand battle for epistemological supremacy of the physical sciences (mostly chemistry) that took place between Johannes Kepler and Robert Fludd, and asks whether the contrasting visions of Comte and Fourier regarding the political and human sciences are akin. Certainly one historian sees them as initiating elements of two very different societies: "In some mechanical respects Condorcet and Saint-Simon with their dreams of science and professional hierarchies showed the insight of authentic seers; but who knows, their day may pass – this stage may be only a prolegomenon – and mankind may yet be ushered in to the rich world of Charles Fourier with its endless delights or, may the gods forfend, it may lapse into the ordered, successfully repressed or sublimated society of Auguste Comte." See Frank E. Manuel, *The Prophets of Paris: Turgot, Condorcet, Saint-Simon, Fourier, and Comte* (New York: Harper, 1965 [1962]), 9. See also the classic English history of France by Gordon Wright, *France in Modern Times* (Chicago: University of Chicago Press, 1966), 229.

atheism. One notes, for example, a series of authors writing articles in the journal *Montpellier médicale* in the mid-1850s that cite the most aggressive claims of materialism as one of the central rationales for a defense or exposition of vitalist thought.[59] The materialists, in turn, made the ideas of the vitalists a subject of attack. This period in the 1850s represented a new phase in the debates about vitalism, as the tone becomes noticeably more polarized and ideologically charged. Spanning across the great materialist-spiritualist divide was vitalism, a view that seemed a reasonable middle ground.[60] One is reminded here of the thought of Schopenhauer, for example, or the arguments made earlier by Coleridge about the nature of life that were reprinted in this period. Though neither was French, both of these figures deserve a closer look.

In this context it becomes quite clear that the struggle between materialism and spiritualism in the medical and biological sphere is also crucial to any attempt at understanding the mid-century in general. Philosophy, while dominated by the Kantian spirit, nonetheless produced strong critiques of the metaphysical shortcomings of modern physiology in this era. No example is more pointed than the work of Schopenhauer, whose *On the Will in Nature* takes to task the modern scientific view and its failings. In an effort to reinforce his philosophy – which espouses the centrality of the will as the unifying matrix that underpins all outward appearances – *On the Will in Nature* (1836) seeks, as he puts it in the preface to his new 1854 edition, to "indicate its points of contact with the natural sciences, and thus to a certain extent furnish the arithmetical proof of my fundamental dogma."[61] He further justifies the new edition of this work by noting "two circumstances" present that make a "real progress" in philosophy more important than ever. "The first," he says "is the unparalleled zeal and energy shown in all branches of

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[59] Challenging the increasing dominance of materialism is one of the expressed goals of articles by Jaumes, "Réponse à des objections nouvelles faites au double dynamisme de Montpellier, par M.F. Bouillier ('De l'unité de l'âme et du principe vital')," *Montpellier médicale* 1 (1858): 505-547 and Lassalvy, "La chimiâtrie et le vitalisme," *Montpellier médicale* 5 (1860): 546; *Montpellier médicale* 6 (1861): 58; 142.

[60] This is a point tantalizingly made by Elizabeth Williams in her recent book: "the vitalists [represented]...a third way between the spiritualism of Christian orthodoxy and the materialism of Diderot." Unfortunately, she does not really elaborate on this point. See Elizabeth A. Williams, *A Cultural History of Medical Vitalism in Enlightenment Montpellier* (Aldershot: Ashgate, 2003), 6.

[61] Arthur Schopenhauer, *On the Will in Nature*, trans., E.F.T. Payne (Oxford: Berg, 1992), 3.

natural science." Schopenhauer further qualifies this by noting the relative lack of philosophical understanding possessed by the average scientist. As he says:

> As this is applied, for the most part, by people who have learned nothing else, it threatens to lead to a crass and stupid materialism whose primary objectionable feature is not the moral bestiality of the ultimate results, but the incredible want of understanding of first principles; for even vital force is denied, and organic nature is degraded to a chance play of chemical forces.[62]

The second justification for his 1854 edition is "the steady growth of unbelief in spite of all the hypocritical disguises and all the semblance of life in the church."[63] This is an unbelief that Schopenhauer acknowledges "necessarily and inevitably goes hand in hand with the ever-growing expansion of all kinds of empirical and historical knowledge." Still, he fears that it "threatens to reject not only the form, but also the spirit and sense of Christianity (a spirit having a much wider reach than has Christianity itself), and to hand humanity over to a moral materialism that is even more dangerous than the chemical one just mentioned."[64] It is against the background of these concerns, eloquently expressed by 19th century German philosophy's self-acknowledged *enfant terrible*, that elements of this investigation of mid-century French vitalism in medicine and physiology should be placed.[65]

Exploring the materialist-spiritualist controversy in the context of medicine and biology, it is easy to argue that the life sciences are a self-evident place for the debate to reach its apex. Still, this controversy can also be seen as part of an even wider ranging crisis of ontology in Western philosophy, and perhaps the last gasp of a metaphysical foundation to science – one might more properly say natural philosophy – other than materialism. Once established, materialism pushed out of this scientific realm into the

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[62] Ibid. In the interleaved copy of the second edition amended between 1854 and his death in 1860, Schopenhauer further notes: "And it has been possible for this infatuation to reach such a degree that men quite seriously imagine they have found in wretched *chemical affinities* the key to the riddle of the essence and existence of this marvelous and mysterious world! Indeed, compared with the delusion of our *physiological* chemists, that of the alchemist was a mere trifle, because they were looking for the philosophers' stone and hoped only to make gold."

[63] Ibid., 5.

[64] Ibid.

[65] It is interesting in this context to remember that Schopenhauer studied medicine at the University of Göttingen in 1809, and it is this experience that likely "cultivated his lifelong habit of reading varied and various writings in the sciences." Ibid., xvii.

larger consciousness, and the once powerful representatives of spiritualist and idealist thought fragmented in response.

Spiritualism may have been fractured, but it was nonetheless resilient. In his book *Death and the Afterlife in Modern France*, Thomas Kselman argues that the 19th century marks the first time that discussions of alternate, non-Catholic interpretations of the afterlife enter the public sphere. Spiritualism, in the sense of Cousin's notion of *spiritualisme*, became the official position in academic spheres in the mid-century. Cousin's was a view devoid of rigid dogma that still insisted on the idea of an immortal soul and the moral and philosophical consequences that went along with this belief. Moreover, one could argue that the underlying rationale for the entire *spiritualiste* project was an anxiety about the most extreme forms of materialism and atheism.[66] Clearly then, vitalism (particularly in its more animistic guises) played a role in helping rationalize and map out new domains of spiritual belief in the wake of the decline of the conventional mainstream theologies of Catholicism.

At the same time, the mind-body divide of the Cartesians was blurring and psychosomatic – *psyche-soma* – relationships were being reformulated more closely in line with the ancient wisdom of Hippocrates. These character-based, 'constitutional', neo-humoral concepts were an omnipresent element of early 19th century medical and social thought. Hippocratic thought also provided classical inspiration for a holistic view of health. This was a notion of life wherein context, tradition and *milieu* were essential aspects in creating particularistic and local conceptions of health and disease. This 'localistic', place-based emphasis was not so far removed conceptually from the nature-worship of the Transcendentalists.[67] They were both expressions of the *esprit* of naturalism – at times heavily mystical in orientation – that was such an important part of the mid-19th century philosophical sphere. This mystical naturalism was, after all, the foundation of the German *Naturphilosophie* tradition. By mid-century the idea of God had become for many thinkers a belief in nature and its unending complexity and subtlety

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[66] Thomas A. Kselman, *Death and the Afterlife in Modern France* (Princeton: Princeton University Press, 1993).

[67] On the importance of "place" in American Transcendentalism see Douglas C. Stenerson, "Emerson and the Agrarian Tradition," *Journal of the History of Ideas* 14 (1953): 95-115. The arguments of self-reliance and internal conscience of the Transcendentalists also harmonize with elements of vitalism thought.

as *the* self-evident revelation of the divine. This view was called "Natural Theology." The reverend William Paley's (1743-1805) *Natural Theology: Or Evidences of the Existence and Attributes of the Deity* (1802) represented the classic British defense of this view, as did the *Bridgewater Treatises*.[68] One also certainly feels the pulse of these naturalistic theologies in, for example, the work of Ralph Waldo Emerson (1803-1882) and Henry David Thoreau (1817-1862), men who would easily understand the vitalist's emphasis on the healing power of place. Emerson even spoke the language of the vitalist in discussions of his own health. He worried constantly about his vital energy and what he called the depletion of his "animal spirits." His first book, *Nature* (1836), argued that natural processes were, after a fashion, also moral lessons.[69]

It is clear that there were numerous convergences between romantic *Naturphilosophie* and vitalism. One might even go so far as to say that vitalism in France was an expression of the same sentiments as German *Naturphilosophie*. There were differences, of course – German romantic philosophy was thoroughly idealistic, whereas French vitalist thought had pragmatic elements because of its inseparable relationship to medicine, to say nothing of the unavoidable burden of rationalism and dualism that permeated all aspects of French philosophy. There was a therapeutic and systemic aspect to vitalism that had no 'high' philosophical analog. Further, *Naturphilosophie* saw all of nature, living and not, in spiritual terms – it was, in this sense, thoroughly pantheistic. The vitalists, in contrast, made the distinction between living and non-living a central aspect of their ideas.

We find an example of this distinction elaborated in Barbaste's *Vitalisme Medicale* (1841). Resisting the reductionist inspiration in Leibnitz' philosophy because of

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[68] William Paley's cosmology is ably summarized in the following: "William Paley likened a living organism to a watch: if we were accidentally to find a watch, would we not postulate a watchmaker? The wonderful way in which all of the parts of the watch fit together allows us to infer that there must have been a watchmaker. In much the same way, the extraordinary manner in which living forms are adapted to their very particular surroundings, and often unable to survive in certain very slightly changed surroundings, suggests a designer. But it is not the existence of a designer which is the problem, but of a design or a plan. Many mechanists were faithful believers. They might still find a pre-established harmony to be unpalatable, given the success of modern mechanical science." Jagdish Hattiangadi, "Philosophy of Biology in the Nineteenth Century," in C.L. Ten, ed., *The Nineteenth Century: Routledge History of Philosophy, Vol. 7* (London: Routledge, 1994), 272-296; 280.

[69] See Carl Bode, ed., *The Portable Emerson* (New York: Viking Penguin, 1981 [1957]), xviii.

his firmly naturalistic, almost anti-philosophical stance, Barbaste offers a realism that balks at the idealism in philosophies as far ranging as those of Leibnitz, Kant and Schelling. It is a Hippocratic naturalism that gives nature, as force, a special place in his thought, and even further sees nature as a proto-holistic concept and as the unifying source of the living:

> Medical practitioners have always agreed on recognizing in the animal economy, a conservative and sometimes destructive force to which they have ascribed most of the physiological and pathological phenomena that have been the principle objects of medical studies. This force, called nature, which attracts what works and repels what does not work for the system, converges all the parts of the system toward a final goal: it stabilizes them in relationship to one another into a kind of solidarity, a veritable synergy: this leads irresistibly to an admission of a vital unity in living organisms.[70]

This vision of unity, Barbaste suggests, has been found among all doctors who have seriously studied human nature; it is described by Barthez as the *principe vital* and is more a marker of a relationship, not a clear Newtonian cause and effect force, but a particular regard for the ancient naturalism where mind and body, *psyche* and *soma*, are connected to a larger overarching idea of nature, of a *physis*. "Barthez could say that it is not the expression '*principe vital*' that he is defending, it is the fact which it represents."[71]

For Barbaste, it is pretty clear that the *principe vital* is definitely not the animism promoted by Dr. Sales-Girons, who is the focus of his critique, and informed by German idealist philosophies like those of Schelling and his notion of an "*âme générale du monde*". The idea of a "world spirit" – an *anima mundi* or 'world soul' – may have been historically relevant to vitalism before Montpellier, but after Barthez the *vital principle* had a more specific meaning. We find Barbaste arguing for a much tighter interpretation of Barthez and challenging the broad animism of Sales-Girons (mistakenly) associated with him.[72] And yet some would very readily accept that Barthez' larger philosophical

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[70] Mathieu Barbaste. *Le Vitalisme médicale, par M. Barbaste, Premier lauréat de la faculté de Montpellier: Ou Réponse critique à la thèse de M. Sales Girons, membre de l'institut historique de France, sur les principes métaphysiques des sciences naturelles et en particulier de la médecine* (Alais: L. Brusset, 1841).

[71] Ibid.

[72] This confusion between, or at least conflation of, vitalism and pantheism often arises. Many see Schelling's organic *Naturphilosophie* as a kind of "monistic vitalism." He certainly saw the organism as fundamental metaphor in nature, and spoke in his 1798 book *Of the World-Soul*

objective was not always so far removed from idealism. Barbaste, however, resists the notion of a world soul; he sees the idea as too overarching, robbing man of liberty and responsibility.[73]

Despite their differences, vitalism and the idealistic, romantic conception of nature are philosophical bedfellows. And they are certainly clearly distinct from the mechanistic-materialism that they seek so passionately to oppose. In the wide panorama of ideas floating around the early 19th century philosophical sphere, there is more that unites *Naturphilosophie* (and the general expression of a belief in a quasi-mystical pantheistic naturalism) and vitalism than divides them.

*Romanticism, Vitalism and Coleridge: A More Comprehensive Theory of Life*

Romanticism and its impact on biology must thus be considered a factor in reinforcing the unbridgeable divide between materialism and spiritualism. The transcendent, ineffable, and spirited interpretation of life and the living offered by many romantic thinkers was certainly at odds with the increasingly mechanistic-materialism of the mid-19th century life sciences. And yet, it may be said that biology was, in origin, a romantic science.[74] In an article on Jean-Baptiste de Lamarck (1744-1829) and the birth of biology, Giulio Barsanti suggests that Lamarck was thoroughly immersed in a romantic conception of life. Romantic science consisted "in the belief that the explanation...[of phenomena of living nature] must be sought within the materialistic tradition, albeit a more sophisticated kind of materialism than that embodied in 'mechanical philosophy,'"

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about the ancient Stoic doctrine of a single soul pervading all of nature. And yet, this monism is very different from the vitalist discourse, which was often a kind of critical dualism, a response to Descartes but one that was ever wary of his simple distinctions. See Beiser, "Romanticism, German," in *Routledge Encyclopedia of Philosophy, Vol. 8*, 351.

[73] Barbaste, *Le Vitalisme médicale*, 25-6.

[74] Modern theories of biology and the nature of life were certainly center stage in one of the most famous literary works of the romantic age – Mary Shelley's (1797-1851) *Frankenstein* (1818). In the prologue to his book *The Romantic Conception of Life*, Robert J. Richards says that "Most often anything called Romantic science has been thought at best a minor tributary of nineteenth-century scientific thought – really nothing but a backwater. My general conclusion is quite different...I have become convinced that the central currents of nineteenth-century biology had their origins in the Romantic movement." See Robert J. Richards, *The Romantic Conception of Life: Science and Philosophy in the Age of Goethe* (Chicago: University of Chicago Press, 2002), xix.

and thus "a third approach or 'middle path' was posited which lay between mechanism and animism."[75] This 'third way', or at least much of the essence of it, related to the debates surrounding vitalism in this period. In this sense, vitalism is at the heart of the romantic impulse in early and mid-19th century biology and medicine.

Regarding the relationship between vitalism and romanticism, consider the following quote on the characteristics of the romantic and how they converge with what up to this point have been argued are the characteristics of the vitalist:

> The Romantic favours the concrete over the abstract, variety over uniformity, the infinite over the finite, nature over culture, convention, and artifice, the organic over the mechanical, freedom over constraint, rules, and limitations. In human terms it prefers the unique individual to the average man, the free creative genius to the prudent man of good sense, the particular community or nation to humanity at large. Mentally the Romantic prefers feeling to thought, more specifically, emotion to calculation, imagination to literal common sense, intuition to intellect.[76]

Emphasis on the particular over and above the general, on exceptional elements of humanity rather than universal ones, was of the essence for the romantic thinker. There was also in this outlook a definite resistance to the universality of mechanism in science just as much as there was an attempt to combat the common mechanical impulses in man. "The romantics thought that [Enlightenment] world [was] too narrow because of its addiction to geometric thinking...The geometric spirit, though metaphysically bold, tried to subject all life to reason and thus to mechanize and demean it."[77]

In Samuel Taylor Coleridge's (1772-1834) notes on science and philosophy as applied to living things, posthumously published in 1848 as *Hints Towards the Formation of a More Comprehensive Theory of Life*, there is an interesting discussion by the great romantic thinker of the problems involved in this increasingly mechanistic and scientific trend. Coleridge begins his castigation of the dominance of mechanical philosophy with the following historical *précis*:

> How widely this domination spread, and how long it continued, if, indeed, even now it can be said to have abdicated its pretensions, the reader need not be

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[75] Giulio Barsanti, "Lamarck and the Birth of Biology, 1740-1810," in Poggi and Bossi, *Romanticism in Science*, 47-74, 47.
[76] Ted Honderich, ed., *The Oxford Companion to Philosophy* (Oxford: Oxford University Press, 1995), 778.
[77] Franklin L. Baumer, "Romanticism," in Philip P. Weiner, *Dictionary of the History of Ideas, Vol. 4* (New York: Scribner's, 1973), 198-204; 199.

> reminded. The sublime discoveries of Newton, and, together with these, his not less fruitful than wonderful application, of the higher mathesis to the movements of the celestial bodies, and to the laws of light, gave almost religious sanction to the corpuscular system and mechanical theory. It became synonymous with philosophy itself. It was the sole portal which truth was permitted to enter. The human body was treated of as a hydraulic machine, the operations of medicine were solved, and alas! even directed by reference partly to gravitation and the laws of motion and partly by chemistry, which itself, however, as far as its theory was concerned, was but a branch of mechanics working exclusively by imaginary wedges, angles, and spheres.[78]

This view echoes the outlook of Hamann or William Blake. Blake regarded figures like Locke and Newton as "devils who killed the spirit by cutting reality into some kind of mathematically symmetrical pieces, whereas reality is a living whole which can be appreciated only in some non-mathematical fashion."[79] Coleridge is also wary of what he sees as this expansion of the mechanical philosophy, synonymous with the "mathematization" of all realms of understanding, extending beyond medicine and biology, going as far as the mystery of thought and even life itself:

> In short, from the time of Kepler to that of Newton, and from Newton to Hartley, not only all things in external nature, but the subtlest mysteries of life and organization, and even of the intellect and moral being, were conjured within the magic circle of mathematical formulae.[80]

Coleridge also links these developments to the meteoric rise of chemistry, and further sees chemistry in light of the revolutionary spirit of his time; chemistry, he argues, had come to dominate the science of his time in much the same manner as mechanics dominated the earlier period. The revolution in chemistry is compared with the revolutionary circumstances of his age:

> How, otherwise, could men of strong minds and sound judgments have attempted to penetrate by the clue of chemical experiment the secret recesses, the sacred *adyta* of organic life, without being aware that chemistry must needs be at its extreme limits, when it has approached the threshold of a higher power? Its own transgressions, however, and the failure of its enterprises will become the means of defining its absolute boundary, and we shall have to guard against the opposite error of rejecting its aid altogether as analogy, because we have repelled its ambitious claims to an identity with the vital powers.[81]

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[78] S. T. Coleridge, *Hints Towards the Formation of a More Comprehensive Theory of Life*, ed. Seth B. Watson (London: John Churchill, 1848), 30-31.
[79] Berlin, *The Roots of Romanticism*, 49.
[80] Coleridge, *Hints Towards the Formation*, 31.
[81] Ibid., 32-33.

We see here that in spite of his resistance to the grand claims of science and in particular chemistry, Coleridge is also wary of the opposite viewpoint, and explicitly states that he "distinctly disclaim[s] all intention of explaining life into an occult quality."[82] At the same time he was "convinced...that I have a rational and responsible soul, I think far too reverentially of the same to degrade it into an hypothesis, and cannot be blind to the contradiction I must incur, if I assign that soul which I believe to constitute the peculiar nature of man as the cause of functions and properties, which man possesses in common with the oyster and the mushroom."[83] We see here that Coleridge was indeed wary of the idea of the divided Aristotelian soul responsible for sensitive and vegetative activities – what many called the 'irrational' soul and what the Montpelliérain called the 'vital principle' – as it was adopted by many late 18th and early 19th century vitalists. And yet at the same time he saw that the animist view, which described all living function as subservient to the rational soul, as going too far in the other direction.

While Coleridge was skeptical of the conventional vitalist invocations that made reference to the idea of a force, he had even further doubts about those ideas in the tradition of Bichat that saw "organization" as a satisfactory explanation of the primary first cause of the living:

> The reasoner who assigns structure or organization as the antecedent of Life, who names the former a cause, and the *latter* its effect, *he* it is who pretends to account for life. Now Euclid would, with great right, demand such a philosopher to *make* Life; in the same sense, I mean, in which Euclid makes an Icosahedron, or a figure of twenty sides, namely, in the understanding or by an intellectual construction. *An argument which, of itself, is sufficient to prove the untenable nature of materialism.*[84]

Coleridge cleverly challenges grand notions that make pretense to asking universal questions answerable with programmatic *a priori* statements: "What is life? Were such a question proposed, we should be tempted to answer, what is *not* Life that really *is*?"[85] Still, he does provide a tentative answer to this grand question, making a statement that is closer to the idea of the dichotomies of individualism and holism rather than vitalism and

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[82] Ibid., 33.
[83] Ibid., 33-34.
[84] Ibid., 36. Emphasis mine. The synthesis of simple organic compounds, like urea, seemed a satisfactory solution to this challenge. This claim, however, is rather debatable.
[85] Ibid., 38. Emphasis in original.

mechanism: "...I define life as *the principle of individuation*, or the power which unites a given *all* into a *whole* that is presupposed by all its parts."[86] Coleridge concludes his work with an elaboration of this principle of individuation and a definition of life that anticipates later aspects of Bergsonian vitalism:

> My hypothesis will, therefore, be thus expressed, that the constituent forces of life in the human living body are – first, the power of length, or REPRODUCTION; second, the power of surface (that is, length and breadth), or IRRITABILITY; third, the power of depth, or SENSIBILITY. With this observation I may conclude these remarks, only reminding the reader that Life itself is neither of these separately, but the cupola of all three – that Life, *as* Life, supposes a positive or universal principle of Nature, with a negative principle in every particular animal, the latter, or limitative power, constantly acting to individualize, and, as it were, *figure* the former. *Thus*, then, Life itself is not a *thing* – a self-subsistent *hypostasis* – but an *act* and *process*; which, pitiable as the prejudice will appear to the *forts esprits*, is a great deal more than either my reason would authorize or my conscience allow me to assert – concerning the Soul, as the principle both of Reason and Conscience.[87]

Coleridge's resistance to the most extreme expressions of the modern scientific definition of life in the mechanistic, physico-chemical sciences, and his associated emphasis on more holistic, psychological themes is a trope repeated throughout the entire discourse of romanticism. Though, ironically, Coleridge moved increasingly toward *materialist* philosophies through his extensive exposure to late 18th and early 19th century medical thought, he was ever skeptical of the *mechanistic* approach to the body and health.[88] Coleridge here echoes the basic principles of *Naturphilosophie*, which developed in part from a concern to try and overcome the perceived alienation between humans and nature. It was the mechanical Cartesian dualism between mental and physical that stood as the preeminent example of this alienation, and thus one also sees a harmony between romanticism and vitalism in their fundamentally anti-Cartesian stance. Neither vitalism nor romanticism were truly anti-scientific, but rather both sought a more complex philosophical and moral response to scientific findings, unwilling to gravitate

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[86] Ibid., 42. Emphasis in original.

[87] Ibid., 93-4. Emphasis in original. There is also something of the process philosophy elaborated by Alfred North Whitehead (1861-1947) in this passage as well. See A.N. Whitehead, *Process and Reality: An Essay in Cosmology* (New York: Harper & Brothers, 1929).

[88] For Coleridge's intimate relationship with medicine, which partly derived from his extensive drug use (and abuse), see Neil Vickers, *Coleridge and the Doctors, 1795-1806* (Oxford: Oxford University Press, 2004).

unquestioningly towards the simple mechanistic and materialist theories of an increasingly 'soul-less' mid-century biological science.

*Romantic Vitalism: A Science with Soul*

This chapter has presented romanticism in an uncomplicated light, reduced to some of its barest essentials, and many of these are congruent with the vitalist view. But is it really so simple? Vitalism and romanticism are messy ideas, sprouting off in unpredictable directions. We are struck, for example, by Isaiah Berlin's description of the phenomena of romanticism, rich in unbridled possibilities and paradoxes:

> Romanticism is [...] the confused teeming fullness and richness of life, *Fülle de Lebens*, inexhaustible multiplicity, turbulence, violence, conflict, chaos, but also it is peace, oneness with the great 'I Am', harmony with the natural order, the music of the spheres, dissolution in the eternal all-containing spirit. [...] It is the ancient, the historic, it is Gothic cathedrals, mists of antiquity, ancient roots and the old order with its unanalysable qualities, its profound but inexpressible loyalties, the impalpable, the imponderable. Also it is the pursuit of novelty, revolutionary change, concern with the fleeting present, desire to live in the moment, rejection of knowledge, past and future, the pastoral idyll of happy innocence, joy in the passing instant, a sense of timelessness. [...] It is extreme nature mysticism, and extreme anti-naturalist aestheticism. It is energy, force, will, life, *étalage du moi*; it is also self-torture, self-annihilation, suicide. [...] It is, in short, unity and multiplicity. It is fidelity to the particular, in the paintings of nature for example, and also mysterious tantalizing vagueness of outline. It is beauty and ugliness. It is art for art's sake, and art as an instrument of social salvation. It is strength and weakness, individualism and collectivism, purity and corruption, revolution and reaction, peace and war, love of life and love of death.[89]

While it is not immediately evident what vitalism has to do with, for example, Berlin's description in the full text of Gérard de Nerval walking a lobster on a leash in the streets of Paris, some of the other aspects of Berlin's ambitious panorama have significant resonance. One element of this *mélange* that rings clear is the play of dualities, something all vitalists were intimately familiar with. Berlin here at times could be read as under the influence of Heraclitus. But even forsaking this broad generality there are further echoes, whether in the "confused teeming fullness and richness of life" or the "inexhaustible multiplicity," and much of what is described as romanticism seems also a form of

[89] Berlin, *The Roots of Romanticism*, 16-18.

vitalism. When romanticism is seen as "energy, force, will, life, *étalage du moi*" one can certainly see its convergence with vitalism, and as will be discussed in the forthcoming chapters, significant segments of the rest of this description also apply in important ways as well.

In his many highly insightful investigations into the nature of romanticism, Berlin sees as one of its essential features a kind of probing beyond the ordered, constrained and confining borders of the everyday, to seek (though the attempt is inevitably doomed to failure) a glimmer or insight into the ineffable, the unutterable, the infinite, the transcendent, the unknowable. In this sense the "vital forces" and "vital principles" so prevalent in this period are quintessentially romantic in their corresponding vagueness and profundity. They are an expression of the need to break through the everyday, echoing the "necessity for perpetual fervent movement forward, movement which is constantly confined by the stupidity and the unimaginativeness and flatness of the existing world."[90] They are the very sources, these unending and illusively mysterious "vital forces," of the romantic condition and its human necessity.[91]

In a collection of essays on *Romanticism and the Sciences*, the authors of the introduction, Andrew Cunningham and Nicholas Jardine, contend that there were "many...who like his [Goethe's] Faust, turned against what they perceived as the soul-less mechanical natural philosophy of the Enlightenment, seeking rather a spiritual and dynamic insight into the natural world."[92] A key word here for our purposes is "soul-less." The powerful mechanistic and materialistic impulse in mid-century biology sought to boldly remove the idea of the "soul" in any of its ramifications or interpretations from any putatively naturalistic explanation of living things. And yet, there was also a deep tradition, traceable through Stahl back to Aristotle and which challenged this naturalistic and neo-Hippocratic paradigm. It was this historical and metaphysical bent that continued to have an influence on mid-century "romantic" science. In this important sense, romantic

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[90] Ibid., 133.

[91] This connection between the romantic and the "hidden" or occluded is, of course, no accident. Much of romantic thought owes a significant debt to the tradition of Western occultism. See, for example the exhaustive and brilliant Auguste Viatte, *Les Sources occultes du romanticisme. 2 Vols.* (Paris: Champion, 1928).

[92] Andrew Cunningham and Nicholas Jardine, eds., *Romanticism and the Sciences* (Cambridge: Cambridge University Press, 1990), xix.

science (and medicine), informed by the fundamental principles of vitalism, was a science with soul.

## *Chapter 2*
## *Vitalism, the Paris Clinic and the Montpellier School: The "Soul" of Medicine*

In 1831 we find the venerable Montpelliérain Julien-Joseph Virey (1775-1846) engaged in a debate within the pages of the *Gazette Médical de Paris* with the well-known French naturalist Étienne Geoffroy Saint-Hilaire (1772-1844).[1] Saint-Hilaire presented his reflections "*Sur la théorie physiologique désignée sous le nom de vitalisme.*" In introducing his subject, Saint-Hilaire noted that L'Académie des Sciences awarded an honorable mention in its recent *concours* to a work by a Dr. Fourcault that totally rejected the idea of vital forces. Saint-Hilaire wondered whether by this act the Academy sought to encourage physico-chemical research applied to the study of animal organization. The Academy, however, had also recently listened to a special work on the nature of matter, which Saint-Hilaire recalled as proof that contradictory opinions on "physiological doctrine" were still quite present.[2] He concluded his article, which saw the distinction between the laws of "brute matter" and those pertaining to the living as essentially tenuous, with an interesting question:

> And yet, if the theory of vitalism has been to this point but a grand error recommended since the origins of our institutions and adopted as a provisory measure, how do we understand that the human spirit has abandoned itself to the conception of so many imaginary laws and this immense framework has been perpetuated until 1830?[3]

Saint-Hilaire's essay prompted a *responsio* in the 22 January 1831 issue of *Gazette Médical* by Virey, who set out to answer the doubts and objections raised about the physiological theory of vitalism by the famed naturalist. "We too," wrote Virey, "search for the truth; it alone remains immutable and sacred, no matter the author who manifests it."[4]

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[1] Étienne Geoffroy Saint-Hilaire was more than a naturalist, he was also a pioneer in the realm of experimental embryology, conducting experiments on hens' eggs which he subjected to abnormal conditions during incubation, producing developmental monsters as a result. See Issac Asimov, *A Short History of Biology* (London: Nelson, 1965), 53.

[2] Geoffroy Saint-Hilaire, "Sur la théorie physiologique désignée sous le nom de vitalisme," *Gazette médicale de Paris* 2 (1831): 9-12, 9.

[3] Ibid., 12.

[4] Julien-Joseph Virey, "Des vrais fondemens de la théorie du vitalisme," *Gazette médicale de Paris* 2 (1831): 29-31, 29.

Virey challenged the idea that "organic" laws and the laws of "brute matter" were synonymous, taking the mechanico-chemical assertions of his opponent to task. He asks about the "comparison of living organisms with a watch or a machine; is it sufficient to give one the right to affirm that only general laws give reason to organization?"

> Mechanism, chemistry, do they present like the living body the sensibility of animal tissues; the excitability and even the spontaneousness and instinct of the vegetative....These minerals, do they offer a self, a centralizing power that maintains unity, that defends the individual against outside attack, either by physical resistance or by protective instincts in combat, with defensive or offensive arms, or by a conserving effort in wounds and sickness by expulsing the venom, the morbid or foreign principle?[5]

This last element of resistance led Virey to suggest the existence of a *nature médicatrice* – a healing nature – which was also the source of the living generally. It was the *moi*, the self, which was the driving force behind all living functions, giving them shape and form, repairing a damaged organism, or driving it to propagate.

This brief mid-century debate between the vitalist Virey and the materialist Saint-Hilaire provides the point of departure for our discussion of the Montpellier school as it succinctly summarizes all the main contentions of the two camps. As these debates emerged between the Montpelliérains and the Parisians in the early 19th century what they reflected was a series of disagreements about 'truths' regarding natural law and the nature of life, the irreducibility of living function to physical law and the characteristically distinct category of 'life', the healing power of nature, and the fundamental acceptance of an essential, irreducible and unknowable element of life encapsulated in the idea of a vital 'force' or 'principle'. This chapter explores the deep roots of these divisions and how they came to the fore in medicine with the emergence of a modern biological paradigm in the early 19th century.

*The Principles of Montpellier Vitalism*

Vitalism and Montpellier are practically synonymous; the vitalism of the Montpellier school was forged in opposition to the dominant models of the 17th and early 18th century – iatromechanical and iatrochemical medicine. These Montpelliérains argued that the

[5] Ibid.

category of 'life' was ontologically distinct, the product of unique living, or *vital*, forces that were irreducible to the strictly physical and chemical. Vitalism was further associated with the characteristically anthropological and Barthezian "science of man" that is another of the great legacies of Montpellier.

Claiming to be a vitalist was also a highly personal stance. It implied many things, from a profession of naturalistic spirituality to a certain skepticism about the nature of science and the scientific endeavor (a kind of "scientific heresy," as Jacalyn Duffin calls it[6]) to belief in the rigorously "empiric" nature of medicine.[7] Vitalism was, in summary, a set of conclusions to the question of "what is life?" that were fundamentally opposed to those of the materialism and mechanism that tended to dominate in theories of scientific inquiry. Consequently, there were philosophic and classically natural philosophic elements in the work of many vitalists – theory and practice were not by definition at odds.

By the mid-19th century many characterized the Montpellier school as overly philosophical. This brought on a defense of vitalism in the *Apologie de l'École médicale de Montpellier* (1842) by Jacques Lordat (1773-1870), a staunch supporter of vitalist thought and Barthez' biographer. Lordat's book was a response to a critique raised by the well-known medical journalist Louis Piesse, who noted, in the preface of a translation of William Hamilton's *Fragments of Philosophy*, that "the Montpellier school attached itself so closely to metaphysics that it often forgot about medicine."[8] Lordat rallied to the cause of his beloved Montpellier tradition, turning into strengths Piesse's criticisms that the school's vitalism was a kind of "lazy, overtly Platonic philosophizing," and that it was skeptical, viewed medicine as sterile and "...produces Philosopher-Doctors rather than Doctor-Philosophers (*Médecins-Philosophe*)."[9] Displaying a fine rhetorical, philosophical

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[6] Jacalyn Duffin, *To See With a Better Eye: A Life of R.T.H. Laennec* (Princeton: Princeton University Press, 2002), 299.
[7] On the old division between "empirics" and "physicians" see Harold J. Cook, "The New Philosophy and Medicine in Seventeenth Century England," in David C. Lindberg and Robert S. Westman, eds., *Reappraisals of the Scientific Revolution* (Cambridge: Cambridge University Press, 1990), 397-436.
[8] Jacques Lordat, *Apologie de l'École médicale de Montpellier, en réponse a la lettre écrite par M. Peisse a M. le professeur Lordat* (Paris: J.B. Baillière, 1842), 5.
[9] Ibid., 10.

and historical subtlety, Lordat painted the Montpellier school as wise, cautious and contemplative.

Another 1841 work entitled *Le Vitalisme Médicale* by Mathieu Barbaste does not at all conceal his larger philosophical objectives, and is subtitled "on the metaphysical principles of natural science and in particular medicine."[10] Barbaste's title does not disappoint, as he engages in broad metaphysical exegesis on the theoretical and philosophical foundations of the medical art.

In spite of positivism's increasing influence on the mid-19th century scientific and medical world, most vitalists, especially the Montpelliérains, were unwilling to accept the anti-metaphysical conceit of Comte's system. This may be one of the reasons vitalism has been overlooked in much of the medical historiography of this period, since the forward looking focus of medical history on the positivist-inspired Paris clinic has overshadowed all other influences on early 19th century French medicine. The emphasis on the narrative of the Paris clinic and its pathological, statistical and scientific successes has meant that the tradition and 'art' of medicine is historically seen as a thing of the past by the early 19th century. Actually, most medical practitioners at the time stood somewhere between positivism and vitalism – ready and willing to adopt new, scientific techniques if it meant better treatment outcomes for their patients, but nonetheless generally somewhat skeptical that findings in the physical sciences were universally applicable to the practice of medicine. Further, many medical men possessed a similar skepticism as to whether living phenomena were deterministic and subject to the notions of causality that maintained in the inanimate physical world. They shared many of the same prejudices as the British physicians that historian Christopher Lawrence describes as professing a form of "incommunicable knowledge."[11] Early and mid-19th century elite physicians in both Paris and Montpellier, at the center and on the periphery, were still quite 'old-fashioned' in important ways, not at all above turning to history, tradition and 'high' philosophy in

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[10] Mathieu Barbaste. *Le Vitalisme médicale, par M. Barbaste, Premier lauréat de la faculté de Montpellier: Ou Réponse critique à la thèse de M. Sales Girons, membre de l'institut historique de France, sur les principes métaphysiques des sciences naturelles et en particulier de la médecine* (Alais: L. Brusset, 1841).

[11] See Christopher Lawrence, "Incommunicable Knowledge: Science, Technology and the Clinical Art in Britain, 1850-1914," *Journal of Contemporary History* 20 (1985): 503-20.

the search for insight into their practice.[12] This was perhaps truer of the Montpelliérains than the Parisians, but it certainly applied to both.[13]

While we will see in this mid-19th century debate a host of issues, from questions of method to epistemology to belief, we argue that initially the vitalism of the

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[12] This view is in relative agreement with that of Georges Canguilhem, who argues that theory was the only thing that medicine had to offer before the late 18th and early 19th century, and that method, of a purely empirical sort, dominates thereafter. See Georges Canguilhem, *Ideology and Rationality in the History of the Life Sciences*, trans. Arthur Goldhammer (Cambridge, MA: M.I.T. Press, 1988).

[13] In her recent book, *A Cultural History of Medical Vitalism in Enlightenment Montpellier*, Elizabeth A. Williams argues that elements of the vitalist ideology of the medical school were shaped by Montpellier itself – that the character of the place was critical in the development of a particularly vitalist view. She suggests, for example, that the warm, restorative, healthy climate of the region reinforced neo-Hippocratic notions of *milieu*, and certainly provided the Montpelliérains with a vital living example to support their theoretical inclinations. Montpellier, rooted as it was in the distinct locale of the south, was a unique cultural space. "...Those who praised Montpellier's unique legacy attributed its medical greatness not only to its favorable location astride the routes from Spain to Italy or to its receptivity to diverse traditions but to the fundamental geography that established its nature as a place. Then as now one of the time-honored themes in Montpellier self-constructions was the bounty of the climate. In a universe of the imagination that insistently counterposed north to south, Montpellier represented the health of the south, with its heat, its herbs and flowers, its *beaux cieux*, its life-giving springs, its proximity to the great sea." Elizabeth A. Williams, *A Cultural History of Medical Vitalism in Enlightenment Montpellier* (Aldershot: Ashgate, 2003), 18. Edged by the *marais* and warmed by the powerful sun of the Languedoc, Montpellier was a far cry from the hectic and quintessentially urban milieu of Paris. The fact of Montpellier as a quiet, restful, even idyllic provincial locale helped to define the medical culture of the school and of vitalism writ large. This clear contrast between the two environments could only reinforce what was already a distinct division between Montpellier's peripheral place and the centrality of Paris. In Montpellier, many of the *ancien regime* patterns of organization and power persisted well past the Revolutionary period, and these in turn affected the way the school functioned. These conservative forces were also instrumental in helping to foster a deep traditionalism in the Montpellier school, which had the dual effect of helping to keep vitalism alive while at the same time ensuring that it would at times be hard pressed to separate itself from the charge of obsolescence and obscurantism. Williams makes this traditionalism and localism clear in her treatment of vitalism in "Enlightenment" Montpellier, but it can also to some degree be carried forward: "I argue that the construction of 'Montpellier vitalism' constituted an instance of the mobilization of what may be called 'local knowledge' – learned conventions purposefully associated with ancient local traditions – and, correlatively, that the fate it met illuminates the inner dynamics of the Enlightenment as a movement dedicated to cultural centralization encouraged by discourses of universalizing science, reform, and progress." Williams, *A Cultural History of Medical Vitalism*, 7. Her idea of "local knowledge" is taken from Clifford Geertz, *Local Knowledge: Further Essays in Interpretive Anthropology* (New York: Basic Books, 1983). At the same time, Montpellier was definitely a "medical town", and the school's impact on the local environment was quite significant. The two Montpelliers, school and city, were inseparable, and as such their fate was also inextricably linked. On this relationship see Elizabeth A. Williams, "Medicine in the Civic Life of Eighteenth-Century Montpellier," *Bulletin of the History of Medicine* 70 (1996): 205-232.

Montpelliérains in the 18th century was largely epistemological. Epistemology in this sense implied a basic set of assumptions about the nature and limits of knowledge about living things. The Montpellier school emphatically believed that understanding life and health was only possible by taking into account the multi-faceted and dynamic dimensions of the living being. Breaking with the ritualistic anatomical enterprise of the medieval and early modern physicians, the Montpellier school moved into the realms of philosophy, psychology and anthropology in an attempt to understand the multi-faceted elements that constituted health and the living.[14] As Paul-Joseph Barthez (1734-1806) so aptly says: "Truth of the vital principle can be known by one means only: observation of phenomena across vast stretches of time and space and at the very borders of living species."[15]

At the same time, the Montpelliérains were skeptical of the "new" science of mechanical physics and its applicability to the understanding of living function. From this they also developed a critique of reductionism, especially the reduction of the life sciences to a series of physical reactions. Ironically, it was increasing knowledge of physics and chemistry in the late 18th and early 19th century, in the work of Antoine Lavoisier (1743-1794) and John Dalton (1766-1844), for example, that gave biologists a growing sense of the fundamental distinction between living and nonliving, and provided some confirmation of the validity of vitalist views.[16]

*The Cartesian Conundrum*

Montpellier vitalism got its formal start as a philosophical medical school resistant to the most aggressive claims of 17th century mechanism. Many medical circles in the mid-17th

[14] This is the argument made in Elizabeth A. Williams, *The Physical and the Moral: Anthropology, Physiology, and Philosophical Medicine in France, 1750-1850* (Cambridge: Cambridge University Press, 1994).
[15] Williams, *A Cultural History of Medical Vitalism*, 269.
[16] In her book on *The Rise of Experimental Biology*, Elizabeth Gasking argues that "as knowledge of the physical and chemical changes that occur in inorganic matter increased, the uniqueness of the vital processes became more apparent. There was a growing realization that living things exhibited a flexibility of response and an overall control of their activities that were not manifested by inorganic material." Elizabeth Gasking, *The Rise of Experimental Biology* (New York: Random House, 1970), 99.

century were under the powerful spell of mechanism. Mechanism was foundational to the emergence of modern science in the 17th century.[17] One historian of the Scientific Revolution has gone so far as to suggest that a mechanistic outlook was one of two major factors in the rise of modern science (the other being the change of perspective in natural history brought about by the voyages of discovery).[18] This mechanistic world-picture was an integral part of early 17th century French philosophy and science as embodied in the thought of René Descartes (1596-1650), Marin Mersenne (1588-1648) and Pierre Gassendi (1592-1655).

Descartes' role was particularly important in popularizing mechanism and its approach to the body. His division between mind and body is one of the most all-consuming and intransigent foundations of our modern understandings. The Cartesian dualism of the *res extensa* and *res cogitans* is synonymous with common sense. The often painful and clearly patent immanence of our bodies is a fact. Yet, as much as this reality is plain, so too is our understanding of the endlessly astounding transcendence of our minds – thoughts, ideas, concepts – which all seem to be something other than the mere result of the physical function of the brain. They are products of language and structure, to be sure, but these notions, of what language and structure are, have no clearly defined physical analog. We can locate the language centers of the brain, but we cannot locate language in the brain.

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[17] In *The Idea of Nature*, Collingwood sees the machine metaphor as the central distinction between Greek and Renaissance (by which he means early modern) views of nature: "Instead of being an organism, the natural world is a machine: a machine in the literal and proper sense of the word, an arrangement of bodily parts designed and put together and set going for a definite purpose by an intelligent mind outside itself. The Renaissance thinkers, like the Greeks, saw in the orderliness of the natural world an expression of intelligence: but for the Greeks this was nature's own intelligence, for the Renaissance thinkers it was the intelligence of something other than nature: the divine creator and ruler of nature. This distinction is the key to all the main differences between Greek and Renaissance natural science." R.G. Collingwood, *The Idea of Nature* (Oxford: Oxford University Press, 1945), 5.

[18] R. Hooykaas, "The Rise of Modern Science: When and Why?" *British Journal for the History of Science* 20 (1987): 453-73. See also Richard S. Westfall, *The Construction of Modern Science: Mechanisms and Mechanics* (Cambridge: Cambridge University Press, 1977). Westfall portrays mechanics and the mechanistic philosophy as foundational in modern science, but is less kind about its impact on biology. For a considerably darker analysis of the rise of science and mechanical thought see Carolyn Merchant, *The Death of Nature: Women, Ecology and the Scientific Revolution* (New York: Harper & Row, 1980).

To this duality many have added a third element – *spirit.*[19] For some thinkers the triad of mind, body and spirit describes the complexity of being human in a more satisfactory way. Most people respond to this notion of spirit as they would to the idea of the soul. And yet the soul was precisely what Descartes meant when he spoke of "mind" in his duality. In this sense, the mind was the soul – the *anima rationalis* – the rational soul so integral to the metaphysical conceptions of the ancients, particularly Aristotle.[20] This rational soul was the essence of existence for Descartes, and through his thought experiments he believed he had proved it was independent of the body, transcendent and, unlike the body, immortal. Consider that after escaping the ultimate skeptical stance of denying one's existence by realizing that it is necessary to think in order to even conceive of this skeptical position (*cogito ergo sum*), Descartes goes on to elaborate the following series of observations:

> Then, when I was examining what I was, I realized that I could pretend that I had no body, and that there was no world nor any place in which I was present, but I could not pretend in the same way that I did not exist. On the contrary, from the very fact that I was thinking of doubting the truth of other things, it followed very evidently and very certainly that I existed; whereas if I merely ceased to think, even if all the rest of what I ever imagined were true, I would have no reason to believe that I existed. I knew from this that I was a substance, the whole essence or nature of which was to think and which, in order to exist, has no need of any place and does not depend on anything material. Thus this self – that is, the soul by which I am what I am – is completely distinct from the body and is even easier to know than it, and even if the body did not exist the soul would still be everything that it is.[21]

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[19] Kierkegaard says the following about the idea of spirit: "A human being is spirit. But what is spirit? Spirit is the self. But what is the self? The self is a relation that relates itself to itself or is the relation's relating itself to itself in the relation; the self is not the relation but is the relation's relating itself to itself. A human being is a synthesis of the infinite and the finite, of the temporal and the eternal, of freedom and necessity, in short, a synthesis. A synthesis is a relation between two. Considered in this way, a human being is still not a self." This quote does little to clarify the notion, but does suggest an aspect of its inward and unconscious nature. See Soren Kierkegaard, *The Sickness Unto Death: A Christian Psychological Exposition for Upbuilding and Awakening*, eds. Howard V. Hong and Edna H. Hong (Princeton: Princeton University Press, 1980), 13.

[20] Aristotle. *De Anima*, ed. Sir David Ross (Oxford: Oxford University Press, 1999 [1961]). It is for this reason that Descartes preferred the use of the term *esprit* rather than the term *âme*, to avoid confusion with the more basic functions below the reasoning soul that Aristotle ascribed to the *animas*.

[21] René Descartes, *Discourse on Method and Related Writings*, trans. Desmond M. Clarke (London: Penguin, 1999 [1637]), 25.

Descartes is also explicit about the undeniable importance of the rational soul and its inherent purpose, seeing its denigration as the first step along a dark path:

> I discussed the soul at some length here because it is among the most important subjects; for, apart from the error of those who deny God...there is none that more readily leads weak minds away from the straight path of virtue than to imagine the soul of beasts has the same nature as ours and, consequently, that we have nothing to fear or hope for, after this life, any more than flies or ants. However, when we know how much these souls differ, we understand much better the reasons that prove that our soul is of such a nature that it is completely independent of the body, and therefore that it does not have to die with it. And since one can see no other causes that destroy the soul, one is naturally led to judge that it is immortal.[22]

The Cartesian soul was clearly divided from the body in a way quite different than Aristotle's *animas*, and this created certain problems. The Cartesian view of the rational soul as the source of reason was idealist, a concession to the spiritual and religious exigencies of his age. The Cartesian conception of the body, however, was purely mechanical. This was the body as machine – where health represented a properly functioning machine, disease a defective one. This radical Cartesian dichotomy between body and soul also raised certain difficulties concerning mental diseases. It was logically absurd, for example, to think of the soul, a *res cogitans*, as being prone to sickness in the same manner as the material body.

More than anything, the deep dualism of Descartes opened the way for a thoroughly mechanistic conception of the body and its functions. An ideal example of this trend is the description that Descartes himself provides in *Discourse on Method* of the function of the heart, derived from William Harvey's (1578-1657) *De motu cordis* (1628). Harvey's thought was another example of the deep dualism between material, mechanical body and immaterial, vital soul so prominent in the 17th and early 18th century. Though Harvey possessed vitalist sympathies, his explanation of the heart as a mechanical pump places him in the category of mechanist when compared with his contemporaries. Other well-known 'soft' medical mechanists of the period with similar perspectives include Herman Böerhaave (1668-1738), Hieronymus David Gaubius (1705-1780) and Antoine Fizes (1689-1765).

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[22] Ibid., 42.

*La Mettrie and the Rise of Eighteenth Century Materialism*

By the early 18th century, mechanism had become something of a cult. It was ensconced as the philosophy *par excellence* of science due to the popularization of Newton's theories of mechanics and their broad applicability to understanding the physical world. Mechanism and Newtonianism were reified by the early *philosophes*, François-Marie Arouet de Voltaire (1694-1778) most prominent among them. The Deism of the *philosophes* and other sundry intellectual revolutionaries like Thomas Jefferson and Thomas Paine often flirted quite overtly with materialism, though it generally remained more dominantly rationalist and mechanist. The philosopher-physician Julien Offray de La Mettrie's (1709-1751) *L'Homme, machine* (1748) is seen by many as the high point of mechanistic-materialism in the 18th century.[23] The apotheosis of mechanistic and materialistic thought in France is found in *L'Homme, machine* but this claim also needs an addendum, as elements of this work are also quite controversial and rhetorical.[24] La Mettrie tries to reassemble the nature of humanity on the side of materialism, and suture together the dualistic split cleaved into it by Descartes. The *Oxford Companion to Philosophy* describes La Mettrie as "reviled in his own time for his professed atheism, determinism, and hedonism, but an important figure in the history of materialism."[25] Looking at this famous materialist's work in some detail reveals an early expression of the "physiological materialism" described by Émile Littré,[26] a materialism that, in many ways, was still being debated a hundred years later.

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[23] Julien Offray de La Mettrie, *L'Homme, machine* (Leyden: D'Elie Luzac, 1748). See also Kathleen Anne Wellman, *La Mettrie: Medicine, Philosophy, and Enlightenment* (Durham, NC: Duke University Press, 1992).

[24] William Coleman says that *L'Homme, Machine* "publicized the necessary relation between organic mechanism and the larger conception of philosophical materialism, and the argument remained a provocative and widespread one into the new century." See William Coleman, *Biology in the Nineteenth Century: Problems of Form, Function and Transformation* (Cambridge: Cambridge University Press, 1977), 121.

[25] Ted Honderich, ed., *The Oxford Companion to Philosophy* (Oxford: Oxford University Press, 1995), 453. For a treatment of medical and biological ideas leading up to this period see Jacques Roger, *The Life Sciences in Eighteenth-Century French Thought*, trans. Robert Ellrich (Stanford: Stanford University Press, 1997 [1963]).

[26] Émile Littré, "Animisme," in *Dictionnaire encyclopedique des science médicale, Vol. 5* (Paris, 1866), 170-174.

In *L'Homme, machine* we find a text that pays deep homage to the medical art. La Mettrie opens his book with a dedication to the famed physiologist Albrecht von Haller, who says, "everything gives way to the great art of healing," and "the doctor is the only philosopher who deserves his heritage."[27] At the same time, the book pushes at the contemporary limits of philosophical materialism, as when La Mettrie says "the soul and the body sleep together."[28] Ever enthusiastic about the findings of medicine and biology, La Mettrie saw more value in the thought of Malphigi than that of Descartes or Malebranche.[29] "I have reduced the systems of philosophy regarding the soul of man to two," La Mettrie says, "The first, and oldest, is the system of materialism; the second that of the spiritualist."[30] Yet, in his attempt to search for answers, La Mettrie sees medicine's empiricism as antecedent to the deductions of philosophy, saying: "Only experience and observation should guide us...[it] abound[s] in the archives of doctors, who were philosophers, but not in those of philosophers, who were not doctors. They [doctors] explored and shed light on the human labyrinth.[31]

This idea of a "human labyrinth" derives from La Mettrie's frustration at the inherent complexity of any attempt at understanding humanity by mechanistic means, a skepticism that suggests his materialism is of a different sort than that which evolves later. For one, it is a materialism based on the *epistemological* constructions of his age. He says explicitly that man as machine is only understandable in *a posteriori*, not *a priori*, terms. This claim separates his view from more ideological forms of materialism made patent in the mid-19th century. The materialism of La Mettrie and the materialism of the mid-19th century German scientist are distinct discourses.

Nonetheless, La Mettrie makes important inroads into the development of a general materialist view, even anticipating some of the far-reaching controversies surrounding Darwin's theories in the late 19th century. In a fascinating segment of *L'Homme, machine*, he entertains the possibility that one could take an ape, perhaps a gorilla, and teach it language: "from animal to man is not a violent transition, true

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[27] La Mettrie, *L'Homme, machine*, 10.
[28] Ibid., 11.
[29] Ibid., 62-3.
[30] Ibid., 1.
[31] Ibid., 6-7.

philosophers will agree."[32] This view differs from the notion of an exalted anthropocentric realm characterized by man's possession of a rational soul, a conception insisted on by many mid-19th century animists and spiritualists, but not necessarily inseparable from all forms of vitalism. A principled separation of man and the rest of the natural world, traceable back to thinkers like Aristotle and Descartes, is the foundation of many of the important differences between animism and vitalism in the mid-19th century.

Pushing the boundaries of the conventional thinking of his time, La Mettrie was skeptical about popular faith, asserting the uselessness of organized religion. He suggests that it is fairly pointless to ask metaphysical questions (i.e. Is matter eternal or created? Is there a God?), and his inclinations are pragmatic and materialistic. This leads him to an ambivalent attitude toward the immortal soul – "the soul is therefore a meaningless term about which we know nothing, and which an intelligent mind should use only to signify that within us which thinks" – and he instead seeks to eclipse dogmatic spiritualism with some theory of movement or animating force: "Given the slightest principle of movement, animated beings have everything they need to move, feel, think, repent and in a word, behave, in the physical sense, and in the moral sense on which it depends."[33]

For La Mettrie, the idea of the soul was a label applied to our ignorance about the source of living movement and function: "The soul is nothing but a principle of movement, or a sensitive material part of the brain, which we can, without fear of error, see as a mainspring of the whole machine."[34] This is the dilemma that La Mettrie faces – clearly convinced that the body is a machine ("the body is merely clockwork, of which the new *chyle* is the clockmaker") and that the soul is an invocation of our ignorance of living function, he still has no other recourse but to make reference to some element of it, concluding that "the rational soul is nothing but a sensitive soul applied to the contemplation of ideas and to reasoning!"[35] While La Mettrie's arguments are deeply immersed in a tradition of materialism, he is also struggling against the transcendental idealism that was prominent in European philosophy at the time. He is not arguing, as the materialists of the mid-19th century eventually would, that life has no particular special

[32] Ibid., 26-31; 31
[33] Ibid., 71.
[34] Ibid., 84.
[35] Ibid., 85.

characteristics of its own, that all was in essence merely matter and force. Rather, he moves us towards a de-spiritualized view of life – a life which nonetheless possessed a particular character – that becomes the central vision of the *epistemological* vitalists. His argument is with the animism and spiritualism of thinkers like Georg Ernst Stahl (1660-1734), for whom the body was merely a vehicle for the ambitions of an immortal soul.[36] La Mettrie approaches the issue from the opposite end of the spectrum, asking, for example, "how can matter think?"

*A Moment of Vitalism: Paul-Joseph Barthez and the Emergence of a Vitalist Doctrine*

Cartesian mechanism and the materialist view, as expressed in works like *L'Homme, machine*, was challenged by François Boissier de Sauvages (1706-1767), who held the chair of Medicine at Montpellier from 1744 until his death, and the man largely responsible for rejecting a purely mechanistic conception of medicine, and introducing Stahlian animism into the university. Labeled as "animist", "animo-vitalist," and "vitalist," Sauvages was, more than anything, an anti-Cartesian who rejected the framework of Descartes' ideas about physiology and life that had taken root in Montpellier by the 1670s.[37] Sauvages was also an enthusiastic nosologist, heavily influenced by Thomas Sydenham (1624-1689), and it was this focus on classification that laid the foundation for his belief in the importance of the variability and autonomy of vital phenomena. Nosological classification was founded, after all, on the principles of the empirical enumeration of living variation, with a particular focus on diversity and a tendency to eschew theory. In this sense, systematizing was its own theory. Sauvages used the word "force" differently from the iatromechanical medical view, emphasizing

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[36] The elaboration of Stahlian animism can be found in Georg E. Stahl, *Theoria medica vera* (Halle: Liferis Orphanotrophei, 1709). See also François Duchesneau, "G. E. Stahl: Antimechanisme et Physiologie," *Archives internationale d'histoire des sciences* 26 (1976): 3-26.

[37] Elizabeth A. Williams, *A Cultural History of Medical Vitalism*, 80-81. Julian Martin provides a refinement of this characterization of Sauvages, arguing for his devotion to a Newtonian natural philosophy and his belief in a mechanical body controlled by the soul: "Man is composed of a living and motile soul, and a hydraulic machine, united together." Julian Martin, "Sauvages's Nosology: Medical Enlightenment in Montpellier," in Andrew Cunningham and Roger French, eds., *The Medical Enlightenment of the Eighteenth Century* (Cambridge: Cambridge University Press, 1990), 111-137; 130-31.

the importance of the "soul" as the bedrock of a proper understanding of living phenomena and the source cause of health and disease.

Through a series of thinkers, from Sauvages to Louis La Caze (1703-1765), Theophilé de Bordeu (1722-1776), and finally Paul-Joseph Barthez, one witnesses the movement from Stahlian animism to a characteristically Montpellier approach to vitalism. And yet, though Barthez, for example, speaks in the late 18th century of the *principe vital* as the foundation of his beloved "*science de l'homme*," there is at this point still no recognition of a distinct "vitalist" school. All this changes in the early 19th century with the development of the Paris clinic and the increasing dominance of the pathological-anatomy approach that marginalized the views of the Montpelliérains. Thus, both vitalism and the "Montpellier school" are constructed and constituted in opposition to more prominent ideologies – positivism, pathologism, therapeutic nihilism, and all the structural assumptions that came to constitute the Paris clinic. And yet, we need to be careful about also seeing vitalism as somehow antithetical to the proto-experimental scientific methods of the early 19th century. Jacques Lordat, for example, completes his 1842 defense of the Montpellier school by asking a final interrogative question: "...how is this abstract and undeniable Vitalism an obstacle to the search for the material and mechanical conditions of phenomena?"[38] He was, of course, right in this respect – that abstract theory could not alone alter the nature of practice and experiment. This was particularly the case when the experimental method as applied to the living was still in its underdeveloped, nascent stage. In many circles in the early 19th century, vivisection was still troubling in its consequence, and the new aggressive experimental approach of the life sciences challenged many sacred assumptions.[39]

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[38] J. Lordat, *Apologie de l'École médicale de Montpellier*, 64.

[39] This issue can also be extended to the relationship between methodology and ideology. "But physiology was long a science in search of a method. In truth, physiology had possessed since antiquity a spectrum of methods for investigating organic function. These methods – principally, observation and comparison, morbid anatomy, vivisection and, a much later addition, systematic physico-chemical experimentation – each had their partisans who were inclined to advocate the exclusive rights of their preferred procedure. Popular opinion easily transforms these alternatives into a progressive sequence, equating progress in the physiological sciences with increasing utilization of experimental techniques. This conclusion is, of course, too simple and too loosely drawn. It does not distinguish, as numerous nineteenth-century physiologists were wont to do, varieties of useful experimental procedure and, more importantly, it fails to indicate the decisive interplay between the physiologist's adopted methods and his conception of life and the

Paul-Joseph Barthez is, without a doubt, the first 'true' vitalist. He is certainly the first of the Montpelliérains to fully elaborate what was really only a patchwork of ideas – to essentially make Montpellier medicine into a coherent philosophical system. A Languedocien and the son of an engineer, Guillaume Barthez, Paul-Joseph lived much of his early life in the south, though he spent some time in Paris in the 1750s, contributed a few entries to Diderot's famed *Encyclopédie*, and was even a court physician for brief periods in the 1780s and around 1800 under Napoleon.[40] His real fame came with the publication of *Nouveaux éléments de la science de l'homme* (1778). Through "reasoned empiricism" he believed that medicine could stand on firm philosophical ground, and that, in rather intentional contrast to Cartesian reasoning, it was using the methods of Baconian induction and careful and extensive observation that this was achieved.[41] Barthez essentially introduced the idea of the "vital principle" into the medical lexicon as the basis of the phenomenon of life. For Barthez, every abnormality of the function of normal life – of his "vital principle" – constitutes disease.

Barthez' masterwork, *Nouveaux éléments de la science de l'homme* was originally published in Montpellier in 1778 but received widespread attention and was reprinted as a considerably augmented two volume work in 1808.[42] In 1818 Jacques Lordat summarized most of Barthez' main ideas and also provided a rich biographical treatment of the man in his *Exposition de la doctrine médicale de P.J. Barthez.*[43] Lest one assume there was no interest in the Montpellier vitalist theories by the mid-19th century, it is also worth recalling that Barthez' work was again republished in a third edition by the popular Parisian medical press Baillière in 1858 with an introduction by his great-nephew M.E. Barthez.[44]

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organism. The latter commonly determined or, at the very least, offered essential premises for the determination of the former. The understanding of life and organism and the suitability of one's means of investigation stand inseparable." Coleman, *Biology in the Nineteenth Century*, 144.

[40] The most extensive biography of Bathez is found in J. Lordat, *Exposition de la doctine médicale de P.J. Barthez et mémoires sur la vie de ce médecin* (Paris: Gabon, 1818).

[41] Williams, *A Cultural History of Medical Vitalism*, 258.

[42] See P.J. Barthez, *Nouveaux éléments de la science de l'homme, Tome 1* (Montpellier: Martel, 1778) and P.J. Barthez, *Nouveaux éléments de la science de l'homme, 2 Vols.* (Paris: Goujon, 1808).

[43] Lordat, *Exposition de la doctine médicale de P.J. Barthez.*

[44] P.J. Barthez, *Nouveaux éléments de la science de l'homme, 3rd ed., 2 Vols.* (Paris: Baillière, 1858).

Barthez begins *Nouveaux éléments* in a very different way from previous Montpelliérains, whose empirical, matter of fact tone was the essence of pragmatic, restrained medical discourse. There is a much more ambitious, metaphysically profound aspect to Barthez, and there is certainly no doubt he was a medical philosopher through and through. It is quite clear, as Elizabeth Williams puts it, that Barthez adopted "the grand philosophical approach."[45]

The essential motivation in Barthez' work is the attempt to find a "middle way" between the opposed poles of mechanism and animism. For Barthez, vitalism responded to this schism rooted in Cartesian dualism. It was this frustration with the all-or-nothing propositions of the mechanists (materialists at heart, believing that all the phenomena of life could be reduced to chemical and physical processes) and the animists (idealists at heart, believing that the body was merely a vessel to contain the rational soul, which was the true source of the living) that led Barthez to favor Bacon as a philosopher over Descartes. Again Elizabeth Williams ably describes the essence of Barthez' philosophical program:

> Surveying the disputes of the Moderns, Barthez repeated the criticism that Montpellier physicians had voiced since mid-century; mechanists explained "all the phenomena of animal physics by the principles of mechanics and general physics," while Stahl and the "animists" referred all life phenomena to "the influence of the thinking soul, whose forethought and errors they viewed as the sole causes of spontaneous action in all the parts of the body." Both these positions, Barthez insisted, were in error: mechanics and physics could not explain the phenomena of life, which differed essentially from those observed in brute matter; nor could the thinking soul explain essential bodily functions such as the beating of the heart or digestion, functions of which it was unaware and over which it exercised no control.[46]

The primary element in Barthez' vitalist paradigm was driven by the need to delineate and unify all at once; to find an accommodation between physics and metaphysics. Or, put another way, between and across two irreconcilable understandings of life and health – one rooted in science, the other in moral philosophy. While carrying out this delicate balancing act, Barthez also helped to define the unique place biology came to have as a form of knowledge. This is certainly one of the things with which the Montpellier school

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[45] Williams, *A Cultural History of Medical Vitalism*, 261.
[46] Ibid., 262-3.

credited Barthez; moreover, they continued, a hundred years after his death, to insist on the importance of these principles.

Addressing his colleagues a couple of years before the hundredth anniversary of Barthez' death, the Montpellier neurologist Joseph Grasset (1849-1918) proposed, in *Le Centenaire de Barthez* (1904) that the faculty honor their historic medical progenitor. For Grasset, Barthez' greatest legacy was an *idea* "sufficiently not banal, original enough for its time, that, for fifty years it was fought and derided," one that was "important enough and, moreover, true enough, that in the second half of the century just past, its value was more and more recognized and it has today become classic." Barthez, Grasset argued, had "deduced from his observations and left to the 19th century the *idea of biology, exact and independent science*, the idea of a science of living things distinct at once from both the physico-chemical sciences and from metaphysical psychology."[47]

Grasset saw Barthez as having introduced the inductive, Baconian method in medical understanding. From this innovation, Barthez saw that life has its own autonomy; its own laws. In founding *vitalism*, Grasset argues, Barthez founded *biology*, the *science of life*.[48] And yet these ideas were poorly received, in part because they came too early. Grasset says that this was due to the vast developments in anatomy and histology, but not in physiology, adding, "it is the living organism, and not the cadaver, that one must study to understand and develop a vitalist doctrine." In the face of the apparently great advances of the laboratory and the dissection room, "Vitalism appeared as an ivory tower...in which were enclosed those who did not want to work and did not know how to find for themselves, who did not want either to experiment in a laboratory, dissect in an amphitheater or look in a microscope."[49] In Barthez, Grasset found the source of the development of a "*science de l'homme*" that explored the unique nature of living phenomena as distinct from physico-chemical laws, and felt that he, and his fellow colleagues at Montpellier, were the inheritors of this tradition.[50]

An entry on "*vitalisme*" written by Dr. Brochin in the 1889 *Dictionnaire encyclopedique de science médicale* sees a third way between the Hippocratic naturalism,

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[47] Joseph Grasset, *Le Centenaire de Barthez* (Montpellier: Delard-Boehm et Martial, 1904), 1-2.
[48] Ibid., 3.
[49] Ibid., 4.
[50] Ibid., 7.

which saw no need to invoke any transcendental force or organization in the living and the animate spirits, and the *archaei* of Stahl and van Helmont. This he calls "the abstract or metaphysical vitalism of Barthez." For Brochin, Barthez is rightly "considered as the creator of medical philosophy." He describes the fundamentals of this view:

> Suffused with the spirit of the Baconian method, imbued with the principles of inductive philosophy that prescribe first to observe all the facts, and move from known to unknown, from phenomena to laws, from laws to the forces which guide them and from these forces to the sole force or first cause, Barthez applied himself to the study of phenomena that occur in organized living bodies, to researching the causes and laws that preside over their manifestation, connecting each physiological or pathological act to a special faculty and all these special faculties to a general one, the unique cause of life that he admitted knowing neither the nature nor essence of, and which he named the *vital principle*, a name he did not invent, and which he used in following the Stoics, Plato, Eristarchus, Galen, Aristotle and Bacon and to which it seemed to him indifferent of substituting the words force or vital force, as long as it was agreed that this, whatever it was, was understood as the cause of life.[51]

Brochin's portrayal of the vitalism encapsulated in Barthez's *principe vital* was essentially an occult cause, a signifier for the unknown variable, akin to the $x$ in a mathematical equation. It constituted recognition that an element in the understanding of the living remained occluded, hidden from view but nonetheless agitating, and relevant to a proper and complete picture of the characteristic nature of the living.[52] Brochin sees in the seminal thinker a division between the three realms of phenomena in man: the physical, the vital and the moral. The three phenomena have in turn physical, vital and moral causes. Brochin describes Barthez' system as a hierarchy, somewhat reminiscent of Aristotle's tripartite *anima*, that moves from the simple, physical structure of the organs to the realm of intelligence and the soul: "He brought to the structure of organs the location, the progression and the physical phenomena of the organism; he attributed to the vital force sensations, contractions, digestion, nutrition and organic function: finally he attached perception, intelligence and conscience to the soul."[53]

This conception of the human system, Brochin argues, is quite reminiscent of the Stoic vision, which admitted in man both a *rational* and *irrational* soul, understanding

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[51] Brochin, "Vitalisme," in *Dictionnaire encyclopedique de science médicale, Vol. 100* (1889): 719-728, 721
[52] Ibid.
[53] Ibid.

the organism as composed of a body, a vital principle and a soul. Francis Bacon as well is seen as developing a similar distinction. What is different about Barthez from Brochin's point of view is his assessment of the *nature* of the vital principle. Brochin rightly suggests that in Barthez' *oeuvre* there is never a clear decision made as to whether the *principe vital* is a "material" or "metaphysical" principle – whether in fact it has an existence distinct from the body and soul or whether it is really just a modality of organized substances.[54]

Barthez clearly understood the implications of his philosophy, and the ambitiousness of his project. Elizabeth Williams writes:

> ...Barthez was fully aware that in asserting the existence and primacy of an independent principle of life – the ultimate objective of his labors – he inevitably trod the terrain of metaphysics and entered an enduring controversy about the distinctions to be drawn between body and soul, matter and spirit, mortal and immortal. Acknowledging that the power of his new doctrine rested largely on the resolution he offered of such disputes, Barthez sought to lay to rest the "diverse opinions" about the soul-body relation that had divided philosophers and physicians since the first appearance of Descartes' dualism. In so doing Barthez made a grand sweep from the Ancients (Hippocrates, Epicurus, Aristotle, Plato, the Pythagoreans) through the medicine of the Renaissance (Bacon, Van Helmont) to the disputes that now, in the aftermath of Descartes, divided mechanists and animists.[55]

No small task, to be sure, but one that relied on a series of proposals and suppositions set down by his forebears at Montpellier. And yet it is clear that as much as Barthez tried to usurp Descartes' central position in French philosophy, the Cartesian conundrums were front and center in the mid-19th century vitalist discourse. The divide between vitalism and animism was essentially rooted in Cartesian soil, since the animists believed in a unified rational soul, and criticized the Montpellier school and its vitalism for espousing a form of "duo-dynamism," in which the soul was divided into rational and irrational (vegetative) aspects.[56] To the animist, this was the first step along a slippery slope

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[54] Ibid., 721-22.

[55] Williams, *A Cultural History of Medical Vitalism*, 262.

[56] One early 19th century mechanist, the Neapolitan A. Adamucci, in the tradition of 17th century thought, actually used this divided sphere to reinforce his argument. He entirely separated "*l'âme immatérielle*" from "*l'âme sensitive*" – it is the latter, he argues, that presides over nervous function. From this he comes to see nervous function as a question of simple mechanical movements. See A. Adamucci, *Système méchanique des functions nerveuses, 2 Vols.* (Paris: Collin, 1808).

towards materialism, and fundamentally at odds with Stahlian views, which insisted on a doctrine that argued that the body was made as a vehicle for the actualization of the soul.

This is the criticism leveled at Montpellier in an 1854 article in the animist friendly journal *Revue médicale française et étrangère* by a Dr. Blaud, head of the Baucaire hospital and member of the Académie Impériale de Médecine. Blaud was an advocate of a "*théorie spiritualiste*" that challenged the notion of a "vital force" which he connected to the Montpelliérains, and which he saw as tainted with the stain of materialism. For Blaud, the vital force was synonymous with the idea of an "irrational soul", a concept he sees expressed in the work of the famed Montpellier vitalist Jacques Lordat. Blaud reproduces Lordat's argument, expressed in the 30 December 1851 issue of *Revue médicale française et étrangère*. This position is quoted as follows:

> In the book of the immortality of the soul (by St. Augustine) the author wants to stress above all the constancy and immutability of reason. To put forward this argument of immutability, he identifies in the forces of life two ancient philosophers' causes, the *rational soul*, or *animus*, and the *irrational soul*, which is what we call the Vital Force....St. Augustine recognized in the total constitution of man a dynamism made up of an immaterial and immortal soul, and an irrational soul similar to that of plants. His doctrine accepts the duality of human dynamism, which is the primary idea of ours.[57]

This, for Blaud, was a troubling assumption, since it divided the idea of the soul and rendered it too close to a materialist view. "But obviously," he says "this [irrational] soul cannot be spiritual; if it were, man would have two of these kinds of souls, and his individuality would be destroyed. It must then of necessity be *material.*"[58] This fact became the essence of a tautology, since if this irrational soul was conceived spiritually, one was faced with a contradiction, and if it were conceived materially, it would be reflective of a defunct doctrine:

> If it is *spiritual*, man has two souls of the same nature; he loses, we repeat, his individuality, and the doctrine of the duality of human dynamism is absurd.
> If it is *material*, inert by its nature, it cannot act on its own in the manifestation of living organic phenomena, and this same doctrine no longer has a foundation.[59]

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[57] Blaud, "Lettre sur le vitalisme," *La Revue médicale française et étrangère* (1854), 193-203; 198.
[58] Ibid. Emphasis in original.
[59] Ibid., 199. Emphasis in original.

This first passage is clearly a critique of the "double" (or even "multiple") dynamism of the Montpellier school (and the "*pleurivitalisme*" we will see that it inspired in Bichat). For Blaud, the idea of the vital force, active as it was in so many material functions of the body through characteristics like sensibility and irritability, was the first step along a slippery slope towards materialism. This was, in essence, the failing of this troubling conception of the *irrational soul*:

> So, here, where does the vital force reside? If matter supports it, it cannot have that as an attribute. It is therefore in matter itself that it resides as a faculty, and it is matter that possesses it, from which one must necessarily conclude that it cannot be distinct from matter, and, consequently, the irrational soul of the Montpellier doctrine, where the vital force resides, must then really be, according to this doctrine, essentially material.[60]

According to Dr. Blaud, there was a fundamental contradiction in the "dual dynamism" of Montpellier: if indeed its notion of soul was an immaterial one, then its division represented a challenge to individuality. If, however, the vital force, synonymous in his mind with the *irrational soul*, was a material entity, then it could not be the source or agent of organic function. To Blaud, looking for the source or first cause of living phenomena beyond the simple notion of a unified, individual human soul further invited the notion of pantheism:

> We would therefore answer, first, that misunderstanding the faculties of created beings and their influence in the acts of life, and *looking for the first cause of vital phenomena in a higher place than the human soul*, that is, in the creator, is crediting God with every vital movement of diverse organizations, is associating, assimilating him with matter, is, in a word, falling into pantheism.[61]

Blaud ended his discussion with a debate on the belief in *animal souls* (*l'âme des bêtes*), which he used to argue that all the ineffable expressions of sensation (*sentiment*) or instinct, whether in animal or in man, were essentially of an immaterial nature. Thus, even instinctual reactions in lower animals were expressions of immaterial (read spiritual) phenomena, merely on a different rung of an intellectual hierarchy. This obviously challenged cherished Cartesian assumptions as well. In the end we see that Blaud professes a form of animism that assumes the immaterial, soul-driven aspect in all

[60] Ibid., 201. Emphasis in original.
[61] Ibid., 203. Emphasis in original.

living mental actions. His final conclusion resounds with a powerful claim for the importance of spiritualism and of the spiritual realm:

> We therefore believe in the world of spirits, we believe the material world is merely the envelope of the spiritual that rules it. We believe that this spiritual world is made up of diverse intelligences with distinct faculties, intelligences that converge with universal harmonies.
>
> In a word, we believe that everywhere the spirit dominates, mutes and modifies nature according to the laws imposed by the creator.
>
> This point of view seems to us much more philosophical than the narrow and sterile, worn out theory of materialism where matter is everything, where the spirit, this unique power, is nothing, and where all the vital phenomena remain inexplicable because of the inertia of matter.[62]

*Georg Ernst Stahl and Animism in the Nineteenth Century*

The distinct tradition of animism rightly owes its origin to the physician, chemist and philosopher Georg Ernst Stahl. By emphasizing the *anima*, understood at times both in the context of soul and *psyche*, Stahl provided a clear impetus to a series of dynamic developments in medical philosophy and its relationship to the idea of mind. One must also recall the "ideological" origins of modern medicine in France, which may have made it possible for Stahl's theories to exercise influence into the early-19th century period and beyond.[63] Not only is it clear that the shadow of Montpellier looms over medicine in the first half of the nineteenth century, but there are even examples of a Stahlian revival among a few iconoclastic medical practitioners in this ostensibly romantic age. The interest in vitalism, and even animism, was most often linked to thinkers who sought to gain philosophical (and psychological) insights from contemporary physiological findings.

In a brief but brilliant entry in the *Dictionnaire encyclopédique des sciences médicales* of 1866, the materialist and eminent literati Émile Littré outlines the historical fate of the word *animisme*. For Littré, the word is intimately linked with the thinking of one man: Stahl. Littré is dismissive of the animist "paradigm" in his age – an age he sees as having transcended the tired duality of mechanism and vitalism. As he says "It no

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[62] Ibid., 205.

[63] In her recent book on the history of vitalism Elizabeth Williams links vitalism to the idea of "ideologization," and ties it to the ideologues generally. See Williams, *A Cultural History of*

longer has a reason for being, and has disappeared with the cause that produced it. There is nothing left, doctrinally, of either mechanism or vitalism."[64]

And yet, Littré also gives Stahl the benefit of the doubt, understanding the enterprise in its proper historical context. "At the time of Stahl," he says, "and at the exact moment mechanism was banned from astronomy, it reigned, as is natural, in physiology and medicine. To it, Stahl opposed his animism. This sort of protest has always, in one form or another, been raised against the error of doctrines that explain life only by inferior laws, well or badly understood, of non-living matter."[65]

Littré presents us with a sophisticated narrative of the historical relevance of animism that is ever mindful to insist on its contemporary irrelevance. In the process he reveals his positivist sympathies and points to important changes in the mid 19th century conception of metaphysics. We find Littré describing the decline of the role of the soul in accounts of physiology:

> In effect, as long as the soul has existed as an immaterial substance joined to the body, and accepted without contest, there has been a need to show its relationship with the body; this has long been one of the themes of metaphysics; it will be the first and most pressing problem of physiology...But, from the moment that protest and doubt arise, metaphysical themes cease to dominate physiological research; Stahl's system loses all right to belong among fundamental and proven notions; and it is wise to abstain from theorizing on the consequences, explanations and application of a fact that is not proven. *From the view of physiology, the idea of an immaterial substance linked to the body is a hypothesis designed to rationalize the moral and intellectual faculties of man.* This hypothesis, submitted to scientific tests, since physiology proceeds rigorously by way of experience and induction, has not been transformed into fact. Otherwise, it would need to be transformed into fact for us to draw conclusions on the subject of the organism, healthy or sick. Stahl's system is judged by this consideration. Those who think that beyond physiology, philosophy can lay the foundation for certain doctrines on this point are mistaken; in all questions that deal with the organization of life, philosophy cannot go further than physiology as in questions of cosmology it can go no further than astronomy and physics; I mean that it can and should coordinate and generalize about true scientific concepts, but not surpass them.[66]

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*Medical Vitalism*, 326. See also George Rosen, "The Philosophy of Ideology and the Emergence of Modern Medicine in France," *Bulletin of the History of Medicine* 20 (1946): 328-39.

[64] Émile Littré, "Animisme," in *Dictionnaire encyclopedique des science médicale, Vol. 5* (Paris, 1866), 170-174; 174.

[65] Ibid. Littré here follows in the tradition of skeptical historicism that one witnesses, for example, in the thought of Pierre Bayle (1647-1706).

[66] Ibid., 172.

The above quote succinctly captures the essence of positivism and its influence on metaphysics. For Littré, there in a sense can be no metaphysics, since the findings of the natural sciences are more fundamental than the arguments of philosophy. Nothing exists *a priori* to the reality of our physiological selves, and so philosophical speculation about the nature of the soul or the character of living things becomes an obsolete discourse. Littré deconstructs the notion of the soul, arguing that ideas of "immaterial substances" are really little more than hypotheses designed to give reason to the moral and intellectual faculties of man. He further suggests that with the rise of a rigid method of inductive experiment applied to the understanding of living functions, all supposedly "higher" attempts at inquiry must fall by the wayside. Philosophy cannot go farther than physiology in its insights into the nature of life any more than it can go farther into the nature of cosmology than astronomy or physics. We are thus left with the positivist maxim that scientific knowledge becomes the background and only foundation for all our understandings of nature, living or not.

Though animism and vitalism had fallen into some disrepute in mainstream medicine by the time Littré wrote his entry, the mechanistic-materialism of the mid-19$^{th}$ century still raised questions that remained unanswered (and seemingly unanswerable) from the time of La Mettrie. Despite Littré's dismissals, discussions of animism continued to make a fairly frequent appearance, especially in the pages of *Revue médicale française et étrangère*, a journal dominated by the animist Dr. Sales-Girons. Sales-Girons devoted considerable effort to promoting animism and vitalism generally, writing many articles on the subject through the 1850s, 60s and 70s. In 1857 he wrote an excellent two-part piece on the distinction between animism and the vitalism of the Montpellier school, emphasizing the central importance of the rational soul in Stahl's animist system.[67] In the 1870s we again find Sales-Girons defending "vitalist" physiology against the overwhelming influence of positivism.[68]

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[67] Dr. Sales-Girons, "Les Vitalisme Comparés. Exposé du Vitalisme de Stahl, Appelé L'Animisme ou le Stahlianisme," *La Revue médicale française et étrangère* 1 (1857): 65-9; 129-135.

[68] Dr. Sales-Girons, "Notre Physiologie Vitaliste au Prises avec la Physiologie Positiviste," *La Revue médicale française et étrangère* 2 (1876): 801-806.

It was the apparently incomprehensible conclusions of materialism, and the question of how pure matter could come to think, that led one mid-century French doctor towards the vitalist hypothesis – but a vitalism that was also strangely sympathetic to materialism. In the 1855 tract *Le Vitalisme physique*, Jules Guyot asks about this thorny contradiction: "Matter organized into life, as marvelous as its combinations, as prodigious as its effects, can it ever come to understand itself in its first causes, in its essence, in its life?"[69] In affirming that man can partly come to comprehend life and the vital principal, Guyot concludes that he is not solely constrained by this reality and is, in a sense, a step beyond it: "I am forced by this to agree that man is endowed with a spirit different from matter and superior to it," and "possesses a spiritual principle unlike and superior to the vital principle."[70] As Guyot's argument develops, the material reality of life and its vital principles are seen as synonymous with movement – movement understood in a subtle and complex manner, in terms of its interior and exterior effect, its translation and vibration, and its amplitude and number.[71] Guyot's analysis is a reduction that nonetheless culminates in a very Aristotelian understanding of movement – the movement that constitutes the vital principle is essentially heat.[72]

Provocative in its title, sophisticated in its metaphysical analysis as applied to medicine and transcending the standard divide between Parisian organicism and Montpellier vitalism, Guyot's tract essentially suggests a definition of vitalism that anticipates its distancing from spiritualism, and its central role in the development of physiological (rather than anatomical) conceptions of disease:

> Here is a logical point of departure, a rational foundation for medical philosophy. This foundation conforms to Hippocratic vitalism but differs from Montpellier vitalism: 1) in that it completely separates the material principle from the spiritual principle. 2) in that it is founded on the physical forces of nature from which it is directly deduced, and in that vital forces for it are really nothing but the physical forces involved and implicated in organic combinations. In this it is

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[69] Jules Guyot, *Le Vitalisme physique. Lettre a Monsieur le Docteur Amédéé Latour* (Paris: Félix Malteste, 1855), 2.
[70] Ibid.
[71] Ibid., 4-5.
[72] To quote Aristotle: "As a steersman steers with his hand and with the rudder, so the instrument of nourishment is twofold – that which causes movement and is moved, and that which is only moved. All food must be digested, and the vital heat effects the digestion; that is why every living thing has heat." Aristotle, *De Anima*, ed. Sir David Ross (Oxford: Oxford University Press, 1999 [1961]), 227

> perfectly in agreement with the Paris school, from which it nonetheless distances itself by rejecting the localization of all illnesses and viewing the therapeutics of organs as only secondary.[73]

Guyot's thoughts on the distinction between the Parisian and Montpelliérain approaches to vitalism provide a jumping off point for an argument about the divisions between the two schools. For while Guyot can, in 1855, make such a clear distinction, most observers would not be so quick to make it in the first half of the century. Until the materialist-spiritualist controversies of the mid-19th century, there was less to distinguish Montpellier from Paris than most historians of medicine have argued. In this sense, elements of vitalism were alive and well, and quite widespread, across the French medical landscape in the first half of the 19th century.

*Vitalism and the Clinic*

Through the early 1800s, till at least 1848, defenders of the principles of vitalism could be found in many schools in the country, though there was certainly a clear concentration of them in Montpellier. Before 1848, vitalism was also very much a part of physiological theory. In fact, it was a word that could still engender deep discourse on the nature of the rational soul and its relationship to the "vital principle". One of the most well-known vitalists of this early 19th century period, J.C.M. Grimaud, provides us with an example. A student of Barthez, Grimaud replaced his mentor as the chair of physiology at the medical faculty in Montpellier. His physiological doctrine earned him a reputation far beyond Montpellier, across the European medical world. Theoretically, his work sought to reconcile and conciliate the systems of Stahl and Barthez.[74] More than just being a part of the physiological language, however, vitalism was still, at this point, thoroughly infused in philosophical debates about the very nature of medicine. But by the 1820s and

[73] Ibid., 17-18. Compare this statement to one uttered more than a hundred years later in the introduction of Joseph Needham's new 1968 edition of *Order and Life*: "I still think that organized patterns and relations in living things, integrative hierarchies never exhibited in non-living material collocations, are the proper subject-matter of biological enquiry, and that the recognition of their existence is in no sense a disguised form of vitalism." Joseph Needham, *Order and Life* (Cambridge, MA: M.I.T. Press, 1968 [1936]), viii.

[74] See J.C.M. Grimaud, *Cours complet de physiologie distribué en leçons, 2 Vols.* (Paris: Gabon, 1824).

early 30s distinctions were starting to develop and fissures between Paris and Montpellier were starting to form.

Philosophically, there is very little difference between the dominant theoretical construct of Paris and Montpellier up to about the mid-19th century. In many ways, the philosophical elements in vitalism supposedly linked exclusively to the Montpellier school are actually widespread in the medical and biological sciences.[75] This was true not only in France, but throughout the early 19th century medical world of Europe and America. Hans Driesch, for example, saw the first half of the 19th century as the period of "the old vitalism...an age when everyone thought vitalistically."[76] Another panoramic history of the subject convincingly argues that elements of vitalist thought are generally widespread in biology before 1859,[77] and were even more significant to medicine proper.

In practice, pathological anatomy became the standard approach in Paris, and the clinical model was quickly spreading across the continent, even to America.[78] But on what exactly did the new clinical approach depend? Experimental rigor? This rigor was certainly not understood in the same sense as in the physical sciences. One must remember that experimental medicine was still very much in its infancy, and the strict epistemological assumptions that accompanied it were not yet dominant. The pathological method only confirmed diagnosis, and told the physician nothing about the process of disease in a living body. Large numbers of post-mortem dissections produced statistical trends, but did not constitute a repeatable experiment, as one typically understands this idea.

The real methodological focus was on observation. The observational imperative was the central "paradigm" of the clinic. By the mid-1830s clinical case studies and observation would be supplemented by the use of statistical methods as well, but only the

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[75] This argument follows from the claims of Williams, who in discussing the origins of "Montpellier vitalism," argues that it "developed in Montpellier *and* it developed in Paris, and its history must encompass developments in both locales." Williams, *A Cultural History of Medical Vitalism*, 8.

[76] Hans Driesch, *The History and Theory of Vitalism* (London: Macmillan, 1914), 113.

[77] L. Richmond Wheeler, *Vitalism: Its History and Validity* (London: Witherby, 1939), 51-64. The choice of date is interesting, since it suggests an ascendance of materialism from the point of the publication of Darwin's *Origin* on. Still, even this author sees some vitalist strains in Darwin, particularly in his evolutionary discussions of "tendencies." Ibid., 116-7.

stark, empirical experimental method painstakingly laid out by Bernard in the 1860s would significantly challenge the traditional sources of medicine's authoritative knowledge claims.[79] In *The Birth of the Clinic*, Michel Foucault discusses this imperative in terms of power – the medical "gaze" thus takes on an authoritative character. Yet it can also be seen in *epistemological* and *methodological* terms. Foucault describes this phenomenon as the emergence of "medical rationality":

> Medical rationality plunges into the marvelous density of perception, offering the grain of things as the first face of truth, with their colours, their spots, their hardness, their adherence. The breadth of the experiment seems to be identified with the domain of the careful gaze, and of an empirical vigilance receptive only to the evidence of visible contents. The eye becomes the depository and source of clarity; it has the power to bring a truth to light that it receives only to the extent that it has brought it to light; as it opens, the eye first opens the truth: a flexion that marks the transition from the world of classical clarity – from the 'enlightenment'—to the nineteenth century.[80]

The enlightened eye is a source of a medical rationality that is, for Foucault, clear and uncomplicated in its methodological implications. Theoretically and philosophically, he also suggests the transition from 18th century Enlightenment rationalism to a 19th century eclectic empiricism. As it is encoded in the discourse of the clinic, this is the cautious, unpretentious, unsystematic, anti-philosophical empiricism that is the very essence and heart of medical thought. Foucault writes:

> The clinic – constantly praised for its empiricism, the modesty of its attention, and the care with which it silently lets things surface to the observing gaze without disturbing them with discourse – owes its real importance to the fact that it is a reorganization in depth, not only of medical discourse, but of the very possibility of a discourse about disease. The *restraint* of clinical discourse (its rejection of theory, its abandonment of systems, its lack of a philosophy; all so proudly proclaimed by doctors) reflects the non-verbal conditions on the basis of which it can speak: the common verbal structure that carves up and articulates what is seen and what is said.[81]

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[78] John Harley Warner, *Against the Spirit of System: The French Impulse in Nineteenth-Century American Medicine* (Princeton: Princeton University Press, 1998).

[79] For a brief but interesting discussion of the idea of observation and the challenge of statistical reasoning in the French context see George Weisz, *The Medical Mandarins: The French Academy of Medicine in the Nineteenth and Early Twentieth Centuries* (Oxford: Oxford University Press, 1995), 163-65.

[80] Michel Foucault, *The Birth of the Clinic: An Archaeology of Medical Perception*, trans. A.M. Sheridan Smith (New York: Vintage, 1993 [1963]), xiii.

[81] Ibid., xix. Emphasis in original.

As this chapter (and the rest of this thesis) shows, medical practitioners did not exercise this *restraint* to the same degree. The idea of the rejection of theory and the abandonment of systems seems difficult to defend when one investigates the importance of history and tradition, the idea of vitalism and the general phenomenon of medical philosophy in early and mid-19th century France. The popularity of the ideas of François-Joseph-Victor Broussais (1772-1838), for example, and the notion of Broussaisism, challenges the idea that the clinic was free of ideology.[82] The abandonment of systems becomes a feature of medicine only in its later experimental phase (though even here one can argue that experimentalism is a system of sorts), and the clear expression of this sentiment is perhaps only really seen with Bernard's *An Introduction to Experimental Medicine* (1865). Even Bernard, as we will see in a later chapter, was not anti-philosophical. In fact, he brought a deep philosophical sophistication to his discussions of methodology and epistemology in medicine and the life sciences.

In the conclusion of *The Birth of the Clinic*, Foucault makes an intriguing suggestion that argues for the overarching nature of the anatomo-clinical method as an early 19th century discourse that demystifies disease and applies a strong positivism to the conception of the living and even of death:

> At that point in time, medical gestures, words, gazes took on a philosophical density that had formerly belonged only to mathematical thought. The importance of Bichat, Jackson, and Freud in European culture does not prove that they were philosophers as well as doctors, but that, in this culture, medical thought is fully engaged in the philosophical status of man.[83]

Indeed it was, and is, very true that medical thought did engage in the philosophical status of man, resulting in a wide range of conclusions. Vitalism was an expression of some of the most fiercely held convictions.

The continued visibility of vitalist themes, and the deep philosophical crisis that they suggest, argues for a complex understanding of the medical and philosophical landscape of the 19th century. For Foucault, clinical medicine is one of the central discourses in the growth of positivism. But it is also, in interesting ways, the source of a

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[82] Broussais' theoretical conception of "*irritabilité*" is sometimes seen as vitalistic, sometimes as materialistic, but always as systematic. See Jean-François Braunstein, "Au-delà du 'principe de Broussais'," *Corpus* 7 (1988): 69-86. See also F.J.V. Broussais, *Examen des doctine médicale et des système de nosologie, 2 Vols.* (Paris: Ménignon-Marvis, 1821).

deep critique of that very same positivism. Only thorough investigations of the relationship between medicine, philosophy and the 'soul' in the discourse of vitalism highlight this divide. They explain the interesting blending of the empirical, Baconian method with the naturalism of Hippocrates. The varied and complex interpretation of systems and philosophical traditions in the early and mid-19th century reinforces the point that medicine had not really become inured to the theoretical. Only with the ascendance of the laboratory would there be a real dominance of anti-systemic and even anti-philosophical (or, more specifically, anti-metaphysical) thinking. From the point of view of method, clinical medicine, with its case studies and its particular brand of individualism, was not reducible to the same level of epistemological simplicity as the findings of the laboratory. And, even in the context of the lab, questions about epistemology were raised.

*Vitalism and the Rise of Physiology*

The conflation of the clinical and the anatomical-pathological becomes difficult when one considers the theoretical inclinations of many early 19th century clinicians. No figure stands out more emblematically than Xavier Bichat, the man who largely created the methods (dissection and observation) and the units of analysis (tissues) of pathology as practiced in early 19th century France.

It is necessary, however, to go beyond anatomy to understand Bichat, for his conception of tissues was a dynamic one that, theoretically and systematically, readily moved into the realm of the physiological. In his classic work, *Biology in the Nineteenth Century*, William Coleman describes Bichat's position:

> Bichat's objective in seeking and determining the various body tissues was not...simple anatomical description. He recognized the manifold complexities of organ-functions and presumed that such activities must have concrete bases and that these could be seated in the tissues. The tissue doctrine was, like the Haller-Cuvier functional anatomy of organs, as much physiological as anatomical.[84]

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[83] Foucault, *The Birth of the Clinic*, 198.
[84] Coleman, *Biology in the Nineteenth Century*, 21.

Not only did Bichat mirror the Montpellier school in his deliberate blend of anatomical and physiological concerns, but he also echoed their most sacred assumption – the distinction between living and non-living and the inability to understand living organisms guided exclusively by physical and chemical laws. In the following quote from his *Recherches physiologiques sur la vie et la mort* (1800) Bichat challenges what he sees as some of the oddest attempts to understand the body mechanistically, reflecting the Montpelliérain's subtle (and romantically inspired) appreciation of character as a factor in health. This kind of neo-humoral view also challenges the supremacy of physical and chemical laws as applied to the living. Bichat proves an able and eloquent propagandist of vitalism when he says:

> ...To calculate the force of a muscle (Borelli), the velocity of blood (Keil), the quantity of air entering the lungs (Jurine, Lavoisier, et al.) means to build a solid structure on moving sand...Who dares to believe that he knows the nature of a fluid derived from organisms when he has not analyzed that fluid in the infant, the adult, and the aged, in the female and in the male, in the various seasons, during peace of mind and during storm of passion...Physics and chemistry meet because the same laws govern their phenomena; but an immense interval separates these two from the science of organisms since an enormous difference exists between these laws and those of life.[85]

By virtue of this curious combination of a belief in vitalist principles and the development of a refined and reductionist "tissue doctrine," Bichat's thought was described by the 19th century Montpelliérains as form of "*pleurivitalisme*." And yet both his principles and theories would be carried forward, as is described by Coleman:

> ...tissues possessed distinctive "vital properties" (sensibility and contractility, with further categories of each) and to these properties Bichat assigned both "life" itself and the diverse organ actions, the latter being a function of the particular tissues that composed the various organs. The discovery of the vital properties precluded, Bichat believed, equating life with any other natural phenomena, particularly those which were the object of physical and chemical investigation. These sciences might contribute, of course, to the progress of physiological understanding but were impotent before the grand question itself, the essential nature of vitality, of life. On such grounds numerous vitalistic doctrines were to be erected and defended.[86]

Many vitalists (especially those with animist sympathies) were critical of Bichat's vitalism, since it seemed to them an attempt to portion the essence of life into a collection

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[85] Xavier Bichat, *Recherches physiologiques sur la vie et la mort* quoted in Felix Friedberg, *Thoughts About Life* (New York: Philosophical Library, 1954), 28.

of tissues with distinct characteristics, leading quickly down the slippery slope towards materialism. And yet his fundamental *epistemological* distinction was also the essence of the Montpellier interpretation of vitalism.

Théophile Hyacinthe Laennec (1781-1826), a well-known Parisian clinician who thrived in the 1820s, can also be seen as adopting a medical philosophy that was vitalist in inclination. Jacalyn Duffin has argued that in his case, vitalism was an essential framework. While she admits the difficulties involved in the mechanist-vitalist distinction, and the impossibility of finding anyone who would have qualified as a "pure vitalist," she nonetheless ascribes important elements of vitalist thought to Laennec. For Laennec, like so many others, the vital principle was related to the central importance of movement, and his generally holistic approach to medicine emphasized sympathetic effects and the intimate convergence of emotion and physical well-being. This fundamentally neo-humoral "romantic" medical impulse is clearly vitalistic. Even his association with the stethoscope – the invention which secured his medical immortality – in its capacity to reveal "hidden," or even "occulted" disease without exhibited symptoms, was to Duffin curiously in harmony with the vitalist vision. It also inadvertently underlined the limits of pathological anatomy as a tool for understanding living things by highlighting the value of dynamic diagnostics. While one might instinctually cite Laennec's conservative Catholic political affinities as the rationale for his vitalism, it seems just as likely the result of his clinician's conservatism, ever aware of limits.[87] This is the typical modesty of medical vitalism in the face of scientific arrogance and hubris.[88]

Laennec represents the important presence of vitalist thought in the Parisian sphere, and yet the bulk of the vitalists were either based or initially trained in Montpellier. The first major defense of vitalism is elaborated by Frédéric Bérard (1789-

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[86] Coleman, *Biology in the Nineteenth Century*, 21.

[87] "It seems facile to label Laennec as a medical vitalist simply because he was a royalist and a Catholic, although those leanings may have encouraged others to do so in the past." Duffin, *To See With a Better Eye*, 296.

[88] Jacalyn Duffin, "Cadavers and Patients: Laennec's Vital Principle and the Historical Diagnosis of Vitalism," in Cimino and Duchesneau, eds., *Vitalisms*, See also Jacalyn Duffin, "Vitalism and Organicism in the Philosophy of R.-T.-H. Laennec," *Bulletin of the History of Medicine* 62 (1988): 525-45.

1828) in his *Doctrine médicale de l'École de Montpellier* of 1819.[89] Bérard's approach to vitalism was a reflection of his philosophical commitment to eclecticism, an influence that was quite widespread in early 19th century French thought. Bérard at times took a doctrinal, even ideological approach to vitalism, and like his fellow Montpelliérain Lordat, was also interested in issues revolving around medical pedagogy and the politics of medicine.[90] In addition to his elaborations of vitalism in a post-Barthezian vein, Lordat made attempts to advocate for the importance of art, aesthetics and the power of observation in the study of anatomy.[91] One might be inclined to think that by the 1820s and early 1830s vitalism was fading fast in the face of the rise of experimental approaches and the reductionism that went along with early expressions of the cell theory. Quite the contrary; many of the early pioneers of physiology, at the vanguards of laboratory practice, were proponents of "vital forces." To contemporary historians, vitalism often appears marginal to the worlds of mid-19th century biology and medicine. After all, witnessed from a contemporary historiographical perspective, this was the golden age of cell theory, and the newest fad in the practice of biology was the microscope. Jacob Berzelius (1779-1848) was arguing that chemical processes suitably accounted for all the reactions occurring within living organisms. For Berzelius, organic and inorganic only differed by virtue of their complexity. "There is," he stated in 1836, "no special force exclusively the property of living matter which may be called a vital force."

German scientists like Justus Liebig (1803-1873), who reigned over his students like an archetypal Prussian patriarch, were seeing to the business of spreading the gospel of the laboratory, whose first rite of initiation constituted the use of microscopy. Despite

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[89] The full title is Frédéric Bérard, *Doctrine médicale de l'École de Montpellier: et comparisons de ses principes avec ceux des autres écoles d'Europe* (Montpellier: Jean Martel, 1819).

[90] See Frédéric Bérard, *Mémoire sur les avantages politiques et scientifiques du concours général, et en particulier de la necessité de le rétablir dans les facultés de médecine, qui seuls en sons privées* (Paris: Delaunay, 1920). Bérard herein petitions for a more public system of medical education.

[91] In 1833 Lordat published a book about the relationship between medicine and art, emphasizing the importance of a critical eye in anatomical observation. See Jacques Lordat, *Essai sur l'iconologie médicale ou sur les rapports d'utilité qui existent entre l'art du dessin et l'étude de la medicine* (Montpellier: Picot, 1833). A few years earlier, he also wrote a book about the dialogic method in medical teaching. See Lordat, *Du dialogisme oral dans l'enseignment de la médecine* (Montpellier: Jean Martel, 1828).

the instrumental impulse towards reductionism, however, Liebig insisted on the importance of theory to give shape to what was seen through these delicate lenses.[92] Many early 19th century physiologists would have heartily agreed with him. By still speaking of "vital force," which he equated somewhat with the forces of gravity and electricity and argued gave form to complex and living cellular structure, Liebig followed in the footsteps of another pioneer of German science, Johannes Müller (1801-1858). Müller was a founder of modern physiology, but was also concerned with the question of the "vital force."

While there were some essential convergences among medical thinkers in early 19th France (and even among the entire European medical culture), divisions were starting to form, and the philosophical medical systems in place in Paris and Montpellier appear increasingly opposed, with the debates arising between these systems expressed in increasingly ideological tones. The idea of a group of thinkers who are clearly distinguished as "vitalists" makes its first appearance in a multi-volume work by Charles-Louis Dumas, published in 1800-1803. In 1809, the physiologist François Magendie (1783-1855) offered the first solid, polemical critique of vitalism.[93] Magendie "still accepted the concept of a 'vital force' (considering it a supposition that served merely to bring together in a single term all the characteristics proper to life)." He, however, "abolished animal sensibility and animal contractility, considering them only as functions."[94] This put an end to much of medical romanticism in the physiology

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[92] Consider the following description of Liebig's thought: "Another aspect of Liebig's influence that was of great importance was his association with the idealistic philosophy of vitalism. In the preface to his *Thierchemie* of 1842, Liebig claimed that we can never know what "life" is, although we can investigate its "vital properties." There is an agency operating in living systems that has no counterpart in the nonliving world. 'Natural science has fixed limits which cannot be passed; and it must always be borne in mind that, with all our discoveries, we shall never know what light, electricity, and magnetism are in their essence, because, even of those things which are material, the human intellect has only conceptions. We can ascertain, however, the laws which regulate their motion and rest, because they are manifested in phenomena. In like manner, the laws of vitality, and of all that disturbs, promotes, or alters it, may certainly be discovered, although we shall never learn what life is.' Garland E. Allen, *Life Science in the Twentieth Century* (New York: John Wiley, 1975), 156-7.

[93] See François Magendie, "Quelques Idées Generales sur les Phénomènes Particulier aux Corps Vivens," *Bulletin des Sciences de la Société Médecine d'Emulation de Paris* 4 (1809).

[94] M.D. Grmek, "Magendie, François," in *Dictionary of Scientific Biography, Vol. 9*, ed. Charles Coulston Gillispie (New York: Scibner's, 1974), 6-11; 7. See also Owsei Temkin, "The

laboratory, but these ideas still maintained validity in the realm of medicine writ large. Above all, Magendie was an advocate of the importance of clear and stringent experimental methods, challenging the claims of vitalists that vital phenomena were unlike other physical phenomena and subject to a certain indeterminism. The most extreme version of this view was that offered by Barthez and the Montpellier school, which denied that the fundamental cause of vital phenomenon could ever be known. In this sense the Montpelliérains were more representative than Magendie of the general medical outlook of the early 19th century in their denial of the determinism of living functions.

In addition to a healthy skepticism about the idea of "vital forces," Magendie emphasized – both in his 1809 polemic and in a 1816 textbook, *Précis Élémentaire de Physiologie* – that vital phenomenon were as deterministic as any other physical event and revealed their nature through experiment. Magendie's influence was widespread; his proto-experimental methodology had a wide appeal in French circles and his empirical approach led to an eclectic *oeuvre* on aspects of neurology, reflex action and the effects of a wide array of drugs on men and animals. By the late 1830s Magendie was also making strides in the realm of neurophysiology, demonstrating the sensory function of the posterior roots of the spinal cord, one of the fundamental principles of the field.[95] As his career progressed, Magendie eventually fell under the influence of Comtean positivism and the idea that science was essentially based on facts and facts alone. Like many biologists in the early and mid-19th century Magendie avoided systems and theory, though in his criticism of vitalism one can certainly see that they loomed large over the medical thinking of his time.

*Montpellier Vitalism in the Mid-Century: Force and Resistance*

Vitalism was still quite widespread in the "bourgeois monarchy" of Louis-Philipe. Interest in "vital forces" and other associated phenomena like animal magnetism and

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Philosophical Background of Magendie's Physiology," *Bulletin of the History of Medicine* 20 (1946): 10-35.

[95] See François Magendie, *Leçons sur les fonctions et les maladies du système nerveux professées au Collège de France* (Paris: Ebrard, 1839).

alternative healing systems such as homeopathy were definitely in the ascendance, growing in visibility, popularity and influence.[96] Concurrently, in the 1830s and 40s the Montpelliérains produced a number of programmatic pamphlets arguing for the importance of vitalism, and even in Paris one notes a continued interest in the subject. An example is Alexandre Surun's popular 1833 work *Le Vitalisme expliqué.*[97] There was also an emerging counter-discourse that replied to the criticisms of an increasingly reductive physiology and an aggressive pharmaceutical therapeutics, as in the writings of

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[96] In Matthew Ramsey's comprehensive essay on alternative medicine in France he briefly mentions that Hahnemann had the most successful phase of his career in the country and that his French widow, Mélanie d'Hervilly, carried on his legacy in France. See Matthew Ramsey, "Alternative Medicine in Modern France," *Medical History* 43 (1999): 286-322, 302. Mesmerism had a growing impact in the place where Franz Anton Mesmer (1734-1815) first found a wide audience. On the initial reception of Mesmer's ideas in France see Robert Darnton, *Mesmerism and the End of the Enlightenment in France* (Cambridge, MA: Harvard University Press, 1968). Darton links mesmerism with radical politics, and in his final analysis actually sees a connection between mesmerism and Victor Hugo's interest in table-turning, spiritism and his associated espousal of radical political ideas. Mesmer's work was expanded on and elaborated by Armand-Marie-Jacques Chastenet de Peységur (1751-1825) in his 1807 book *Du Magnétisme animal.* See A.M.J. Chastenet de Peységur, *Du Magnétisme animal: Considéré dans ses rapports avec diverses branches de la physique générale* (Paris: Desenne, 1807). Peységur continued to publish on the subject throughout the 1810s, but his pioneering work was followed in the 1820s by an even more popular 'how-to' book by Joseph-Phillipe-François Deleuze (1753-1853), *Instruction pratique sur le magnétisme animal, suivie d'un lettre écrite à l'auteur par un médecin étranger* (Paris: Dentu, 1825). This practical manual was extremely well received, going through a least four editions in the next thirty years, and was translated into a number of foreign languages. Through the work of Charles Poyen and Joseph du Commun, mesmerism was exported from France to the United Sates in the 1830s, some of its principles eventually culminating in the Christian Science movement. On this story see Eric T. Carlson, "Charles Poyen Brings Mesmerism to America," *Journal of the History of Medicine and the Allied Sciences* 15 (1960): 121-132. See also Frank Podmore, *Mesmerism and Christian Science: A Short History of Mental Healing* (Philadelphia: George W. Jacobs, 1909) and Robert C. Fuller, *Mesmerism and the American Cure of Souls* (Philadelphia: University of Philadelphia Press, 1982). The work of James Braid in the 1840s moved animal magnetism away from its direct association with Mesmer and toward the notion of hypnotism. Mesmerism was also pushed in the opposite direction, towards spiritualism, by other thinkers. Louis Alphonse Cahagnet was the most known in France, writing a three-volume work on *Magnétisme* published between 1848-1854. See Louis Alphonse Cahagnet, *Magnétisme. Arcanes de la vie future devoilés, ou l'existence, la forme, les occupations de l'âme après sa séparation du corps sont prouvées par plusieurs années d'experiences au moyen de huit somnambules extatiques qui ont eu quatre-vingts perceptions de trente-six personnes de diverses conditions décédées à différentes époques, leur signalement, conversations, renseignements preuves irrécusables de leur existence au monde spirituel! 3 vols.* (Paris: Baillière, 1848-1854). Cahagnet, a Swedenborgian, was important in providing a direct link between the tradition of animal magnetism and that of spiritualism.

[97] Alexandre P. Surun, *Le Vitalisme expliqué, ou nouvelle doctine physiologique et médicale* (Paris: Béchet, 1833)

Magendie. Consider the words of Gilbert Labas, in his 1835 thesis *Sur l'unité et l'activité des forces vitales, considérées dans l'homme dans l'état de santé et dans la maladie*: "Nature, following the divine oracle of Cos, is the true medicine. *Natura morborum medicatrix.*"[98] Labas' thesis, in addition to acknowledging the relevance of the Hippocratic tradition, was also a clear criticism of the limits of pathological/anatomical diagnosis (i.e. autopsy) and the mechanical and physico-chemical conception of man. "We have mutilated and cut up living man in terms of organs, tissues that they are composed of, and the properties which animate them," Labas says. "Doubtless we have needed to isolate these parts and their properties to better study them, but we have not succeeded in reassembling them and considering them in their unified state, so as to see which are regularly exercised in life."[99] One of the clear targets of Labas' criticism is the reductionist "*pleurivitalisme*" of Bichat. It is also intriguing to note such a firm critique of the pathological anatomy approach so soon after it had been established as orthodoxy in the Parisian medical community.

By the early 1830s the idea of a concrete "vital force" was becoming difficult to defend, and the successes of reductionist physiology, particularly in the area of brain function and neurology, made materialism an increasingly attractive philosophical option. It is around this point that a really clear divide starts to form between the Montpellier and Paris schools.

There were still influential and staunch Montpelliérains like Julien-Joseph Virey, a well-known physician, who produced a vitalist *oeuvre* extending across five decades, from his *Histoire naturelle du genre humain ou recherche sur ses principaux fondemens physiques et moreaux* (1800), an early 19th century work of general anthropology,[100] to

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[98] "*La nature, suivant le devin oracle de Cos, est la vraie médicatrice des maladies.*" Gilbert Labas, *Sur l'unité et l'activité des forces vitales, considérées dans l'homme dans l'état de santé et dans la maladie* (Paris: Didot, 1835), 10

[99] Ibid., 6.

[100] Julien-Joseph Virey, *Histoire naturelle du genre humain ou recherches sur ses principaux fondmens physiques et moreaux; précédées d'un discours sur la nature des êtres organiques, et sur l'ensemble de leur physiologie, 2 Vols.* (Paris: Dufart, An 9 [1800]). This work also includes an attached document entitled *Une dissertation sur le sauvage de l'Aveyron.*

his 1844 *Examen Critique des faits touchant le vitalisme.*[101] These works represented a transition from romantic anthropological medicine to a critical stance that challenged the growing materialism of the mid-century. Virey's debate with St. Hilaire, which begins this chapter, perhaps marks the high point of his influence. Virey was devoted to vitalism because of philosophical beliefs, but also because of its underlying therapeutic potential expressed in the idea of a vital resistance and healing nature.

This belief in a vital resistance is also elaborated elsewhere, as in the example of an 1851 article in *Revue médicale française et étrangère* by Dr. Anthoine de Baucaire. Baucaire describes a form of vital principle, an important element of which is the ability to resist the agents of destruction that threaten the living organism. He sees vital resistance as linked to other forces, which conserve and repair, and further compares it, following the medical philosopher Alibert, to the "supreme mechanical force of movement in the heavens, which is responsible for holding the planets in their orbits."[102] In his explanation of the nature of vital resistance, Baucaire relies on ideas like character and even heredity as factors in the presence of a given vitality, which he also conflates with elements of will. He sees vital resistance as possessing a fundamental therapeutic (or at least rhetorical) power, particularly in apparently hopeless cases. "It is confidence in vital resistance that sustains the courage of the true physician, he knows he must never despair as long as the organism has the strength (force) to which the physician contributes."[103] For Baucaire vital resistance was an expression of the unknown factors that separated medical diagnosis and prognosis from actual outcome, which often did not reflect any clear deterministic or predictable result.

Like Baucaire, and echoing the basic assertions of Stahl and Bichat, Virey also proposed an organizing force in the living that was, in sum, all the capacities it had to resist the destructive forces of the outside world: "There is thus a form of organization that dominates in the matter of living bodies, that fights, as much as it can, the resistance

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[101] J.-J. Virey, *Examen Critique des faits touchant le vitalisme* (Paris: Bourgogne et Martinet, 1844). See also Virey, *De la puissance vitale considéréé dans ses fonction physiologique chez l'homme.* (Paris: Crochard, 1823).
[102] Anthoine de Baucaire, "De la Résistance Vitale," *Revue medical française et étrangère* (16 April 1851), 385-399; 388.
[103] Ibid., 398.

that opposes it in the general laws of the exterior world."[104] It was this notion that suggested to him the impossibility of a universal, general natural law which also included living phenomena: "It [life] is thus not a result of these same general laws, as we claim. Forces which are identical cannot be contradictory."[105]

Virey suggested that it was impossible for the living to develop from inert matter. For Virey, it was essential to understand that there must be "intelligence" – a "*travail intelligent*" – involved in the production of organization in the living. He asks if there "might be a divinity under the name of *nature*."[106] Virey's metaphysical stance postulated the necessity of intelligent design in the living universe, and could not accept that all the many, complex and brilliant products of life were reducible to simple mechanical impulses and chemical affinities:

> All these seeds of bright flowers, these animals so surprising, all these stunning deployments of morals, of love, of combat between so many species, so many curious instinctual dispositions, sympathic and antipathic, innate, radical, hereditary, imperturbable like their organisms, do they not manifestly suggest a system of intelligence, of wisdom, other than mechanical impulsions...acting on or in our planet?[107]

Virey here uses examples of development, both evolutionary and psychological, anticipating later 19th century debates. He concludes with a statement about the importance of observation as the fundamental tool in attempting to comprehend the distinct nature of living phenomena. In an evocative romantic tone that nonetheless expresses empirically rooted principles, he suggests that the belief that life is nothing more than "brute matter" would be the greatest confusion of reason:

> The whole seems to invincibly show that creation did not spontaneously organize with brute elements. That the industry of a bee or all other beings, in their internal and external function, claim loudly, cry with the most explosive energy, that there is something else in this world besides the raw materials of the earth. It would be the most confusing outrage to reason, the greatest unworthiness of higher philosophy. True genius cannot have another mission than the search for the truth, with sincerity and deep conviction, founded on observed facts.[108]

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[104] Virey, "Des vrais fondemens de la théorie du vitalisme," 30. There are strong echoes of this sentiment in Claude Bernard's conception of the *milieu interieur*, as will be seen in Chapter 4.
[105] Ibid.
[106] Ibid.
[107] Ibid., 31.
[108] Ibid.

Though observation was the tool *par excellence* in the contemplation of nature, Virey still felt there was something transcendent – a hidden, occluded nature that was, perhaps forever, beyond the pale of human comprehension: "Whatever this unknown, even impenetrable, essence of active nature may be, a secret and elusive world exists below these appearances."[109]

Virey's *Examen Critique des faits touchant le vitalisme* (1844) begins as another serious challenge to the new science of experimental physiology and its subservient relationship to the physical and chemical sciences: "It has been said that all nature is one, and in effect, the physico-chemical sciences seem today to some to be so confused with the physiological sciences that they alone would be sufficient to establish the phenomenon of life and its organization."[110] Virey notes also a growth of materialism which he sees as problematic:

> From this follows the opinion, sustained especially in Germany, that *matter alone rules*, or that our diverse telluric materials intrinsically possess the scattered forces of vitality, that they are *encrypted* (even in hiding) but capable of developing under favorable circumstances into various organic equilibria or forms: in this the theory of spontaneous generation has not yet been abandoned.[111]

Virey sees the development of this proto-genetic view as leading to a kind of pantheistic monism that is troubling in that it makes no distinction between living and non-living and the special qualities inherent in living things.[112]

In contrast, Virey points to the unique characteristics of living things, showing that not all things have the ability to organize into life – in fact, some elements are antithetical, even hazardous, to living things. Crystallization is a form of organization that is non-living, and a model for structure in the putatively inert: "*Crystallization thus becomes the primal form for all inorganic substances.*"[113] Thus he sees organization and structure, function, as a more meaningful guide than form – the constitution of objects. For Virey, the notion of organization in the living means far more than even a simple question of structure and unity, but also "tends toward a calculated goal of advancement

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[109] Ibid.
[110] J.-J. Virey, *Examen Critique des faits touchant le vitalisme*, 1.
[111] Ibid. Emphasis in original.
[112] Ibid., 2. Emphasis in original.
[113] Ibid., 3.

of conservation," an ability to resist the forces of destruction and to reproduce oneself.[114] Virey felt it was essential that "life" and "organization" not be so simply conflated, turning to the history of mechanical and physio-chemical explanations:

> To demonstrate how much the physico-chemical sciences have been invoked in vain to explain life, a short *exposé* of their principle systems is sufficient. Neither does the *static-hydraulic mechanism* of Boerhaave give a reason for the reparative and conservative tendency of the animal or plant body, nor has the Hallerian irritability of nervous function succeeded in explaining the embryonic formation of the chicken in the egg; nor does Brown's incitability provide satisfactory notions on the transmutation of food substances and our tissues and humors; nor does modern living chemistry, any more than the ancient agitation theories, know how to create the faculties of sensibility and motility of parts; nor are the vital properties of Bichat and other physiologists of today capable of organizing the slightest viscera on their own, or to co-ordinate any members. Finally, chemistry breaks down, disassociates or destroys the close organization of blood, milk or sperm to analyze them without being able to reconstitute them, while life associates, synthesizes elements to defend them against putrefaction or to assimilate them.
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> Therefore, it is precisely this synergy that constitutes the whole by which the parts sympathize and defend themselves (although more slowly in plants), which establishes the overall vivification in the individual.[115]

Virey ends here with a holistic and dynamic perspective at odds with the many static reductions that came before. His criticism of the chemical approach to the living must also be understood in the context of a discipline (biochemistry) that sought to disprove the claims of vitalism by virtue of its ability to synthesize certain organic compounds, like urea. How far that was, however, from synthesizing complex organic substances, like blood.

*History, Philosophical Tradition and Vitalism*

It is impossible to understand French medicine in the mid-19th century without taking into account the central importance of history. The institutional history of the French Academy of Medicine provided by George Weisz is a comprehensive portrayal of 19th century medical culture. He notes the move from a corporate to a national organization,

[114] Ibid., 4. Emphasis in original.
[115] Ibid., 5-6.

and the increasing presence of the state in the life of the medical elite of France.[116] His use of the term "mandarins" is evocative of a somewhat stagnant and entrenched regime of traditionalists, and he certainly paints a picture of the growing conservatism of the Academy, made up increasingly of an older membership that played a less vibrant role in the greater intellectual scene, as the century wears on. While these structural constraints are noteworthy, he also shows the significant role of a culture of commemoration and the importance historical memory played in the lives of these physicians. This sense of history applied perhaps even more to Montpellier than it did to Paris. Medical history was often supplied through the vehicle of commemoration, as in the case of J.L. Alibert's *Éloges historiques* (1806) of Galvani, Spallanzani and Roussel, which interestingly included a discourse on the relationship between medicine and the physical and moral sciences.[117]

By the 1850s and 1860s medical history had become a more elaborate enterprise, even a nascent discipline. The history of medicine as a discipline owes a great deal to the French tradition. The First International Congress of the History of Medicine took place in Paris in 1867. Charles Daremberg (1817-1872), a specialist in Greek and Roman medicine and the founding figure in the field in France, was the first to hold the new chair in the History of Medicine at the Collège de France starting in 1870, the same year he published his monumental *Histoires des sciences médicales*. He was also quite interested in the medical school at Salerno, writing a number of pieces on this important and influential place in Western medical history. A half-decade before *Histoires* he wrote *La Médecine*, a popular work that treated the doctrinal aspects of medical history in addition to discussing the doctors of Louis XIV and the health problems of the great men and women of letters of the 18th and early 19th century.[118] Medical history was still at this point an essential aspect of any self-respecting elite physician's education and – as we have clearly seen – a valuable tool in his rhetorical arsenal.

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[116] George Weisz, *The Medical Mandarins: The French Academy of Medicine in the Nineteenth and Early Twentieth Century* (New York: Oxford University Press, 1995).
[117] J.L. Alibert, *Eloges historiques composés pour la société médicale de Paris, suivis d'un discours sur les rapports de la médicine avcec les sciences physiques et morales* (Paris: Crapart, 1806).
[118] Charles Daremberg, *La médecine: histoire et doctrines* (Paris: Didier, 1865).

As regards Montpellier and its legacy, things were a little different. While history of this newly emerging academic sort was of interest to the Montpelliérains, so too was a more panoramic, philosophical history. Even Daremberg early on in his career had this kind of historio-philosophical orientation, writing a biography of Galen as a philosopher that was published in 1847.[119] In interesting ways, the Montpellier school reflected its beliefs through its conception of history – at one moment a theoretical endeavor to be balanced with practical knowledge of contemporary physiology, at other moments a plea for the empirical tradition as a challenge to old Cartesian axioms, and at still others as guide to a critical view of the myriad 19th century medical systems. The importance of philosophical principles and larger issues of metaphysics continued to have an impact on medicine, and were often discussed in historical works dealing with the question of vitalism. The Montpelliérains frequently fell back on Hippocrates as their founding father, a strategy that the Paris school would adopt in an attempt to transcend elements of the vitalist discourse in the 1850s.

In *Le Vitalisme médicale* (1841), Mathieu Barbaste, a Montpellier physician, takes to task the work of Dr. Sales-Girons, the devoted neo-Stahlian, who spent the better part of the mid-century insisting on the centrality of the soul in any philosophical doctrine of medicine. Barbaste challenges Sales-Girons' philosophical assertions, and begins by saying "the work we try to refute touches on the most elevated questions of medical philosophy."[120] He further balks at the assertion that Sales-Girons proposes a "new" philosophical system that includes in it an impulse for the "radical reform" of the medical sciences.[121]

Barbaste counters the animist arguments of Sales-Girons with a fascinating brand of medical philosophy that is, ironically, something of an "anti-philosophy." Taking his cue from earlier vitalist discourse, Barbaste seeks right at the outset of his work to challenge the value of "grand systems" of science. What has become of the doctrines of

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[119] Charles Daremberg, *Essai sur Galien considére comme philosophe* (Paris: Fain et Thunot, 1847).
[120] Barbaste, *Le Vitalisme médicale*, 3.
[121] Ibid., 4.

Böerhaave, he asks? And what, moreover, will become of the "grand ideas" of Broussais?[122]

Instead of grand systems, Barbaste argues for an appreciation of the particular view of *nature* that one finds in medicine. He paints a picture of medicine as a wise and cautious old man: "we recognize it by its steadfastness at times simple, serious and modest: one might say an old wizened one, with a slow and gradual gait, that will not take a fast leap that fits neither its age, nor its character."[123] Barbaste challenges the assertions of the Montpellier professor F. Bérard, whom he quotes as arguing for the philosophical foundations of medicine. "*The great revolutions of medicine*," Bérard says, "have come from *philosophy* itself and the *important improvements* that we can still aspire to can only be searched for in this *first source*...In vain, Hippocrates thought he could claim, with some reason, to have *separated medicine from the philosophy* of his time; he was *inspired* by it."[124]

Barbaste is critical of Bérard's statement, because he regards Bérard's *Doctrine de l'École de Montpellier* (1819) as an attempt to link the school with Hippocratic dogma – though he concedes this is a legitimate claim. Barbaste argues, however, that Hippocrates built an independent philosophy that was quite laudable in its own right, every bit as coherent as that of Socrates or Plato. For Barbaste, Hippocrates moved his philosophy away from the debates of the sophists and based it on the principle of simple observation. This is the foundation of Hippocratic naturalism, a view that saw nature as the causal source and principle of all science. As such, it was also resistant to *a priori* reasoning. "It is this [Hippocrates'] philosophy that has always been known under the name of *reasoned empiricism*," Barbaste says. By extension, he sees Baconian induction as the only philosophical method adaptable to medicine.[125] Medical science, he argues, needs an *immutable* philosophical basis, and must resist the many various individualized philosophies of idealism.[126] Barbaste is here reflecting a basic axiom of Montpellier

[122] Ibid., 6.
[123] Ibid.
[124] Ibid., 7. Italics in original.
[125] Ibid., 12.
[126] Ibid., 14.

vitalists like Barthez, who saw the Hippocratic Corpus as the most important step in the development of medicine.

Barbaste then moves from the moral and dogmatic basis of medicine to a discussion of the historical. He describes medicine's passage through "*le Galénisme, l'Ecole d'Alexandrie, l'Arabisme et le moyen-age*," finally culminating in the philosophical methods of Bacon and Descartes. There are, furthermore, the threats of the ideologies of "*chimisme, méchanisme, animisme, and l'anatomisme*".[127] In response to this historical litany, Barbaste proposes *l'hippocratisme* as the most universal of medical systems.[128] In order to justify this claim, he marshals the words of Barthez, who calls Hippocrates "...the glory of our school and possibly the greatest thinker medicine has seen so far."[129] To Barbaste, hippocratism was synonymous with medicine, the one indivisible from the other. Hippocratic medicine was a worldview with its own particular logic, its own unique paradigm:

> Medicine differs from other sciences in the progression and spirit of its civilization, as we have just proved; it also differs in its distance from the spirit of reform, as we have mentioned; finally, it differs in its intimate nature and the way it relates to philosophy, toward which it must exercise permanent watchfulness...Medicine, we have said, is a fixed science; it has its unique laws, dogmas and principles. It is therefore vain and reckless to want to reform it, to want to impose on it alien influences, to want to attach it to the handle of *Condillacisme*, or *Cartesianism*, or *Kantism*.[130]

Barbaste returns to his critique of the thought of Sales-Girons, and takes to task some of the latter's philosophical assertions, arguing against the assumption, for example, that Democritus and Epicurus were precursors to the philosophy of Leibnitz, whose idea of the monad is rooted in the atomistic philosophy. Barbaste, in fact, criticizes the entire enterprise of atomism: "Can we imagine, in philosophy, anything lamer or more narrow-minded than the doctrine of atomism!"[131] He instead paints Leibnitz in a rather mystical light, mentioning his passion for alchemy and his youthful search for "the Philosopher's Stone," seeing monads as kinds of "*automates spirituels*." Barbaste cannot, as such,

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[127] Ibid., 15.
[128] Ibid., 16.
[129] Ibid., 17.
[130] Ibid., 18-19.
[131] Ibid., 20.

understand how Sales-Girons can conflate this philosophy of the monad with atomism.[132] For him, monads distinguish "degrees" and "qualities" of phenomena; atoms "position" and "order".[133]

In Barbaste there is an expression of the central divide between the *ideological* and *epistemological* visions of vitalism, which in this period revolves around the differences between Stahlian animism and the Montpellier vitalism more closely associated with Hippocratic naturalism. This is a fundamental schism, as has already been shown, in distinguishing among the various visions of vitalism around the mid-century. Barbaste thought it was essential that vitalism, according to his understanding of the term, still be rooted in naturalism, in a philosophy that was uniquely visceral and medical, but not necessarily patently transcendental. And yet there was a very definite distinction here between naturalism and a strictly materialist view.[134] In essence, he saw vitalism and naturalism as synonymous, as both embraced the holistic conception of man summarized in the notion of a "vital principle"; a marker that one understood the living as possessed of three essential characteristics:

> The efforts to date put into dethroning the *naturism* of Hippocrates, or the *vitalism* of Montpellier by the *pantheism* of Schelling, appear to us unjustified, and we persist in regarding the expression *vital principle* as very appropriate to refer to the *unity*, *activity*, and *individuality* of a living system.[135]

In contrast to this vision of a vital Hippocratic naturalism founded on the axiomatic aspects of medical philosophy, Barbaste sees Sales-Girons as proposing something of a philosophical jumble, an animism whose ideological melange is a frustrating collage when compared to his whole cloth: "Therefore materialist with Democritus, quasi-spiritualist with Leibnitz and dynamist with Kant, M. Sales becomes pantheist with Schelling and idealist with Krause: With so many different colored pieces, is there not enough to make a clown costume?"[136]

Of particular interest are Barbaste's final words; his panorama of Hippocratic naturalism also outlined a physiological tradition that concerned itself with the "*système*

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[132] Ibid., 21.
[133] Ibid., 22.
[134] For an interesting investigation of this subtle distinction see Roy Wood Sellars, "Why Naturalism and Not Materialism?" *Philosophical Review* 36 (1927): 216-225.
[135] Barbaste, *Le Vitalisme médicale*, 27.

*total de l'homme.*" This lineage began with Haller, was continued by Bichat and Magendie, and in his time was also taught by the likes of Fernel, Hoffman, Barthez, Grimaud and Lordat.[137] This was, for Barbaste, the Montpellier tradition, something that still had much life despite the growing centralization of medicine:

> In this era of absolute centrism, it is not surprising that it carried people along, but what is evident is that one can still make a *distinction* between *Montpellier* and *Paris*; that you are still a philosopher when it is not enough to be a *naturalist* or *physician* to explain everything; *you've resisted the 18th century and* Broussais; you have the temerity to want to live a life that is *your own.*[138]

This was a critique of a certain conservatism and skepticism that held in medicine; it was also a tremendous coup in Barbaste's mind that there were still those who resisted the crude and simple naturalism – which for him was a kind of mechanistic materialism – of the Enlightenment *philosophes* and who thought for themselves. It was even more of a coup that this naturalism had been, from his point of view, overtaken by the Hippocratic naturalism he espoused, and that this Montpellier heritage was, he argued, all the rage in Paris. In concluding, Barbaste suggested that the challenge vitalism represented to the materialist sensualism of the 18th century was perhaps its greatest legacy: "What would become of the most noble attribution of the doctrine of *vitalism*, if this doctrine had not been able to shake off the yoke of the *sensualism* of the 18th century?" [139]

This distinction between vitalism and 'sensualism' is essentially rooted in a moral paradigm, with vitalists insisting on some higher moral axioms, and sensualists arguing for a completely material, visceral view intimately tied to the experience of the body. In his recent book, *After Theory*, Terry Eagleton captures the essence of this latter view:

> To say that morality is basically a biological affair is to say that, like everything else about us, it is rooted in the body…It is the mortal, fragile, suffering, ecstatic, needy, dependent, desirous, compassionate body which furnishes the basis of all moral thought. Moral thought puts the body back into our discourse…The eighteenth century, with its cults of sentiment and sensibility, understood in its own extravagant way that moral talk was basically talk of the body. The cult of sensibility evolved a language which could cope in the same breath with the moral and the material, sympathy and the nervous system. Talk of melting, softening, swooning, palpitating, excitation and stimulation hovered ambiguously

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[136] Ibid., 33.
[137] Ibid., 34.
[138] Ibid., 37.
[139] Ibid., 38.

> between the physical and spiritual. The nineteenth century, by contrast, was a good deal more high-minded about the whole affair.[140]

As we will see in the next section, the Montpellier paradigm was unwilling to completely abandon these metaphysical and moral themes. Moreover, one might ask whether Eagleton's claim about the 19th century's "high-minded" stance, by which he certainly means a division between philosophy and psychology is merited, or if, in fact, this physical-moral dialectic continues to be central to medicine and philosophy in the 19th century, and also continues to be fiercely debated and discussed. As is clear from the intense interest among vitalists and animists in 'high' philosophical questions such as the nature of the soul and its relationship to the body, not only were these issues rooted in a material, embodied experience, they were also connected to important systems and traditions of medical history and philosophy.

*Montpellier Defended*

We saw at the outset of this chapter that critics of Montpellier, like the medical journalist Louis Piesse, challenged its overt philosophical (and even Platonic) sympathies and created a marginalizing portrait of the school and its contribution to contemporary medicine. Yet there were spirited defenses of the Montpellier school on into mid-century; Jacques Lordat's 1842 *Apologie de l'École médicale de Montpellier* is perhaps the foremost example. In an 1889 dictionary entry, Dr. Brochin sees Lordat as the medical thinker who transformed the timid dualism of Barthez into the formal doctrine of "*duodynamisme.*" Brochin paraphrases Lordat in providing a definition of this *vitalisme duodynamique* – the duo-dynamic vitalism that by the 1840s had become archetypal of the Montpellier school:

> In the word's most widely accepted sense, the vitalist…is he who knows that the characteristic phenomena of life cannot be explained by the general known laws of physics and chemistry. The sum total of the mental operations by which the spirit creates a divide between inert and living bodies is called vitalism. The first proposition of vitalism is thus a negative one, knowing the actual impossibility of explaining the phenomena of life only by physical laws.[141]

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[140] Terry Eagleton, *After Theory* (New York: Basic Books, 2003), 155.
[141] Brochin, "Vitalisme," 722.

This view was derived, Brochin argues, from the physiological search for that which constitutes man, and the elements of which he is composed. Observation shows that there are two broad orders of elements, one accessible to our senses that is the result of the organism, the other hidden, and manifest only in its effects. Thus again one finds an interesting admission in Lordat's vitalist credo of a hidden, or occulted nature, in the living (in this case more specifically in man).[142]

In response to Piesse's most ardent criticism, that of the Platonic sympathies of the Montpellier school, Lordat cleverly replies in his *Apologie* by suggesting that this is at least a better stance than strict scientific materialism:

> The claim of Platonic sympathies puts the Montpellier school in opposition to the Peripatetics, descendants of Aristotle, named the Positivists, who recognize only one science...understanding physics; who avoid Metaphysics, detest and vilify Theology, both revealed and natural; who create a materialist biology, where they recommend to their disciples that they isolate physiology from medicine, to assure the originality of its scientific character, providing a continuity between organic and inorganic philosophy. Since the materialists don't want us to associate ourselves with Aristotle, who nonetheless adopted a clear Metaphysical view, they have grouped us with him in a way that does not force us to reduce all to the laws of physics.[143]

Lordat freely admits the influence of the philosophy of Plato (and Hippocrates and Aristotle, for that matter) on the Montpellier school, but for him the idea of medicine really starts with the assumption that one is "exempt from supposition" since "what is indispensable to everyone is to recognize that what is cannot be considered a supposition."[144] For Lordat, the basic methodology of medicine was to be even more objectively empirical than Bacon; more rigorous, as he puts it, than the *Novum Organum*.[145]

Lordat counters the claim that Montpellier harbored Platonic sympathies, and could as such be justifiably tarnished with the brush of an outdated idealism, by clearly dividing the school from the "spiritual" qualities of Plato:

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[142] Ibid. Brochin sees this element of vitalist thought as *the* emblematically skeptical philosophical stance of the biologist: "*La doctrine de la force vitale constitue la biologie proprement dit. La vie nous est inconnue dans son essence. La production du dynamisme des êtres vivants est étrangère à nos conceptions.*" 722.
[143] Lordat, *Apologie de l'École médicale de Montpellier*, 11.
[144] Ibid., 13.
[145] Ibid.

> But when it comes to the enduring ideas of Plato, his cosmogeny, his opinions on the Vital Unity of the world, on *théopneustie* or Divine Inspiration...we remain strangers to these high ideas, and our dogmas never show a complexion from which we can assume they have been imbued by them; our medical sphere is too restricted to permit us to explore these regions. But of the Platonic Academy, if the Metaphysicians, whether Theologians or Teleologians, review these questions whose answers can contribute to the solution of their great problems, we would be inclined to show them our good will.[146]

He continues by contrasting this philosophical compromise with the views of Aristotle, of whom he says: "Materialism was in his heart, but Reason often forced him to distinguish the Laws of Physics from the Laws of Metaphysics."[147] And that "...in spite of his tendency to see nothing in Nature other than physical forces, the philosopher was forced to acknowledge in man two metaphysical forces, that is: Intelligence, plus Entelechy, the principle that the Peripatetics could not understand and which Barthez applied very well."[148]

In acknowledging Barthez' debt to the classical thought of Aristotle, Lordat is challenging the supposed Platonic roots of Montpellier. He is also problematizing the Barthezian origins of Montpellier as being fully in sympathy with Aristotelianism. And yet vitalism, thought surely not synonymous with neo-Aristotelian thought, nonetheless owes him some great debts. Lordat, perhaps conscious of Aristotle's important emphasis on *entelechy* and the nature of the soul, here praises the moral and spiritual roots of Montpellier. In continuing his response to Piesse, Lordat lays out some of the central concerns of his school, saying that "...here the study of medicine can never compromise Religious Morality, must return infallibly from incredulity towards skepticism, and never weaken neither faith nor piety, the needs of the soul it makes so much of respecting."[149]

Along with this important moral dimension of medicine adapted from the "*sensibiliste*" and romantic tradition, Lordat emphasizes other aspects of the classical Montpellier paradigm. This links him to the eclectic and panoramic qualities of the "*science de l'homme*" methodology. Anthropology, for example, is given significant

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[146] Ibid., 14-15.
[147] Ibid., 16.
[148] Ibid. The idea of *entelechy* becomes central to the vitalist philosophy of the German Hans Driesch. See Driesch, *The History and Theory of Vitalism.*
[149] Ibid., 20.

emphasis in his approach. We find him arguing for the importance of a broad appreciation of all the vagaries of human variability in the following:

> ...our school is constantly attentive to acquiring all the anthropic facts, whatever their character. It holds back nothing in maintaining and disseminating its records: observations, as many experiments as possible, autopsies, travels, difficult lectures, dangerous inspections, everything is put to use; even to the point of risking ridicule.[150]

Lordat continued to emphasize this anthropological aspect of the Montpellier school throughout his text, discussing the link between "practical anthropology" and medicine.[151] For him, anthropological findings were essential to the development of an inductive philosophical method as applied to man: "The Professors never forget, firstly, what they owe to human claims; secondly, what they owe to the *higher* anthropological truths, as they are recognized through the rules of inductive philosophy."[152] In this respect, Lordat's defense of Montpellier fits well with the classic thought of earlier vitalists like Barthez and Bordeu, in respect to their avoidance of any overarching system in favor of a rigorous, yet skeptical, empiricism, and in their general, qualitative, panoramic and anthropological "*science de l'homme*" approach.

For Lordat, the Montpellier school was the very heart and essence of medicine. He responded to the charge that Montpellier was sterile and "lazy" with the following:

> Without protesting against your reproaches relative to progress, *you want to evaluate the schools only like trees, by their fruits*. And what are the fruits of Montpellier? They are *principles and methods, a magnificent curriculum for studies in medicine.*[153]

Further replying to the charge that the school was overly philosophical, Lordat responds: "You know, sir, that all the components of medicine are deeply impregnated by philosophy. There is no problem, theoretical or practical, in which we can dispense with having recourse to Physics *and* Metaphysics."[154] Thus, for him, medicine was inseparable from philosophy – and more particularly, from *natural* philosophy – and this beginning

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[150] Ibid., 24.
[151] Ibid., 39.
[152] Ibid., 41. Emphasis in original.
[153] Ibid., 44. Emphasis in original.
[154] Ibid., 48. Emphasis mine.

position clearly related to Hippocratic naturalism was essential to anyone who truly professed to be a doctor:

> A man is not a doctor until he knows how to apply to anthropological facts all the rules of Natural Philosophy to which they are subject. When he has earned this title, he is a Philosopher as Hippocrates would have wanted it.[155]

Lordat's specific defense of the Montpellier school ultimately reveals itself as a defense of vitalism in general. He rightly suggests that many of the principles of vitalist thought permeated the largely mythical barrier between Paris and Montpellier. Lordat writes of the Baconian empiricism of Montpellier and asks of his accuser whether it is not also important to the Parisian physician: "You approve of our school's Baconian Method; but...you almost annihilate your approval in saying that *this Method is laid claim to by everyone, even Paris.*"[156]

Lordat argues that his school is responsible for important contributions to biology and medicine, and that these principles are no longer an exclusive Montpellier phenomenon – a view that holds to certain principles while insisting that these principles do not affect the outlook of experimental findings. What are these principles? We again turn to Lordat for an elaboration:

> ...that science and human dynamism spontaneously divided into two distinct sciences, that is Psychology and Biology, in spite of the confusion created by Stahl; that this biology has its own discernable laws, very different from physical and psychological laws; that by virtue of the structure of our Intelligence, the difference in these laws make us distinguish their relative powers; that independent from therapeutic physical means, admissible by Mechanists, and moral means that Stahlians attach only to the physical, there exist vital means that are the most numerous and incomprehensible...that the appeal, the effects, the results of the Vital Force are the subject of a science quite different from any other...[157]

This outline of a principled stance that was a compromise – a 'middle way' – between pure mechanism and Stahlian animism would have had a good number of advocates in the medical ranks of the early 19th century.

The criticism, of course, came from those who suggested that any "dogma" was anathema to the spirit of scientific inquiry and the materialism and mechanism that made

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[155] Ibid.
[156] Ibid., 59.
[157] Ibid., 61.

up the very essence of research. Lordat responds to this criticism by suggesting that wholehearted endorsement of the scientific enterprise is at the crux of the issue, and that what is really covertly being discussed is the law of large numbers opposed to the individual case. His vitalism is thus a kind of empiric skepticism that balks at the findings clinical medicine derives from universals like statistics. This skepticism is seen as a tradition in medicine as old as Hippocrates:

> After this, you would accept some of our proposals, just not isolated dynamism, which we know to come from neither the thinking soul or from Mechanism directly, because you would never permit this indecision. This means you would accept all, except the idea that constitutes Vitalism, Hippocratism, the Montpellier Doctrine.[158]

*Conclusion: Vitalism and the Essence of Medicine*

In her recent study of the Montpellier vitalists, Elizabeth Williams situates vitalism in the context of "Enlightenment revisionism," seeing the ideas of the Montpellier physicians as complicating the conception of "Enlightenment" science. She clearly sets out to show vitalism in a broader context than simply the history of physiology.[159]

And yet, her focus ends up being surprisingly narrow, and she never endeavors to separate vitalism from Montpellier. Thus her conclusion that as the provincial medical school fades in contrast to the rising star of the Paris clinic in the early 19th century, so too does vitalism as an idea. For her, it ceases to have any impact or relevance after about 1830, and disappears altogether after the mid-century. This of course, is, as we have seen, simply not the case. Vitalist themes were not only present, but widespread in the early and mid-19th century medical world. If only to understand vitalism's meteoric revival with Hans Driesch and Henri Bergson in the early days of the 20th century, this perspective needs alteration. In fact, as I argue in the introduction, the entire enterprise of biology (and particularly its theoretical principles and foundations) in the 19th century is incomprehensible without taking account of vitalism. The deep and far-flung controversies about materialism and spiritualism are in large part motivated by vitalism's continued vitality. Even after the 1850s, as materialism increases its influence in the

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[158] Ibid., 63.

[159] Elizabeth A. Williams, *A Cultural History of Medical Vitalism*, 1-5. See especially her schema on page 5.

scientific sphere, vitalism remains visible. One commentator from the 1850s even suggests that all biologists, in so far as they admit a principle that determines living phenomena, are vitalist to a greater or lesser degree.[160] In this sense a belief in the unique qualities of biological phenomena and their irreducibility to simple chemical and physical affinities was the most basic and widespread expression of vitalism.

Vitalism meant a view of life in its active, dynamic, indeterministic guise; a life capable of self-creation, spawning heretofore unforeseen *telos*. Rather in contrast to the linear, mechanical, inert, dead pathos of anatomism, vitalists (and humoralists) broke out of the dissection room and followed the health of peoples – constitutions, characters, climates and circumstances. Life in its infinite variety. And yet they balanced this dynamic, empirical methodology against history and theory richly conceived, constantly challenging aspects of accepted theory nonetheless, poised just above the razor's edge of skepticism, probing towards an unknowable *x*, the mystery of life fully accepted and fully vital in their works.

Vitalists, and particularly the Montpelliérains, continued to insist on the important intersection between the physical and the moral, seeking a balance and harmony across these two realms. With the rise of materialism by the 1850s one finds an increasing disdain for these questions, which are purged from scientific inquiry.[161] At the same time, however, in the continued appeal of animism one finds an emphasis on the moral and spiritual at the expense of hard scientific fact. In vitalism both concerns maintain, and in this sense the vitalist vision was an intellectual high-wire act, espoused by those who were constantly teetering back and forth between philosophical concerns and physical realities, trying in their own way to heal and suture together the deep, divided and dualistic wounds of the Cartesian paradigm.

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[160] Thus, he says "toutes les écoles, quelles qu'elles soient, reconnaissent l'existence de ce principle, et ne diffèrent entre elles que par leurs opinions sur sa nature et sur le siége qu'il occupe dans l'organisation. Les *organiciens* le considèrent comme inhérent à tous les organes, constituant leurs propriétés vitales, et déterminant toutes leurs fonctions. Les *animistes* le supposent dans l'âme intellective, donc il n'est qu'une faculté. Les *vitalistes-dualistes* le voient dans *une âme irrationnelle instinctive*. Tous sont donc vitaliste." P. Blaud, "Lettre sur le vitalisme," *La Revue médicale française et étrangère* (1854), 193-203; 197-8.

[161] They, of course, remain justifiably more relevant to psychology and psychiatry till the end of the century.

The Montpellier school and its vitalism can be encapsulated as a delicate position of equilibrium between empirical, observational practice and critical, humanist metaphysical theory.[162] And despite differences, there were a clear set of beliefs they all shared about the purposeful, self-regulating and consistent, if undetermined, nature of vital phenomenon.[163] Foundational to the conception of biology as a discipline with unique concerns that made it irreducible to the methods of analysis and assumptions of chemistry and physics, vitalist thought was also important in fostering a holistic and characteristically anthropological understanding of health. These themes are carried forward by Hermann Pidoux and Paul-Emile Chauffard, the main proponents of a fierce Hippocratic revival in Paris in the 1850s and 1860s – as such these figures will be central to the discussions in Chapter Three.

Montpellier vitalism was also critical of Enlightenment mechanism, materialism and universalism, and, as we saw in the previous chapter, foundational to the romantic and counter-Enlightenment discourses that sprung up among a host of early 19th century thinkers.[164] More than simply a reflection of residual spiritual and religious sympathies, vitalism was rooted in a sophisticated, complex philosophical discourse that borrowed liberally from a rich tradition extending back to the very origins of modern science in the 17th century.

Despite Williams' argument, vitalism does not fade into obscurity, only to be associated with the traditionalists in Montpellier. On the contrary, it continues to hold attraction to some, and even weathers the materialist challenge of the 1850s, though, as

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[162] In this sense vitalism can be tied to the entire Enlightenment project of understanding, particularly as it now being reformulated by recent scholarship – the idea of Enlightenment science as a challenge to the mechanism and rationalism of 17th and early 18th century physics, and of the notion of a group of "sentimental empiricists," captures essential elements of this new synthesis. On the "sentimental empiricists" see Jessica Riskin, *Science in the Age of Sensibility: The Sentimental Empiricists of the French Enlightenment* (Chicago: University of Chicago Press, 2002).

[163] Williams says that "Beyond any distinctions, all Montpellier vitalists emphasized the unconscious and involuntary but still purposeful character of vital activity. All of them insisted that vital action was self-regulating and devoted to the preservation of the organism. All the vitalists conveyed a powerful sense of normativity and lawful behavior in vital phenomena, if one that differed essentially from that which dominated mechanist thinking – or animist thinking – lawfulness as imparted by judgments of the thinking soul that were in turn the effect of God's grace." Williams, *A Cultural History of Medical Vitalism*, 280.

will be seen in later chapters, in a somewhat altered form and representing, in some cases, important shifts in perspective.

[164] See Isaiah Berlin, "The Counter-Enlightenment," in Philip P. Weiner, ed., *Dictionary of the History of Ideas, Vol. II* (Cambridge: Cambridge University Press, 1973), 100-112.

## *Chapter 3*
## *Hippocratic Naturalism and the Paris School*

### *The Characteristics of Parisian Vitalism*

Parisian vitalist thought, what I here term the 'Paris School', shared some clear themes with its Montpellier variant. First and foremost, it was Hippocratic. This aspect was patent in all the Parisian thinkers in spite of the confusion the use of the term 'Hippocratic' could entail.[1] In the case of these mid-century aficionados of Hippocratism and vitalism, their interpretation was a generally consistent vision: holistic and offering a distinct medical philosophy: concerned with *milieu*, and trusting in the inherent healing power of nature. Secondly, it was formally philosophic, in the sense that the concerns the medical thinkers expressed extended far beyond the clinic or laboratory.

A third element distinguishing the writings of the Parisians from their Montpellier counterparts: an ontological belief in what I will call 'spiritual' naturalism. That is to say that the Parisians are less transcendental than the Montpelliérains in their understanding, seek to dispense with Barthez' "vital principle", and see less of a point in being quasi-theological and debating the intricacies and multiplicities of the soul. In this sense, their view was opposed to idealism and spiritualism as I have defined them here. Thus, one of their biggest targets was animism, a position they often associated too readily with the Montpellier school.

The Paris School differed in yet another fundamental way from the Montpelliérains, despite their shared beliefs in Hippocratic principles, philosophical approaches and the healing power of nature. The Parisians were much closer to the positivist medicine of the clinic, and were generally less skeptical about experimental methods and the pathological-anatomy model. What really distinguished the two was a general philosophical outlook, since the Parisians essentially advocated a fairly narrow form of naturalism while the Montpelliérains flirted more openly with idealism and

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[1] The idea that representations of Hippocrates and his thought were completely malleable in the 19th century French medical landscape is made in Ann F. La Berge, "The Rhetoric of Hippocrates at the Paris School," in David Cantor, ed., *Reinventing Hippocrates* (Aldershot: Ashgate, 2002), 178-199. Despite variations, however, I would argue that certain themes regarding the nature of Hippocratism remain fairly constant, and even explain why some writers were better able to make their case about its connection to contemporary theories and practices.

engaged in debates about spiritualism and the nature of the soul that were a close accompaniment to this view. In this respect, the 'Paris School' offered a largely de-spiritualized vision of vitalism tied directly to the concerns of medical thought and practice.

One final aspect of the 'Paris School', perhaps most central of all and related closely to much of what was often said about Hippocratic philosophical principles, was a professed belief in the unique nature of the medical art. Medicine was a craft. But it was also a philosophy – an outlook on life. Medical thought thus possessed its own, particular and irreducible *problématique* among these neo-Hippocratic naturalists.[2] In a modern medical world increasingly rife with dramatic, demonstrative (and often deadly) therapies both surgical and pharmacological, there was something out of place, and yet also very appropriate, in a group of physicians urging their colleagues to trust in nature and the often incredible indeterminism of a healing, restorative vitality left to its own devices. If there is a central, quintessential element to the Hippocratic vitalism of the Parisians, it is this unshakeable faith in nature as a healing force.

*A Hippocratic Renaissance*

The mid-19$^{th}$ century Hippocratic revival in medical philosophy was so widespread that its influence is difficult to overstate. And yet the history of medicine has largely overlooked this important reformulation and rebirth of Hippocratic principles. There are a number of reasons for this, not the least of which has been the historical focus on the major innovations of the mid-19$^{th}$ century that have had the greatest resonance in our time. Pathological anatomy, histology, cell theory and the growing power of the laboratory, the increasing rationalization of the clinic and the associated development of statistical methods, and the early stages of the revolution in surgery and asepsis in medical practice have been the major emphases in the history of mid-19$^{th}$ century medicine. These are all very clearly important influences on medical practice in this period, but how profound, initially, was their impact on medical philosophy and thought?

Were all these positivist influences sufficient to move medical men towards positivism as a philosophical outlook? In many cases the influence was limited, since most of the understandings of these pragmatic changes were still situated within larger overarching 'systems.' There were those individuals, mostly in physiology, who had a deep anti-systemic bent (a view that culminated in Bernard), but even the need to address this issue speaks to the power of systemic thinking in this period.

And so, even as mechanistic materialism was pushing into the medical world, there were figures in Paris and Montpellier in the 1850s, devout clinicians like Hermann Pidoux (1808-1882) and Paul-Emile Chauffard (1823-1879), who would never dream of separating philosophical concerns from their understanding of medicine and life. Chauffard was already speculating on the value of medical "systems," essentially philosophical doctrines, to understanding in clinical medicine in his *Essai sur les doctines médicales, suivi de quelques considérations sur les fièvres* (1846).[3] He would continue this investigation with his *Lettres sur le vitalisme*, which gained him fame in the Parisian medical world of the 1850s.

For many elite physicians, the traditions, systems and philosophies of medicine continued to elicit significant interest and discussion. Moreover, the insights to be derived from these historical inquiries were not just an addendum to practice but, in the frustrating and confusing mid-19th century medical landscape, often helped guide it. Residual elements of the Galenic and humoral ideologies of medicine, the neo-humoralism that has shadowed vitalism throughout this period, were still present in medicine at the beginning of the 19th century. The famed physician René-Théophile Laennec (1781-1836) wrote his 1804 MD thesis on Hippocrates and the development of a Hippocratic "system." Many physicians with a theoretical bent continued to use this philosophical tradition as a means of separating medicine from the many influences of the emerging biological sciences and the new realm of science generally. By the end of the century, modern biomedicine founded on strict experimental principles would take

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[2] La Berge discusses this portrayal of Hippocrates as a doctor-philosopher, a *médecin-philosophe*, in the context of the medical thought of Cabanis in the early 19th century. See La Berge, "The Rhetoric of Hippocrates," 179-181.

[3] Paul Émile Chauffard, *Essai sur les doctines médicales, suivi de quelques considérations sur les fièvres* (Paris: J.-B. Baillière, 1846).

the lead and bring nearly everyone up to speed, but in the period of the 1840s, 50s and 60s philosophy and theory were still heavily debated in mainstream medicine. One notes texts like Théophile Galicier's *Théorie de l'unité vitale*, published as late as 1869.[4] These philosophical discourses had an impact on thought and therapeutics, and were elaborated both in principle and practice, as in the case of Charles Labouverie's *Considérations practiques sur la force vitale*.[5] In this context of a rich discourse of medical theory and philosophy, the appeal of Hippocrates and Hippocratic principles was clear.

This Hippocratic renaissance can also be related to another widespread trend in mid-19th century medicine – public health. This concern was instrumental in exacerbating the increasingly strained relationship between Paris and the provinces.[6] As the state was seeing to the health of its airs, waters and places – all of which were slowly being modified by the industrialization and urbanization of more and more human spaces – the discourse of doctors and public health officials moved steadily towards the notion of *milieu*. In their concern with the environmental dimension of health, Hippocratism and sanitary thought share important convergences. In the introduction to a collection on *French Medical Culture in the Nineteenth Century*, Ann La Berge and Mordechai

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[4] Théophile Galicier, *Théorie de l'unité vitale* (Paris: Adrien Delahaye, 1869). One finds an English equivalent published in the same year. See E. Haughton, *The Laws of Vital Force, in Health and Disease; or the True Basis of Medical Science, 2nd ed.* (London: John Churchill, 1869). Haughton notes that medicine "has no settled fundamental principles," and that "Life [...] is not a property of matter, but something superadded thereto, whose amount may be increased by generation through organized structures, and by means of the various forces of nature; but certain conditions are essential to its continuance, although in themselves incapable of originating it." 13-14.

[5] Charles Labouverie, *Considérations practiques sur la force vitale* (Paris: J.B. Baillière, 1855).

[6] "French medical culture also reflected the old strain between Paris and the provinces, between the efforts of the Parisian government to impose centralization and bureaucracy on the provinces and regional efforts to preserve cultural diversity in local customs and institutions. Both patients and medical practitioners in the provinces sensed a fundamental tension between their individual rights and the capital's bid for cultural and political dominance. Attempts to promote public health reform show the extent of the conflict between Paris and the provinces, the 'princes of medicine' – the elite of Parisian public health – made hygienism the cornerstone of their programme. In the name of national security and social order, they sought to impose their views and practices on the country at large. The provinces resisted. To them such a policy was yet another attempt by power-hungry Parisian physicians to control the provinces by the imposition of centralized order, which, they believed, would intrude into the domain of the family and private life and deprive physicians and families of individual liberties." Ann La Berge and Mordechai Feingold, eds., *French Medical Culture in the Nineteenth Century* (Atlanta, GA: Rodopi, 1994), 2.

Feingold boldly suggest that "hygienism, or the ideology of public health, emerged as the secular religion of the Third Republic."[7] If this is the case, as I believe to a significant degree it was, then the 'spiritual' naturalism of the Parisian School must also be linked to this cause. Hippocratic philosophy was rooted in ideas of constitution and large-scale social understandings of health, and was essentially oriented towards a public health "paradigm" in its concern with regimes and its fundamentally preventative inclination. Thus the concerns of the Hippocratic vitalists of the mid-century are an important precursor to the debates in the early Third Republic. La Berge and Feingold offer a rather totalistic portrayal of the impact of public health issues in the political sphere:

> Legislators, social critics, reformers, and physicians all offered medical reasons to rationalize the defeat in the Franco-Prussian War, to account for French depopulation, and to explain the perceived moral and physical degeneracy of the French people. This widespread tendency to view France as fundamentally disease-ridden prompted the new Republic to look to physicians to solve those socio-medical afflictions believed to be at the root of military, economic and moral weakness. Consequently, alcoholism, tuberculosis, venereal disease, and high infant mortality – all cited as causes of degeneracy and depopulation – dominated public discourse and stood high on the national agenda of matters on which action was needed.[8]

When one connects Hippocratism in its narrow sense to this widespread public health agenda the debate shifts, from a purely sociological and political focus to a more historical and philosophical perspective. To understand the neo-Hippocratic preoccupation with place, tying Parisian vitalism and public health together, it is first necessary to also take a brief look at the classical expressions of the Hippocratic Corpus and the nature of Hippocratic medicine.

*The Origins of Hippocratic Medicine*

The Hippocratic Corpus provides the first important set of principles regarding the nature of life in the Western tradition. As all the mid-19$^{th}$ century Hippocratic thinkers so readily pointed out, it was also the first set of thoughts and ideas about medicine that were clearly divided and delineated from mythology, philosophy and superstition. In the

[7] Ibid., 1.
[8] Ibid.

Hippocratic theory the origin and beginnings of life lie in the breath (*pneuma*). It is the breath that causes growth and articulation. In this sense, life is dependent on the relationship between fire and water, whose interaction creates the structures and functions of the body, and it is the evaporation of moisture due to heat that initiates the breathing process.[9]

It is also the relationship between fire and water that determines the quality and character of the thinking and perceiving soul (*psyche*). A perfect balance of fire and water leads to a balanced soul, reflected in part through one's intelligence (*phronesis*). Excess fire or water directly impacts the soul and its function. This is manifested through, for example, the perceptive, sensitive qualities of an individual (i.e. through under-stimulation in the case of water and over-stimulation in the case of fire).[10] Thus, Hippocratic ideas laid an important foundation for meaningful aspects of later vitalist thought, and established the intersection between the state of the soul and the state of bodily sensations. Or, put another way, between the *psyche* and *soma*.

Hippocratic medicine acknowledged the close, even arguably inseparable, relationship between psychic states and health. Dreams, for example, were seen as possible insights through the soul into the condition and circumstance of the *soma*. It is this suggested inter-relationship which surely gives the Asclepian dream-healing temples their theoretical backing.[11]

The intimate and entwined association between psychic and somatic is a fundamental principle of the Hippocratic approach. Again and again, psychic states are seen as having physiological and somatic correlates. It is a kind of monistic dualism that leads to interesting therapeutic proscriptives, such as the suggestion that diet can affect *psyche*. This emphasis on diet follows from the Pythagorean diet (*diaita*); the diet was more than simply a question of proper food, but a focus on the disciplined life as a whole, in order, harmony and accordance with the laws of nature. While certainly distinguished

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[9] Beate Gundert, "Psyche and Soma in Hippocratic Medicine," in *Psyche and Soma: Physicians and Metaphysicians on the Mind-Body Problem from Antiquity to Enlightenment*, eds. John P. Wright and Paul Potter (Oxford: Clarendon, 2000), 16.
[10] Ibid., 25.
[11] On Asclepius and his popularity in the ancient world see the introduction by Gary B. Ferngren in Emma J. Edelstein and Ludwig Edelstein, *Asclepius: Collection and Interpetation of the Testimonies* (Baltimore, MD: Johns Hopkins University Press, 1998 [1945]).

from one another, *psyche* and *soma* in the Hippocratic Corpus are described in the same interrelated, programmatic fashion. The *psyche* is not seen as some immaterial, insubstantial thing, but as an immanent, empirically real element of life – the life principle, if you will. Ultimately, all living functions are encompassed under a larger overarching quality, that of human nature (*physis*), which includes both the *psychic* and the *somatic*. Thus, in a sense, the duality of the individual is subsumed under a more all-embracing monistic unity. This is, in part, a further reflection of the principle regarding the indivisibility of nature. It is later Christian conceptions of the soul that make *psyche* a somehow more spiritual, divided element of humanity, divorced more rigidly from the experience of the body,[12] resulting in a challenge to the early classical conception of the holistic character of human beings. In the neo-Hippocratic discourse of the mid-19th century, there is a revival of these classical principles. The Parisian Pidoux, for example, insists again and again in his work that physiology has reached the point where it can transcend the invocation of vital forces, and it must now move to describe "*l'homme tout entier.*"[13]

One volume of the Hippocratic Corpus, *Ancient Medicine*, was also quite critical of the ancient and classical conceptions of medicine reliant on the humoral system. Interestingly, the medical structure dependent on humors was seen as reductionist, and *Ancient Medicine* argued instead for a broader, more universal approach. There are echoes of this idea in the critique the Parisian vitalists leveled at organicism and the focus on organ systems with its associated tendency towards reductionism.

Many things have been said about the Hippocratic approach to medical practice, but perhaps none is more certain than the idea of the primacy of the patient. This was not the patient archetype, but rather a perspective focused on a specific, individual patient, replete with all his or her particularities, characters, sensitivities and nature. When compared to the modern endeavor of scientific medicine, there is no question that the

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[12] For a discussion of the translation of Hippocratic principles into a Christian context see Owsei Temkin, *Hippocrates in a World of Pagans and Christians* (Baltimore, MD: Johns Hopkins University Press, 1991).

[13] Hermann Pidoux, *Le Spiritualisme organique* (Paris: Asselin, 1869), 10. Pidoux could rely in this ambition on a rapidly developing field of anthropology. One of the inspirational figures in this respect was the anthropologist and political radical Gustave Flourens. See Gustave Flourens,

patient in Hippocratic practice was central. In this sense, ancient medicine placed healing and humanitarianism above scientific discovery.

*Hippocratism Vitalism and the "Paris School" in the Mid-Century*

Much of the general popularity of Hippocratic thought in the early 19th century reflects an interest in vitalist themes. For Dr. Brochin, in an entry in the *Dictionnaire encyclopédique des sciences médicales* (1889), vitalism begins with what he calls "le vitalisme empirique ou *naturisme* d'Hippocrate."[14] This reliance on nature was one of the original ancient aspects of vitalism, and according to Brochin, its most basic and fundamental form:

> This doctrine of naturalism consecrating the dogma of unity, of the autonomy of the system, adopted and propagated by Galen, despite the opposition of the empiricists, dogmatist and methodists, and the adulteration that resulted in its mixing with Arabism and iatrochemistry during the middle ages, had nonetheless survived, revived by Fernel, Baillou, Prosper Alpin, Houllier, and Sydenham, who rendered its primitive simplicity and luster. It is from this that have proceeded the other forms of vitalism more or less transformed and modified.[15]

What Brochin here describes is a kind of holistic naturalism that is perhaps the clearest repeated element in the philosophy of Hippocrates. In this respect the Parisians differed from the Montpelliérains in their commitment to neo-Hippocratism, since for the latter it was merely one influence among many, while for the former it was perhaps the principle influence.[16]

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*Histoire de l'homme. Cours d'histoire naturelle des corps organisés au College de France* (Paris: Garnier, 1863) and *Science de l'homme* (Brussels: Rozez, 1865).

[14] Brochin, "Vitalisme," in *Dictionnaire encyclopédique des sciences médicales*, Vol. 100 (1889): 719-728; 720.

[15] Ibid.

[16] Hippocratism was of course also of interest to the Montpelliérains, like Barthez and Lordat, who saw his persona and ideas as the very origin of medical thought. In an 1801 commemoration of Hippocrates presented at a lecture on the 23 July at the Montpellier Medical School, Paul Joseph Barthez saw the separation of medicine from philosophy as one of this archetypal figure's great accomplishments. Echoing the earlier vitalist de Bordeu, Barthez calls Hippocrates "the Prometheus of medicine." Barthez says that Hippocrates further understood that conceptually, the most important framework for understanding the living and the health of the living was movement, of a state of dynamism, of flux. Above all, Barthez reminded his audience of Hippocrates' belief in the positive influence of the force of nature as it moved to heal: "Hippocrates attached himself particularly to observing the times and modes of salutary

The Parisian physicians who turned to Hippocratic thought and principles in the mid-19th century did so for a number of reasons. First and foremost, they sought to elaborate a medical outlook situated somewhere between the dominant organicism (organic localism) and materialism of the Paris clinic on one side and the animism and spiritualism of the radical vitalists on the other.[17] They did this by reinterpreting vitalism as a kind of Hippocratic naturalism; still anti-reductionist, but not necessarily patently spiritualist. It is for this reason that they were generally dismissive of the concept of the "vital force." This Hippocratic vitalism served another purpose, since in theoretical terms it placed medicine in a unique category, emphasizing its particular, irreducible qualities. In this sense, this vitalism was also opposed to the conceptual (disciplinary) reduction of all sciences to physics and chemistry, a point it shared with the Montpellier school. And yet, most Parisian vitalists, unlike the Montpelliérains, insisted that the methods of analysis and understanding of the physical sciences were applicable to the study of living things. Chauffard spoke of Hippocratism as the summary of all the basic ideas of vitalism:

> Two thousand years ago, Hippocrates left the sovereign word *nature* as a legacy to physicians, and this word is the only one that vitalist physicians can use to faithfully encompass their entire thought, their entire life's study, as the broad and living synthesis of their observation.[18]

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movements that nature affects in illness." ("*Hippocrate s'est attaché particuliérement à observer les temps et les modes des mouvements salutaires que la Nature affecte dans les maladies.*"). See also P. J. Barthez, *Discourses sur la génie d'Hippocrate* (Montepellier: Seguin, 1816). It has been argued, and we have seen to this point, that Hippocratism was quite widespread in the late 18th and early 19th century medical world, and this is most assuredly also true in the context of the Montpellier school. See Pierre Izarn, "L'Hippocratismé à Montpellier et dans la France méridionale de la fin du XVIIIe siecle au debut du XIXe siecle," in *Hellénisme et hippocratisme dans l'Europe méditerranéenne*, ed. Roland Andréani, Henri Midel and Elie Pelaquier (Montpellier: Université Paul-Valéry – Montpellier III, 2000), 121-131. Nonetheless, despite this shared Hippocratic lineage, the Paris and Montpellier schools differ markedly.

[17] In the category of "*organiciens*" Dr. Brochin included all those doctors and modern physiologists and naturalists who, while they recognize that the living body differs from inert bodies in terms of the phenomena they present – thus giving one the idea of their own proper impulsive forces different from the forces of brute matter – nonetheless no longer separate the forces of matter in organized bodies. In this group Brochin places Cuvier, Geoffroy Saint-Hilaire, de Blainville, Dutrochet, Magendie, Richerand, Rostan, Béclard and Claude Bernard. See Brochin, "Vitalisme," 720.

[18] Paul-Émile Chauffard, *Lettres sur le vitalisme* (Paris: V. Masson, 1861), 45.

The Hippocratism of the Parisians was also in particular an attempt to redress the general imbalance in medicine created by organicism and organic reductionism, a perspective that had greater validity and visibility as specialization expanded dramatically in the mid-century medical world.[19] They emphasized, in contrast, the holistic and dynamic character of the living and of health. Gabriel Andral, a Parisian physician and pioneering hematologist, used Hippocrates in an 1843 essay on pathological haematology to support his neo-vitalist theories and his dynamic conception of organ systems. Andral's sophisticated observational method (he was a devotee of the microscope as a research tool) was also portrayed as having Hippocratic roots.[20]

Physicians, clinicians and medical generalists, whose practices were focused on patient care and therapeutics rather than research, also faced the pressures of professionalization and the need to compete in a massive, multi-dimensional medical marketplace. A sophisticated understanding of medical theory and philosophy was an essential ingredient in establishing a doctor's credibility, and helped him to rationalize and give shape to diverse therapeutic practices. In this respect clinical practitioners continued to use their knowledge of traditional medical philosophies and systems as a means to establish their authority, rather in contrast to the early adoption of laboratory methods and the general ethic of "scientific" medicine. In truth, many of these practitioners were perfectly happy blending historical and philosophical understandings with the new techniques of medical practice, meshing the old with the new in a seamless ensemble of expert knowledge.

A good example of a Hippocratically inspired attempt to seek a quasi-spiritual and dynamic insight into the natural world is found in *Examen de l'animisme théocratique et de l'hippocratisme moderne* (1854) by the Paris clinician Hermann Pidoux. This text reminds us that even in the 1850s, in an age of increasing scientism and materialism, moral questions still prompted deep reflection from a most illustrious elite Parisian

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[19] For a comparative study of medical specialization, which argues that it is a widespread phenomenon from about 1865-on, see George Weisz, "Medical Directories and Medical Specialization in France, Britain and the United States," *Bulletin of the History of Medicine* 71 (1997): 23-68 and Weisz, "The Emergence of Medical Specialization in the Nineteenth Century," *Bulletin of the History of Medicine* 77 (2003): 536-575. See also George Weisz, *Divide and Conquer: A Comparative History of Medical Specialization* (Oxford: Oxford University Press, 2006).

physician. Pidoux situates himself at the outset of this book when he mentions that he was asked to respond to a recent debate in another journal between "...a certain Christian spirituality applied to medicine, on one side, and a vitalism claiming to be Hippocratic, on the other."[21]

Pidoux finds it frustrating that in this "*médicine théocratique*" – a kind of "*faux hippocratisme*," – have been lost important ideas, possibly useful in a time when modern medical science is new in its materials and methods but old, even Galenic, in its principles. It is here where he sees the need for vitalism regenerated by a powerful philosophy.[22] He clearly disassociates this Hippocratic vitalism from animism, and in particular a "theocratic animism" which Pidoux links to other errors: "Animism in general, and still more the theocratic animism that some want to return to, is a capital error that saps both philosophy and physiology; a horrible thing, Christian materialism."[23] Pidoux argues that this theocratic animism ascribes far too much to the idea of the soul, making of it a totalistic unity: "Theocratic animism says more: the soul is the unique moral and physical principle of man, the soul is one and cannot be torn asunder."[24] Expressions of this animism that Pidoux was motivated to criticize were still widespread in the 1850s and 1860s.[25]

Pidoux's argument is essentially that theocratic animism is as great a danger as the secular faith in science witnessed in a materialistic society. As an example of the latter he surely had in mind the increasingly secularized, scientized world of Second Empire France. In society, theocracy becomes dogmatic and rules over all realms, even science. But what of a materialistic society, Pidoux asks? Its institutions can also become dogmatic, all-consuming in the manner of thought, education, belief. Further, the state takes on a powerful, even overwhelming role. It is not surprising to see this concern expressed by Pidoux, particularly given the increasingly heated nature of the conflict between church and state in this period. Those who want to think for themselves and seek

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[20] La Berge, "The Rhetoric of Hippocrates," 192-3.
[21] Hermann Pidoux, *Examen de l'animisme théocratique et de l'hippocratisme moderne* (Paris: Félix Malteste, 1854), 3.
[22] Ibid., 4.
[23] Ibid.
[24] Ibid., 5.

the truth are, as he puts it "...threatened with soon experiencing the prison of Socrates or the kindling of Bruno. Here again, what's the difference between these two systems?"[26] This passage also reminds us Pidoux is writing in the heated political milieu of mid-century France.

Pidoux is seeking a *juste milieu* between materialism and animism, and this leads to some interesting interpretations.[27] He is also challenging the elements of vitalist thought that relied too heavily on the classical Aristotelian conception of the tripartite soul (the *animas*). Pidoux sees Aquinas, for example, as a kind of quasi-materialist, and a man who was brilliant for his time in bringing reason and Christian spirituality into harmony. He argues, however, that Aquinas would have seen a materialized soul as something of an abomination: "A soul that secretes urine would seem to him today as revolting as a brain that secretes thought."[28] This last half of Pidoux's quote is a clear jibe at the emerging thought of strict materialists like the German geologist and anthropologist Karl Christoph Vogt (1817-1895), who gained fame in the late 1850s with lines such as "thoughts come out of the brain as gall from the liver or urine from the kidneys."[29]

*Materialism, Spiritualism and the "Juste Milieu"*

In the 1870s, Frederick A. Lange wrote an enormously influential three-volume work on *The History of Materialism*, arguing that materialism was already the dominant philosophical model of the 19th century.[30] Lange identified electromagnetism as an

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[25] See, for example, Jacques-Julien Richard de Laprade, *Animisme et vitalisme* (Lyon: A. Vingtrinier, 1861) and Joseph Tissot, *L'Animisme et ses adversaries* (Paris: V. Masson, 1863).
[26] Pidoux, *Examen de l'animisme théocratique*, 5.
[27] This passage evokes the idea of the "*juste milieu*," the eclectic *spiritualisme* of Victor Cousin (1792-1867) that became the official institutional philosophy, and a challenge to an emerging materialism and skepticism, in France in the 1840s and 1850s.
[28] Pidoux, *Examen de l'animisme théocratique*, 6.
[29] Owen Chadwick, *The Secularization of the European Mind in the Nineteenth Century* (Cambridge: Cambridge University Press, 1993 [1975]), 166. Vogt's opinions can be found in K.C. Vogt, *Lectures on Man: His Place in Creation, and in the History of the Earth*, James Hunt, ed. (London: Longman, Green, Longman and Roberts, 1864).
[30] Frederick A. Lange, *The History of Materialism and Criticism of its Present Importance, 3 vols.*, 2nd ed. (Boston: Houghton Mifflin, 1881).

emerging challenge to mechanistic materialism, but saw little beyond this that would quell its growing popularity among German scientists, particularly those working in the life sciences.

We also find a particularly apt description of this phenomenon in the Scottish philosopher Alexander Bain's *Mind and Body: The Theories of Their Relation* (1873).[31] Bain mentions that "spiritualism, in the form of dualism, was never the philosophical creed of Germany," and this orientation can be traced to "Kant, who ridiculed alike materialism and idealism, yet did not ascribe to matter a real existence by the side of an independent spiritual principle."[32] This position is further modified by Fichte and Hegel, who Bain describes as being "over mastered with the idea of unity," and who also thus "attaching themselves by preference to the dignified mental state, became pantheists of an ideal school; resolving all existence into mind or ideas." Bain notes that this tendency to emphasize one or the other was common, and that "people generally, when tired of Kant's critical position, became either materialists, or idealists, and not believers in two substances."[33]

Bain provides a brief and incisive description of the materialist advances of German scientific men in the 1850s:

> As regards the recent materialistic movement, scientific men first broke ground. Emphatic utterances were made by such men as Müller, Wagner, Liebig, and Du Bois Reymond, all tending to rehabilitate the powers of matter. But the outspoken and thorough-going materialism begins with Moleschott, who in 1852, published his "Circular Course of Life," a series of letters addressed to Liebig. In 1854, Vogt came into the field, in an attack upon Wagner, the great physiologist, who had said that, although nothing in physiology suggested a distinct soul, yet this tenet was demanded by man's moral relations. In a series of subsequent works, Vogt has urged *the dependence of mind on body* in extreme and unnecessarily offensive language. The third and most popular expounder of these views is Büchner, in his book "Matter and Force," which was first published in

[31] Alexander Bain (1818-1903) is an interesting character. A philosophical "monist" who H.P. Blavatsky calls a "guarded materialist" in her epic occult tome *The Secret Doctrine*, Bain was also an advocate of physiological psychology. In 1876 he founded the well-known philosophical and psychological journal *Mind*. Bain also wrote a brief panoramic history of the soul, see Alexander Bain, "A Historical View of Theories of the Soul," *Fortnightly Review* 5 (1866): 47-62.

[32] Alexander Bain, *Mind and Body: The Theories of Their Relation* (London: Henry S. King, 1873), 194.

[33] Ibid. The influence of the scholastic and Cartesian traditions and the French preoccupation with dualism meant that the Gallic response was bound to be more circumspect in reconciling the "two substance" problem.

> 1856, has run through a great many editions, and has been also translated into English.[34]

As the title of Büchner's book suggests, these materialists were, according to Bain, particularly focused on the relationship between "matter" and "force," essentially seeing one as the necessary condition of the other. As Bain describes it:

> Their...[thought] turns partly on the accumulated proofs, physiological and other, of *the dependence of mind on body*, and partly upon the more recent doctrines as to matter and force, summed up in the grand generality known as the Correlation, Conservation, or Persistence of Force. This principle enables them to surpass Priestley in the cogency of their arguments for the essential and inherent activity of matter; all known force being in fact embodied in matter. Their favorite text is "no matter without force, and no force without matter." [35]

Bain further notes that the German materialists "reply to the spiritualistic argument based on the personal identity of the mind and the constant flux of the body," with "the obvious remark, that the body has its identity too, in *type* or form, although the constituent molecules may change and be replaced."[36] This materialization of the mind would only increase in potency as the century progressed and the findings of neurophysiology grew in number, stemmed only by those, influenced by animism, who continued to insist on the separate sphere of the *anima rationalis* or the soul.

Not only were the extreme claims of the largely German mid-century materialists a problem for Pidoux, but so was the opposite position of strident spiritualism as expressed by the animists, for whom the soul was preeminent: "For the animist the body is just a word, a convention; it is the soul that is all."[37] Pidoux, in contrast, agreed with the materialists that there could be no substance without activity. To him an animism that deprived the body of all activity also made it insubstantial, annihilated it: "Therefore animism destroys the substantive union of soul and body. This union is no longer mystery, but non-sense."[38] Pidoux saw this outlook as leading along a slippery slope towards a kind of superstition, and thus, "one must not forget to invoke, along with all

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[34] Ibid., 194-5. Emphasis mine.
[35] Ibid., 195. Emphasis mine.
[36] Ibid., 195-6.
[37] Pidoux, *Examen de l'animisme théocratique*, 6.
[38] Ibid.

these spirits, the magic and sorcery, the incantations and tricks which would be the only methods, the only reagents to have a rapport with this animistic physics and chemistry."[39]

Pidoux argued that this animism, what he calls "medical theocracy", tended to see the Christian influence on science in the same light as it saw the influence of the soul on the body: "It debases Christianity and materializes it by giving it a direct and immediate action on temporal things, as it debases the soul and materializes it by identifying it with the properties of organized matter."[40] This materializing of the soul was, ironically, a criticism that animists often leveled at the Montpelliérains. Pidoux also related this view of Christian doctrine and its supremacy over scientific ideas to a particular interpretation of history, a view that the source of the revival of civilization at the end of the Middle Ages was spiritual. Pidoux acknowledges the role of Christianity in civilization and even grants that it was a spur to the development of science, but to see science as having an actual, sacramental, spiritual source, well, as he says: "It is...not appropriate that the sciences be the natural product of the human spirit regenerated by Christianity."[41] Aristotelian and scholastic reasoning was fine in an era where nature seemed rife with mystery:

> But wanting to perpetuate it after the Renaissance when the explosion of discoveries of this fecund era came precisely from man full of the feeling of restored vitality who, leaving theology in its domain, rejected scholasticism to think for himself and become the master of nature, is an aberration with no excuse and deserves all the reprobation of spiritualism, even Christian spiritualism.[42]

Can science, Pidoux asks, be truly compared with theology, perfect from the beginning and never subject to criticism and reform? After all, the success of science in the Renaissance and early modern era embodied in the likes of Paracelsus and Descartes was the purification of ideas from the burdensome scholasticism of the Middle Ages. This view leads to a particular reading of the history of philosophy, wherein Pidoux contrasts

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[39] Ibid., 7. Pidoux is here clearly challenging animism as the persistent belief in "occult causes" in the classic alchemical sense. On the idea of "occult causes" see B. P. Copenhaver, "Natural Magic, Hermeticism, and Occultism in Early Modern Science," In *Reappraisals of the Scientific Revolution*, eds., David C. Lindberg and Robert S. Westman (Cambridge: Cambridge University Press, 1990), 261-301.

[40] Pidoux, *Examen de l'animisme théocratique*, 8.

[41] Ibid., 9.

[42] Ibid., 10.

Plato and Hippocrates as "living opposition to scholasticism" with the more scholastic and theocratic influences of Aristotle and Galen.[43] The power of Platonic idealism as a dynamic form existing as an undercurrent even in scholasticism is important to Pidoux: "Do theocrats not know that Platonism was the philosophy of St. Augustine, St. Bernard, St. Anselm, Descartes, Leibniz and Bossuet?" This Arcadian flow, Pidoux argues, needs to be undammed: "One would certainly be more useful to St. Thomas by *platonizing* him and even by giving him something of the Hippocratic, rather than *theocratizing* Hippocrates and Plato."[44] This is certainly a viewpoint with which later neo-Thomists would heartily agree.

Despite this nod to an element of idealism, Pidoux is clearly trying to demystify medicine, removing all the scholastic, theocratic and spiritual influences that have confused and clouded its philosophical landscape. And yet, he cannot but help address them, so fused are they with the various medical systems of the 19th century. Again, it is clear that it is in medicine where religious and spiritual ideas most liberally intermingle with scientific thought, and it is thus no wonder that Pidoux is struggling to create a particular de-spiritualized and naturalistic place for the medical paradigm.

For Pidoux, the greatest failing of theocracy is that, in the end, it masks a deep skepticism. Pessimistic about man and science, scholastic theology took refuge in absolute texts and aged authority, presenting it as dogma.[45] In contrast, the apparent dogma of Stahl's animism is cleverly juxtaposed with this scholasticism, and Pidoux sees in Stahl a more modern thrust, and an important response to Descartes: "Stahl was an animist, friend of a liberating animism, an entirely Cartesian and modern spirit." He thus emphasizes the optimistic tone of Stahl's thought and its positive influence on theories of medicine.[46] But he warns that when Stahl's critical medical system, or any medical system, becomes too conflated with religion and dogmatic theology, the result is disastrous, falling deeply into the realm of the esoteric and occult:

> But what would the medical practice of theocratic animism be like? Logically, it is superstition, the amulet, the miracle of suggestion. This would be the only way to avoid vulgar empiricism. The Arab doctor, another theocrat, gives his patients

[43] Ibid., 11.
[44] Ibid. Emphasis in original.
[45] Ibid.
[46] Ibid., 12.

> *tisanes* in which he marinates his prayer beads or verses of the Koran written on bits of porcelain. In the absence of miracles, theocratic animism could add to hydrogen peroxide any kind of mysterious beads it wishes. The occult will always be its domain.[47]

So, if this is not the appropriate direction for the development of medical theories, where does it lie? For Pidoux, the greatest challenge (and the most appropriate alternative) to "medical theocracy" is "Hippocratic vitalism," with its unique stance independent of modern idealist (and anti-idealist/materialist) philosophy: "Theocratic animism scorns philosophy; *modern hippocratism* ignores it."[48] This modern Hippocratic naturalism also considered and integrated all the recent developments in the life sciences – physiology, morphogenesis, histology, anatomy.

In elaborating on the subject of modern Hippocratism and its value as an alternative to conventional vitalism, Pidoux cites the address he gave the previous year (1853) to the faculty of medicine in Paris:

> I know there is another vitalism called Hippocratic. The public is persuaded that this false vitalism is the only one that can be taken from the works of Hippocrates. This is a very troubling prejudice. If it were true, Hippocrates would not be the father of medicine.
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> The principles of this Gothic vitalism are very simple. It consists of negating the organs by hating the organism; by taking the opposite direction from Broussais in everything. It blindly bypasses the reformer, but exterminates the leeches. It replaces one pathological myth with another, the movements of irritability with those those of the humors. It isn't inflammation that produces fever, it's fever that produces inflammation. But their strong point is the diasthesis. They'll give you a diasthesis for any morbid state in the world. Crises in resolution are indispensable to them to establish the power of nature, and they see them everywhere; illness, in its cause, is in their eyes nothing but a foreign body introduced by accident into an organism. In substance, that's about it. It is the surgery of Cos much more than his medicine. Medical constitutions are for them a question of the almanac, and if they admire Hippocrates it's rather like church caretakers admire St. Paul.
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> There is in the father of medicine a luminous truth whose idea is so natural that it shapes medical common sense. It's the great principle of medicative nature.[49]

Pidoux here clearly seeks to disassociate his Hippocratism from the darker view of a perennial diasthesis and the hereditarian view of natural causes. Rather, he emphasizes a healing and medicating power of nature as natural cause. This is clearly a place where the

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[47] Ibid.
[48] Ibid.

Parisians also split from Montpellier in their view of the neo-humoral. In this respect the 'Paris School' delved less deeply into the pool of social and anthropological explanations for disease than the Montpelliérains and relied more heavily on the conventions of traditional pathology. The Parisian 'constitutionalism' was also much more materialist in its orientation, and had little of the romantic sensibility to the 'souls' of peoples that was such an essential part of the Barthezian/Montpellier discourse. Pidoux is also pointing to a particular consciousness of the new emphasis on hereditary or endemic predisposing causes in the study of epidemics and disease transmission, a debate that struck to the very heart of the mid-century medical preoccupation with public health.[50]

This naturalistic, proto-environmentalist outlook was perfectly in keeping with Pidoux's philosophical and methodological inclinations but even further, it finds expression in his therapeutic expertise. Pidoux's specialty was diseases of the chest and lungs, particularly tuberculosis. In contrast to the increasing number of physicians who attributed this great 19th century killer exclusively to heredity and the diasthesis, Pidoux also focused on social and environmental causes, and further showed a great interest in the use of 'soft' therapies, like water-cure (hydrotherapy), in the prevention and treatment of diseases of the chest.[51] Nothing could be more in keeping with Hippocratic natural healing principles than hydrotherapy, and it is not surprising that this therapeutic approach witnessed a boom in theoretical support in the mid-19th century around the same time as the Parisian neo-Hippocratic revival reached its apex.

Seen from the overarching perspective of the larger Parisian medical scene, Pidoux is an enigma. He is an eclectic, a medical philosopher, a vitalist, a neo-Hippocratic, and a hydrotherapist – in many ways an "alternative" medical practitioner of

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[49] Ibid., 15.

[50] In this respect Pidoux would seem to be confirming Hamlin's argument that the central issue in public health was predisposing causes, and not the contagionism and anti-contagionism schism popularized in the historiography by Ackerknecht. See Christopher Hamlin, "Predisposing Causes and Public Health in Nineteenth-Century Medical Thought," *Social History of Medicine* 5 (1992): 43-70 and Erwin H. Ackerknecht, "Anticontagionism Between 1821-1867," *Bulletin of the History of Medicine* 28 (1948): 562-93.

[51] See Hermann Pidoux, *Etudes générales et pratiques sur la phthisie* (Paris: Asselin, 1873) and Pidoux, *Aperçu sur les cures préventives des maladies de poitrine par les eaux minérals d'Eaux-Bonne* (Paris: Quimper, 1877). On the debate regarding the "scientific" legitimacy of water-cures see George Weisz, "Water Cures and Science: The French Academy of Medicine and Mineral Water in the 19th Century," *Bulletin of the History of Medicine* 64 (1990): 393-416.

sorts. And yet he is also a respected member of the mid-century Parisian medical elite and most certainly not subject to the same kind of censure than many mesmerists and would be spirit healers suffered at the same time. As a matter of fact, Pidoux made it his mission to challenge those "theocrats" who persisted in bilking the sick with enchanted medallions and parlor tricks. This is perhaps the best way to understand his resistance to elements of animism. His was a view of vitalism that tried valiantly to attach itself to the rigorous empirical skepticism of mainstream medicine while offering a holistic alternative to the general wave of organic reductionism so characteristic of the Paris clinic.

*Hippocratism, Vitalism and Public Health*

In terms of its Hippocratic, environmentalist roots in such works as *On Airs, Waters and Places*, it is not difficult to see how vitalism applied to the struggles between contagionists and anticontagionists in France. A certain type of "environmental" vitalism, or at the very least the omnipresent *miasmas* derived from the ancient Hippocratic notion of healthy and unhealthy places, undoubtedly had a role to play in the debate raging over the cause of epidemic disease in the mid-century period.[52] The very notion of causality and the difficulty of understanding it in medical terms was also something vitalist discourses had struggled with from their very beginning. In *The Death of Nature*, Carolyn Merchant traces the origins of an ecological position through the vitalist view. She writes of the transition from a pre-modern conception of nature infused with the vital, living spirit to a critique of the mechanization and rationalization of the natural world in the

[52] In her thesis, Roselyn Rey deals with this question and its connection to vitalism in the 18th century context. See Roselyn Rey, *Naissance et dévelopment du vitalisme en France de la deuxième moitié du 18e siècle à la fin du Premier Empire* (Oxford: Voltaire Foundation, 2000), 270-319. Ackerknecht, "Anticontagionism between 1821-1867," discusses the struggle between contagionists and anticontagionists, arguing that their discussions surrounded the issue of quarantine, and that anticontagionists discredited contagion theory largely in resistance to the rise of social medicine. More recently, it has been shown that this opposition between the two views is exaggerated, and at least in the French context, doctors were divided on a range of issues and questions regarding theory and practice. In fact, anticontagionists were seen as having a "more holistic" approach to epidemics than contagionists, who by focusing on individual transmission, "missed the forest for all the trees." See E. A. Heaman, "The Rise and Fall of Anticontagionism in France," *Canadian Bulletin of Medical History* 12 (1995): 3-25, 20.

early Enlightenment – where vitalism provides the core of a critical position. Merchant's argument that the dominant metaphor for nature becomes the machine in the time of Hobbes, Descartes and Newton, can be carried forward.[53]

How, then, does one situate vitalist thought in the context of mid-century debates about sanitation and public health, of cholera outbreaks and the Haussmannization of Paris under Napoleon III?

Historically, medicine can be divided into two expansive categories, the first rooted in the classical Greek and Roman traditions and essentially understood as contemplative, the second, brought about by early modern figures like Harvey and celebrated by Bacon and Descartes, which one could label operative.[54] While operative medicine enjoyed a rhetorical credibility by embracing the rational, empirical and experimental virtues of the Moderns, over time it had little practical success to recommend it over the naturalistic, neo-Hippocratic principles encapsulated in the simple principle of *primum non nocere*: "Above all do no harm."[55] This began to change in the early-19th century, as symbolized in France by figures like Magendie and eventually Bernard, not just physicians but experimental physiologists whose fame and reputation were built as much in the laboratory as in the clinic.

The theoretical model that eventually came to dominate was the histological; and cellular theory was a medical mantra from the mid-19th century on, but from this core consideration blossomed many subtle interpretive forms.[56] For Bernard, the *milieu intérieur* was where all the important activity was taking place.[57] To him, the infectious were agents of fermentation that altered the internal, cellular environment.[58] This view of

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[53] Carolyn Merchant, *The Death of Nature: Women, Ecology and the Scientific Revolution* (New York: Harper and Row, 1980).
[54] Georges Canguilhem, *Ideology and Rationality in the History of the Life Sciences* (Cambridge, Mass.: M.I.T. Press, 1988), 52.
[55] Ibid., 53.
[56] The idea of protoplasm, for example, seemed a triumph for mechanism. For arguments surrounding protoplasmic theory as a materialistic antidote to vitalist explanations in Britain, see Gerald L. Geison, "The Protoplasmic Theory of Life and the Vitalist-Mechanist Debate," *Isis* 60 (1969): 273-92.
[57] See Frederic L. Holmes, "Claude Bernard, the *Milieu Intérieur*, and Regulatory Physiology," *Journal of the History and Philosophy of the Life Sciences* 8 (1986), 3-25 and Mark D. Sullivan, "Reconsidering the Wisdom of the Body: An Epistomological Critique of Claude Bernard's Concept of the Internal Environment," *Journal of Medicine and Philosophy* 15 (1990), 493-514.
[58] Canguilhem, *Ideology and Rationality*, 62.

disease made it hard to fully accept some aspects of the cellular and germ theories, and Bernard differed with Virchow, for example, on what the source of a pathogen was.

It is difficult to say which way vitalists leaned in the debates about public health and the source of disease that raged through the mid-century. On one hand, a view of health that saw problems in the urban *milieu*, like the lack of sewers, cramped quarters and the general proliferation of filth, as sources of disease, would seem allied to the vitalist paradigm, particularly in its neo-Hippocratic guise. On the other hand, vitalists placed great faith in the natural capacity for healing and the resistance to disease, and consequently would not necessarily always see the need for aggressive social intervention. Bernard, for example, tended to downplay external vectors of disease and argued that viruses were produced under the influence of the nervous system, even suggesting that there were cases of spontaneous manifestation.[59] By placing such primacy on the interior, the physiological-based vision of Bernard and others tended to ignore external factors and paid little attention to the work of Pasteur, whom Bernard accused of wanting to "direct the course of nature." As Canguilhem notes, Bernard overlooked Pasteur's ideas, "for the simple reason that he was pursuing his own, namely, the idea that disease never introduced functional innovations."[60] But there is definitely a distinction to be made here between the Montpellier and Paris styles. In sum, the classical, Montpellier vitalist view remained contemplative in an era where medicine and public health were increasingly compelled to take an operative stance. In contrast, the Hippocratic vitalism espoused by the Paris School was more circumspect in this regard; though they were certainly more willing than most vitalists to accept the idea of disease specificity.

The most important point to be made here concerns the relationship between vitalism and the logistics of state-sanctioned medicine. In general there was less to be found in the Montpellier paradigm as regards large-scale, operative medical initiatives, and this partly explains why it fades from the scene. The Parisians, in contrast,

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[59] Ibid., 64.

[60] Ibid., 63. Bernard was not alone as one who held this position. Sigismond Jaccoud, a student of François Malgaigne, was also resistant to aspects of the germ theory because of his devotion to vitalism. See George Weisz, *The Medical Mandarins: The French Academy of Medicine in the Nineteenth and Early Twentieth Centuries* (Oxford: Oxford University Press, 1995), 203.

interpreted "vitalism" in a very different light, one that gave them the tools to make practical proscriptives in contrast to the Montpellier School, which remained distant, aloof, critical and even somewhat skeptical of the medical endeavor.

*Pidoux and Medical Philosophy*

Pidoux felt it was essential at that particular moment in the 1850s, when the materialist-spiritualist controversy was reaching a fevered pitch, to clearly distinguish between positions increasingly at odds. Thus he wrote his work, *Examen de l'animisme théocratique*, for what he claimed were two reasons:

> ...first, with the goal of rejecting the errors which dishonor spiritualism and vitalism and the Hippocratic doctrine; secondly, because spiritualist, vitalist and admirer of the doctrine of the father of medicine myself, it was important to me to disengage my principles from the deplorable ideas recently proposed and debated under the guise of the most serious labels.[61]

For Pidoux, ideology was a strong force, but science and medicine were stronger. There were few things that stood above the powerfully important findings of modern science: "After philosophy or self-knowledge and the knowledge of God, nothing is above physiology. After morality and politics, there is nothing above medicine."[62] Pidoux argued that the problem with modern medicine was twofold. On one side was the physiological vitalist approach that saw all disease as the combined result of external causes and internal effects. On the other, was the classical nosological view that broke the link between the physiological and the pathological, and saw all diseases as unique "types", rather than, in some cases, as alterations in conventional living function; "Physiologism which sees nothing in illness but accidental changes whose causes are external, and nosologism which, in contrast, breaks all ties between physiology and pathology, proposes a fourth kingdom of nature and fills it with our illnesses."[63] In this critique, Pidoux likely had in mind the claims of Broussais in his *Examen des doctrines médicales et des systèmes de nosologie*, which made the most extensive case for the

[61] Pidoux, *Examen de l'animisme théocratique*, 16.
[62] Ibid.
[63] Ibid., 17.

"ontological" description of disease entities.[64] Pidoux is here again trying to find a middle ground between the dynamic physiological view where all disease is a process of stimulus, response and reciprocity, and the inert nosological view where all disease is a specific type with specific outcomes, regardless of any differences in the character and constitution of the patient.

Despite his fierce resistance to "medical theocracy", Pidoux was an advocate of a certain spiritualism – not the spitualism of the animists, but the philosophical *spiritualisme* of the mid-19th century French academy. This, at least, is the claim he makes in *De la Nécissité du spiritualisme pour régénérer les sciences médicales* (1857), a text which also features an exposition of the contrasts between the philosophies of Bacon and Descartes.[65] Pidoux is actually quite critical of the thinking of Bacon, the favored philosophical son of the Montpellier school, who he sees as having replaced philosophy with a limited empiric physical science: "Bacon denies self-knowledge and replaces philosophy with the physical sciences – studying spirit only by its phenomena, he can't go beyond phenomena in the study of natural beings."[66] Bacon, Pidoux suggests, gave shape to the observational method, but also rendered it somewhat superficial and philosophically barren."[67]

Historically, it was Descartes who Pidoux sees as having purged animism from the physical sciences, specifically astronomy and cosmology, a task far easier than removing the same invocation from the understanding of life: "Descartes was able to banish animism from astronomy and mathematical physics – easy work compared to that of purging the science of life in organized beings from this error!"[68] Animism, in its classical guise, Pidoux argues, prompted both the physico-chemical and the vitalist

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[64] F.J.V. Broussais, *Examen des doctrine médicales et des système de nosologie, 2 Vols.* (Paris: Ménignon-Marvis, 1821). Ironically, in an article on medical philosophy in France, J.F. Braunstein criticizes Broussais and the entire Paris School for condemning all philosophy as "ontologism," and relegating all medical thought to the exigencies of science and physiology. See J.F. Braunstein, "L'école française de philosophie de la medecine," *Revue des sciences philosophiques et théologiques* 74 (1990): 35-44.

[65] Hermann Pidoux, *De la Nécissité du spiritualisme pour régénérer les sciences médicales. Descartes et Bacon* (Paris: Félix Malteste, 1857).

[66] Ibid., 38.

[67] Ibid., 41.

[68] Pidoux, *Examen de l'animisme théocratique*, 17.

response, depending on the nature of the tradition – experimentalist or rationalist – that one ascribed to:

> I have often demonstrated that this error, animism or pneumatism, forced physical or chemical medicine into schools that experiment more than they think and an ontological vitalism into schools that reason more than they observe, where causes are studied more than effects.[69]

Pidoux's particular response to this conundrum was to fall back on the old physician's empiric logic that theory must proceed from the necessities of practice, that prognosis must triumph and at the same time elevate diagnosis.

Pidoux's Hippocratic naturalism was a fairly close analog to the skeptical materialism of the late 18th century, with its associated critique of theological truths, but unlike the *philosophes* he did not replace one dogma with another, turning theologism on its head through rationalism.[70] Whether the vital force belongs to the body or the soul, Pidoux argues, does not really matter to modern Hippocratism, and changes little. "Medicine must profess absolute skepticism for anything beyond the reach of the senses."[71] Unfortunately, with the likes of Frédéric Bérard in Montpellier, a situation existed, Pidoux says, where "Catholicism is a fact, like the vital force, or fever, or diasthesis, or sickness or symptoms, etc..."[72]

Despite his pragmatic approach to the ancient wisdoms of Hippocrates, however, Pidoux was ever aware of the essential tension between observation and reflection, and the problem of a science without any substantial philosophical underpinnings. He saw the modern clinic as a new ideal, but warned against becoming totally inured to reflection and thought. "This reform and progress must come from a clinic emancipated by sensualist philosophy," he says, and "everywhere one observes, experiments, and expounds, but nowhere does one think." He concludes with something of a nostalgic tone: "This absence of thought in the sciences is the dominant fact of the century."[73]

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[69] Ibid., 18.
[70] On rationalism as a replacement for religion see Isaiah Berlin, *The Roots of Romanticism, The A.W. Mellon Lectures in the Fine Arts, The National Gallery of Art, Washington, D.C. Bollingen Series xxxv:45* ed., Henry Hardy (Princeton: Princeton University Press, 2001 [1965]), 46-47.
[71] Pidoux, *Examen de l'animisme théocratique*, 14.
[72] Ibid, 12.
[73] Ibid., 20.

It is clear in Pidoux's comment that there is more of the 18th century natural philosopher in his thought than the increasingly simplified, unreflective stance of the 19th century laboratory scientist. A certain 'high' philosophy was anathema to Pidoux, who is profoundly critical of the theologies, animisms and idealisms of the pure thinker. And yet he is at the same time intimately aware that medicine needs some philosophical scaffolding and framework. For Pidoux, most of this was to be found in his own brand of naturalistic, Hippocratic vitalism. In the section to follow, we find another Parisian medical thinker espousing a rather different set of ideas that he, nonetheless, still clearly demarcated as vitalism.

*Medical Philosophy and the Vital Force*

A different sense of the intertwined relationship between medical philosophy and vitalism comes through the *oeuvre* of one of the foremost French medical philosophers of the mid-19th century, Théophile-Charles-Emmanuel-Édouard Auber (1804-1873). Auber's first major text, *Coup d'oeil sur la médecine* (1835), was a treatment of medicine with a particular consideration of its role from a philosophical point of view.[74] This was followed a few years later by the *Traité de philosophie médicale* (1839), a comprehensive study of the origins and principles of medical philosophy in its own right.[75] By the mid-1850s, Auber's thinking had matured, and so had the debates in French medical circles over theories, systems and philosophies, and so we see a serious attempt to understand the philosophical difference between the Montpellier and Paris schools of vitalism and

[74] Théophile-Charles-Emmanuel-Édouard Auber, *Coup d'oeil sur la médecine, envisagée sous le point de vue philosophique* (Paris: Lacouvey, 1835). This relationship between philosophy and medicine can be seen in the work of another thinker, Louis-Auguste Gruyer, who over the space of two decades discussed everything from theories of movement, to vitalism, to Cartesian metaphysics. See Louis-Auguste Gruyer, *Dissertation sur le mouvement* (Paris: Lugan, 1825); *Métaphysique de Descartes* (Brussels: Méline et Cans, 1838); *De la Liberté physique et morale* (Brussels: Méline et Cans, 1839); *Des Causes conditionnelles et production des idées, ou de l'enchaînement naturel des propriétés et des phénomènes de l'âme* (Paris: Ladrange, 1844); *Principe de philosophie physique pour servir de base à la métaphysique de la nature et à la physique experimentale* (Paris: Ladrange, 1845); *Du Spiritualisme au XIXeme siècle, ou Examen de la doctrine de Maine de Biran* (Brussels: M. Hayez, n.d); *Coup d'oeil sur le vitalisme* (N.p., n.d).

[75] Théophile-Charles-Emmanuel-Édouard Auber, *Traité de philosophie médicale, ou Expositions des vérités générales et fondamentales de la médecine* (Paris: Germer Baillière, 1839).

organicism.[76] The vitalism-organicism debates marked a significant interest in vitalist themes, and beyond Auber, one sees the publication of other vitalist texts, like Sigismond Jaccoud's *De l'humorisme ancien et moderne* (1859) and a re-edition of Barthez' *Nouveaux elements de la science de l'homme.*[77] Finally, in the late 1850s, Auber himself also devoted a significant number of pages to examining the subtleties of Hippocratic medicine and its relationship to vitalism, before finally summarizing his thoughts on medical philosophy in a popular and general publication in the mid-1860s.[78]

In 1852, Auber wrote a defense of vitalism in the animist-oriented *Revue médicale française et étrangère.* His essay, entitled "Considérations pratiques sur la force vitale," began by expressing a concern that medicine was being subsumed under what he called "*connaissances accessoires.*" For Auber, the notion of a "vital force" represented the essence of medicine, to be overlaid as a critical matrix in response to any new idea in the medical domain:

> At a time when certain minds, turned away from true philosophy by the lure of ancillary knowledge, got as far as wanting to elevate *anatomism* to the level of a healing doctrine, at the risk of humiliating medical reason which will always rise up against such odd ideas, it seemed to us opportune to return to a question that dominates all of medicine and contains the germ of other scientific truths; that is the question of Vital Force, which is the expression of the primary and fundamental fact of medicine, and which, by being so, must always be invoked whenever ideas, discoveries and new trends are submitted to the rigorous controls of philosophy.[79]

Like many other theorists who discussed the "vital force," Auber saw it as inextricably embedded in the dynamic movements of the living. To have some understanding of its

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[76] Théophile-Charles-Emmanuel-Édouard Auber, *Philosophie médicale. Esprit du vitalisme et de l'organisme, ou Examen critique des doctrines médicales des école de Paris et de Montpellier* (Paris: Germer Baillière, 1855).

[77] La Berge, "The Rhetoric of Hippocrates," 193-4. There were a series of debates between the vitalist and organicist camps in the 1850s, including one on medical nomenclature in 1855, and another in 1858 prompted by the re-edition of Barthez. For the initial debate see *Bulletin de l'Academie de Médecine* 20 (1856): 549-906.

[78] See Théophile-Charles-Emmanuel-Édouard Auber, *De la fièvre puerpérale devant l'Académie impériale de médecine de Paris, et des principes du vitalisme hippocratique appliqués à la solution de cette question* (Paris: Germer Baillière, 1858); T.C.E. Auber, *Institutions d'Hippocrate, ou Exposé philosophique des principes traditionnels de la médecine, oeuvre d'analyse et de synthèse...suivie d'un résumé historique du naturalisme, du vitalisme, et de l'organicisme et d'un essai sur la constitutions de la médecine* (Paris: Germer Baillière, 1864); T.C.E. Auber, *Philosophie de la médecine* (Paris, 1865).

nature, one had to be, above all, aware of the great variety and multiplicity of its manifestations, and yet also somehow see beyond these specific appearances to its general essence:

> ...to get an accurate understanding of the vital force, one must not be content with the mere results of thinking, but must study in all their multiplicity the phenomena that reveal it, envision it and pursue it in its diverse evolutions, the organization of which is admirable theatre; one must finally know how to separate it by one's own reasoning from all the variety of vital acts it engenders and the combinations that it ensures.[80]

This task, he argued, was already helped along by Hippocrates through his formulation of the idea of *nature*, representing as it did the cause of life, mysterious in its essence, that was at once both the beginning and the end of all the phenomena produced by organization.[81] This was an understanding of the word 'nature' that also carried with it a host of differentiated meanings and contexts.

This prevalent notion of organization, like the associated notions of movement and dynamism, recurs again and again in the vitalist discourse, for it is the seeming order and purpose of living things, their very structure, which leads so many to invoke the idea of vitalism at all. While this idea had many names, Auber sees that they were all invariably derived from the same root concept:

> So, to get right to the point, without preamble, without useless commentary, we will re-state along with the greatest observers, a unique living force...which had been designated...by these other names, *archée*, *âme*, *principe vital*, force which, seen especially in animals and humans, specifically constitutes this plastic property which gives to matter the ability to organize itself and live, and which, in this relationship, consequently contains all the actions which later become the result of this organization.[82]

Auber's vital force was not just idle philosophical musing, however, but also had a pragmatic and central role in his understanding of medicine:

> ...we can finally arrive at the recognition of this fundamental truth, the most important of all in medicine, that is, that the Vital Force is at the same time

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[79] Édouard Auber, "Considérations pratiques sur la force vitale," *Revue médicale française et étrangère* (1852), 449. Emphasis mine.
[80] Ibid., 450. Emphasis in original. This idea of a vital force embodied in unending "multiplicities" presages the philosophy of Gilles Deleuze. See John Marks, *Gilles Deleuze: Vitalism and Multiplicity* (London: Pluto Press, 1998).
[81] Auber, "Considérations pratiques sur la force vitale," 450.
[82] Ibid., 451.

> *formative, proactive and medicating*, which must be noted in the study which has the science of man as objective, and the conservation of health as end result.[83]

For Auber the most intriguing element of this triad was the medical and medicating aspect of the vital force, described as a dynamic, self-regulating function too often unappreciated in practice, which ironically, therapeutics often works against rather than with:

> Vital Force is essentially medicating; at the core of even the most violent functional disturbances or tumult of its parts, it is the thing which, by its often immutable processes and combinations, ends up re-establishing equilibrium by giving the healthy organs the energy and industry necessary to restore a normal state; by expelling, neutralizing or destroying the cause of illness, or by calming the disorder which has been caused in the organism, and by, finally, repairing the losses that are the result of its own actions, or, which is still common, the unfortunate results of the art.[84]

This necessity to appreciate the unique "medicating" nature of the vital force as a key element in the gentler aspect of the medical art is, for Auber, a reflection of his belief in a particular quality of medical understanding. This idea of a medicating nature is found in all the vitalisms, Montpelliérain and Parisian, and is founded through practice in a deep skepticism about aggressive, often unproven therapies. Given the nature of therapeutics through most of the early 19th century, this point of view could certainly be seen to carry the patina of wisdom.

Auber also sees the vital force as medicine's insistence on the necessity for all the sciences to possess a unique formula for understanding theoretical thought, which he finds in the word *attraction* in physics and *affinity* in chemistry. It is in this fundamental manner that he defends the notion of a vital force against those who perceive it as a grand, "romantic" delusion:

> Therefore, the admission of a Vital Force is not, as the critics would have it, the dream of a poetic or diseased imagination, but is the moral prescription of a sound philosophy imposed by genius, like a fundamental condition, for all those who want to penetrate the sanctuary of medicine.[85]

Auber turns to history to justify this fundamental concept, saying that "in effect," if one "attentively examines the different systems one will see that the *enormon* of Hippocrates,

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[83] Ibid. Emphasis mine.
[84] Ibid., 453.
[85] Ibid., 454-5.

the faculties of Aristotle, the *pneuma* of the Athenaeum, the *archeus* of Van Helmont, the soul of Stahl, the vital principle of Barthez and the all the modern organic forces only truly reveal the same principle...of life considered diversely."[86] This quote is noteworthy for both its historical and quasi-spiritual tone, quite in contrast to the emergence of a stark, neutral positivism in medicine and science. Like so many false religions doctrinally distinct and dogmatically at odds with each other, these ideas still point, when taken together, at a deeper, underlying truth:

> ...in reality it allows us to compare, within this relationship, numerous medical systems, for which these ideas have served as texts, to false religions, so apparently different, but which in the final analysis are very close, even confusing one for the other, in the sense that under different attributes, different symbols, and with different rituals, all had as their objective the expression and affirmation of the existence of God, to promote and make appealing the cult of a supreme being.[87]

The belief in a "vital force" is thus seen as foundational to all of medicine in the same way that a Supreme Being is foundational to all religious thought. In his final, somewhat visionary conclusion, Auber argues that the insistence on a vital force is a necessary invocation to prevent medicine from degrading into little more than an aggressively experimental science, losing sight of its fundamentally unique character:

> Nevertheless, though we consider the expression of Vital Force as, among all others, the one which best describes the faculty of the life principle exhibited in all organized beings, we would willingly sacrifice that formula to our adversaries provided that they agree to recognize the primordial and fundamental fact it expresses; but on that condition only, knowing that without that reservation medicine would develop into an experimental science, violently and irreversably tearing away its fundamental, generative principle.[88]

Obviously, medicine for Auber could not just be the study and examination of living bodies, for this knowledge must ultimately be used both to help heal the sick and to encourage the continuation of life in all its manifestations.

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[86] Ibid., 455.
[87] Ibid.
[88] Ibid.

*The Paris Clinic: Pathology as Paradigm*

The development of the clinical, Parisian approach to medicine was founded on two critical elements, the expansion and rationalization of the hospital, which widened the scope of research into the basic causes and manifestations of disease, and pathological-anatomy, the essential tool used to understand this new conception of disease. There was very little in this method that promised cures, and so there developed something of a disconnect between diagnosis, prognosis and therapeutics. In fact, therapeutic methods remained remarkably primitive throughout most of the 19th century.[89] While the path and progress of a given disease began to be properly understood and its course charted, eventually culminating in its final confirmation with the discovery of the appropriate lesions and growths on the dissection table, one can definitely argue that there was very little medicine or healing in all of this. It was really more a study of the natural history of disease, and the hospital provided an environment where, historically, disease was certainly very natural. These great hospital clinicians of the early 19th century were making, it must be admitted, great strides in the understanding of disease processes, but rarely was this accompanied by much success with treatment. Still, in developing an increasingly refined conception of disease specificity, they pushed a reductionist agenda at odds with the views of the vitalists.[90] A situation developed that many later medical

[89] In his classic article on 19th century therapeutics Charles Rosenberg see some progress, but most of it is limited to the last half of the century. See Charles Rosenberg, "The Therapeutic Revolution," *Perspectives in Biology and Medicine* 20 (1977): 485-506.

[90] Vitalists accepted disease specificity of a sort as well, but, as Roselyn Rey argues, saw it in a very different social and holistic light: "The specificity of disease for vitalists should not be looked for in the traditional definition of a morbid state opposed to nature, which is able by its healing forces to win, but rather in the idea of a natural process (there is a physiology of disease) which society is completely involved in. In so far as the individual is a social being who needs society and social emulation for his health and happiness, his relations with society are the touchstone of medicine, not only for moral diseases, but for any kind of disease. Thus, we could speak of a double shift; from the body as a machine towards an organism where all the parts are sensible and in mutual dependence; from a problematic of a mere struggle between two opposing categories – living body versus environment – towards a problematic of management of relations which may include both exchanges and conflicts. This view leads to a dialectic of inside and outside. Medicine, then, is a political problem, a problem of self government by a person who is able to choose his way of life and, to some extent, his kind of disease. By this, I do not mean this transferral of responsibility is no more than the old religious idea that disease is a punishment for some sin, but on the contrary, that each individual, responsible for his life, may have the diseases

historians would label as "therapeutic nihilism."[91] In a medical environment such as this, vitalism, with its focus on the essential dynamic of life and the preservation of this circumstance, represented a very important philosophical challenge to medicine as it was practiced in the most widespread context in the Parisian hospitals.

And yet, at the same time as it challenged the materialist's rather fatalistic conceptions of medicine as a healing art, the Hippocratic vitalism of the 'Paris School' also eclipsed the Montpellier approach and robbed it of its ideological furor and, for lack of a better word, vitality. In the end, this only proved to be the thin edge of a wedge, and the spirited naturalism of the Parisian vitalists would be eclipsed in the general move towards strictly pragmatic, reductive and materialist medical models.

There are, of course, also important political dimensions to the question of the marginalization of the Montpellier school and elements of the vitalist doctrines. Much of the aspect of the transfer of authority to Paris had little to do with the inherent supremacy of the pathological-anatomy and clinical models in healing, and a lot to do with the establishment of *la médecine officielle* in France by the mid-century. In his panoramic essay on "Alternative Medicine in Modern France," Matthew Ramsey describes *la médecine officielle* as "the medicine of [...] science and the government."[92] "Science" is a difficult word in the context of mid-century medicine but what clearly emerges, as the century progresses, is the reality that it is the association of medical knowledge and theory with the prescriptive of the laboratory and the emerging experimental model that proves critical.[93] No development is more emblematic in this respect than bacteriology. In so far as the new "experimental" laboratory approach found intensive support from the government and private industry, particularly when one thinks of the development of a new, nascent chemistry and its associated industrial manifestations, the role of the state

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that he, or the society he lives in, deserves." Roselyn Rey, "Vitalism, Disease and Society," in Roy Porter, ed., *Medicine in the Enlightenment* (Atlanta: Rodopi, 1995), 274-288; 283-4.

[91] Rosenberg, "The Therapeutic Revolution." See also Ivan Waddington, "The Role of Hospitals in the Development of Modern Medicine," *Sociology* 7 (1973): 211-24.

[92] Matthew Ramsey, "Alternative Medicine in Modern France," *Medical History* 43 (1999): 286-322; 290.

[93] The introduction of experimentalism as the key to the transformation of biology from its 'natural history' paradigm is the argument William Coleman makes in the final chapter of *Biology in the Nineteenth Century*. See William Coleman, *Biology in the Nineteenth Century:*

and its powerful corporate auxiliaries is crucial and decisive.[94] Vitalist physicians, with their focus on passive observational methods and their belief in the Hippocratic conception of a healing nature, obviously fared poorly in this new applied scientific, mechanical and industrial enterprise. It is also difficult to argue that medical vitalism flourishes within the new paradigm of experimental biology, even if there are increasing manifestations of vitalism's general influence outside of medicine as the century wears on.

*Between Organicism and Animism: Chauffard's Vitalism*

The complexity of the 'Paris School' finds a fascinating expression in the writings of the most prominent vitalist of the mid-19th century, Paul-Émile Chauffard. Chauffard's *Lettres sur le Vitalisme* (1861) portrays the schism of medicine in the three philosophies of vitalism, animism and materialism. For Chauffard, vitalism is an intermediary position between the two radically "ontological" outlooks of animism and materialism. Vitalism, Chauffard argues, is an idea that is difficult to comprehend in its totality, but nonetheless grand and majestic in its sweep. Any true appreciation of its profundity and magnitude, he feels, requires (in a clear echo of Hippocrates) a patient and devoted contemplation of nature.[95] For Chauffard, then chief physician at the *hôpital d'Avignon* and later to become professor in Paris, vitalists are those "for whom life is a law." This vitalist view of life was further rooted in the dynamic notion of "continuous activity."[96] Chauffard's

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*Problems of Form, Function and Transformation* (Cambridge: Cambridge University Press, 1971 [1977]), especially chapter 7 on "The Experimental Ideal."

[94] In this context one can say that no "scientific research programmes," to use Lakatos' parlance, could be built around vitalism in the mid-19th century. This in stark contrast to histology, for example, and its association with the nascent German chemical industry. See Imre Lakatos, *The Methodology of Scientific Research Programmes: Philosophical Papers, Vol. 1*, John Worrall and Gregory Currie, eds. (Cambridge: Cambridge University Press, 1978). For a critique of the modern technoscientific endeavor see Lakatos' longtime correspondant and general *agent provacateur* in the philosophy of science, Paul Feyerabend. See Paul Feyerabend, *Against Method: Outline of an Anarchistic Theory of Knowledge* (London: New Left Books, 1975). The fascinating discussions between Lakatos and Feyarabend can be found in Imre Lakatos, *For and Against Method: Including Lakatos's Lectures on Scientific Method and the Lakatos-Feyerabend Correspondance*, ed. Matteo Motterlini (Chicago: University of Chicago Press, 1999).

[95] Chauffard, *Lettres sur le vitalisme*, 12-13.

[96] Ibid., 23.

approach is one which "studies and judges life outside of all arbitrary conceptions and hypotheses." Like the rest of the 'Paris School', it can also, he says, be called Hippocratism in honor of that great purveyor of the principle of nature. This Hippocratic outlook harmonizes with Chauffard's understanding of vitalism as a kind of passive and contemplative view of nature. Further, Chauffard argues, it is the only school faithful to the philosophy of causality and of observation, and to the truly experimental (by which he essentially means empirical) method.[97]

Chauffard's vitalism contained within it a uniquely dynamic, physiological conception of disease – one that, in stark contrast to the organicists, saw disease as intimately linked with and tied to putative 'normal' living function. Thus the state of disease was not clearly divisible from the state of health, but rather the two represented a constantly fluctuating and ever evolving series of states – an interrelated whole. Chauffard describes it as follows:

> We define disease this way: an abnormal reaction of the organism against a condition it is subjected to. It is the sum total of all that precedes: activity, medicative tendency, primary or secondary lesion, which our senses perceive or not, the lesion neither isolated nor passively supported, but associated with life, linked to reaction, cause or causative, and ultimately existing in all its real relationships with the vital activity surrounding it.[98]

Chauffard's view of the nature of disease here is a complex, dynamic, physiological and ultimately elusive thing, and we see the strength of his criticism of the inert nosological disease categories that existed in medicine before the isolation of individual *bacilli*. Conversely, this gives us a clue as to why his work in the early 1860s was one of the last manifestations of medical vitalism, since the effect of bacteriology on the idea of disease and medicine was profound.

As far as the 'Paris School' was concerned, Chauffard was its foremost vitalist. Brochin ably describes Chauffard's vitalism and its influence in what follows:

> Chauffard was, at the Paris School, the most committed and persevering representative of vitalism. His vitalism, having significant affinity with that of the Montpellier School, differed with it nonetheless on certain points. Studying and judging life outside of all arbitrary conceptions, hypotheses, and ontological givens, Chauffard began with the primary notion that there are in biology and pathology notions that impose themselves through evidence, principles from

[97] Ibid., 33.
[98] Ibid., 145-6.

> which consequences are naturally deduced. Such is this basic notion that life is a law, an ordered succession of acts having a goal, a finality. It is at this abstract level that Chauffard located his vitalism, from which he took all the elements of his doctrine of pathology, which clearly recalls traditional Hippocratic naturalism.[99]

This was the vitalism as Hippocratic naturalism that is essentially indivisible from the views that dominated the Parisian medico-philosophical world of the 1850s, the vitalism of Chauffard surely, but also the vitalism of Pidoux, of Auber, of an important number of the city's medical elite.

*Conclusion: The Delicate Balance of the 'Paris School'*

Both Chauffard and Pidoux, the main figures of this neo-Hippocratic 'Paris School', sat astride the animists and the organicists, seeking a kind of spirited naturalism that was nonetheless not idealist in its philosophy. Against the background of the larger philosophical debates and controversies that divided the materialists and spiritualists into enemy camps in the mid-19th century, these Hippocratic vitalists stood firm on a middle ground position that tried to encapsulated the unique and particular necessities of medical thought and practice.

Chauffard, for example, sees a problem with the animism view, defined by him as the insistence on the effect of an immaterial force on the material body. This is a view that makes life the result of the action of a "simple entity on the organized mass" and can be, in general, designated as systems of animism, whether this entity is called the rational soul, the sensitive or inferior soul, the *archée*, or the vital principle.[100]

He also, however, sees faults in the organicist's view for its completely denuded positivism:

> Among those physicians who avow their belief in organicism, some profess forgetting and seeing as useless all philosophical examinations and medical doctrines of life, and think that science must be reduced to plain observation of the pure appearances of phenomena.[101]

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[99] Brochin, "Vitalisme," 725-6.
[100] Chauffard, *Lettres sur le vitalisme*, 28.
[101] Ibid., 35.

Chauffard continues by saying that there are also those organicists who also make a principled claim about animism that they take as sufficient to profess a belief in vitalism. Neither of these views is satisfying to Chauffard, since they both fail to cut to the heart of the matter, to what he calls the "reasons and causes of phenomena."[102]

Chauffard's distinctions help us to narrow and define the nature of Hippocratic vitalism, for it is surely not just a profession of faith layered above a scientific mind. It is really a philosophical quest to understand living nature in all its diversity and complexity, beyond the simple appearances of phenomena and ultimately seek some insight into causality. In all these goals, as we shall see in Chapter Four, the 'Paris School' had close affinities with the epistemological outlook of Bernard.

There were a host of influences, from the growing role of the state in health and the debates involving the nature of public health to the development of a distinct medical philosophy and "thought-style", which gave rise to this unique mid-century Hippocratic revival. With the increasing success of the biological laboratory and the growing secular spirit of the late 1850s and early 1860s, spiritualist and vitalist claims faded from the mainstream of modern medicine. After 1865 these theoretical concerns would fade even further, as medicine grew by leaps and bounds under the influence of laboratory methods, specialization, the growth of surgery and the development of bacteriology. In this sense, thought about medicine's philosophical underpinnings in the 1840s and 1850s was closer to the ideas of Galen and Hippocrates than it was to Koch and Pasteur.

[102] Ibid.

## *Chapter 4*
## *Claude Bernard and An Introduction to the Study of Experimental Medicine: "Physical Vitalism," Dialectic and Epistemology*

In his lectures to students at Princeton in the late 1950s, Charles Coulston Gillispie, a pioneering historian of science, presented a vision of science as driven by the inquisitive individualist. It is perhaps no surprise that Gillispie was also the chief editor of the monumental biographical reference that still stands as a classic research tool in the history of science – the *Dictionary of Scientific Biography*.[1] This work is a testament to a historiographical "paradigm" of internalism now largely superceded by externalist and other eclectic approaches. According to Gillispie, the history of ideas was centered on individual "great men", the thoughts of a few brilliant lights, who bravely probed at the "edge of objectivity" in the quest to advance the collective scientific inquiry of humanity. For Gillispie, science was a decidedly progressive endeavor, and modern understanding was the final end point and central frame of reference for this claim. From his lectures and discussions with students came a book, first published in 1960 in the early, heady days of the DNA revolution, entitled *The Edge of Objectivity: An Essay in the History of Scientific Ideas*. In the chapter on "The History of Nature," Gillispie sees biology – despite being etymologically evocative of a "science of life" – as having "redirected (or betrayed) the impulse it took from *romantic idealism*."[2] With the arrival of the ideas of Darwin, and an understanding of their full ramifications, "biology is no longer partitioned off as the science of life. It is a science of nature, and the boundary between life and nature becomes one of narrowing ignorance rather than of principle."[3] In fact, Gillispie suggests, the science of nature becomes so all consuming that it, in a sense, encompasses nature itself:

> Quite generally, indeed, the historical movement of modern science has transferred the arena where unity reigns from nature into science itself, until in positivism the ancient assertion that there are no boundaries or jumps applies

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[1] Charles Coulston Gillispie, ed., *Dictionary of Scientific Biography, 18 Vols.* (New York: Scribner's, 1970-1990).
[2] Charles Coulston Gillispie, *The Edge of Objectivity: An Essay in the History of Scientific Ideas* (Princeton: Princeton University Press, 1960), 260. Emphasis mine.
[3] Ibid.

> rather to science than to the nature it objectifies, or alienates, or even (as romantics would say) annihilates.[4]

Gillispie here also anticipates emerging critiques of science as a totalistic framework for action and understanding.[5]

Of Claude Bernard (1813-1878), Gillispie had a few interesting observations. Seeing Bernard as the archetypal experimentalist, Gillispie argued that the questions of evolution and development were of precious little interest to him:

> Claude Bernard, perhaps the greatest of experimentalists in his skill and sobriety, saw the future of biology as lying in its reduction in physiology to laws of chemistry and physics. There was nothing for him in Darwin, whose work he did not distinguish from *Naturphilosophie*. "We must doubtless admire," he writes in his fine manifesto on *Experimental Medicine*, "those great horizons dimly seen by the genius of a Goethe, an Oken, a Carus, a Geoffroy Saint-Hilaire, a Darwin, in which a general conception shows us all living beings as the expression of types ceaselessly transformed in the evolution of organisms and species,-- types in which every living being individually disappears like a reflection of the whole to which it belongs." But he did not admire them. He never thought this science. In the critical tradition of French learning, Darwin's mind and language seemed simply slack.[6]

On the issue of debates regarding vitalism and mechanism in 19th century biology, Gillispie was even more circumspect, suggesting, with no small presentism, that "the real problem was to achieve biological objectivity rather than to choose between vitalism and mechanism, idealism and realism."[7]

This chapter will take these two assertions to task: Bernard's experimentalist role and the apparently fruitless debates between mechanism and vitalism. It will be argued that the portrayal of Bernard as a simple experimentalist is a broad characterization in need of important refinements. For one, Bernard was a pioneer in the epistemology of the

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[4] Ibid.

[5] In his general sociological description of the "world as laboratory" and more historical exploration of the "Pasteurization" of France, Bruno Latour shows us specific manifestations of these general ideas. See Bruno Latour and Steve Woolgar, *Laboratory Life: The Social Construction of Scientific Facts* (Los Angeles: Sage, 1979) and Bruno Latour, *The Pasteurization of France*, trans. Alan Sheridan and John Law (Cambridge, MA: Harvard University Press, 1988). The science and technology studies (STS) approach has generally been one of the loudest critical voices in the "science wars" chorus. Recent works have suggested a new synthesis in free and open debate. See Keith M. Ashman and Philip S. Baringer, eds., *After the Science Wars* (London: Routledge, 2001).

[6] Gillispie, *The Edge of Objectivity*, 320-21.

[7] Ibid., 322.

life sciences in much the same way as Newton pioneered in the epistemology of the physical sciences. Further, it will show that the schism between mechanism and vitalism is essential to any meaningful understanding of 19th century biology and medicine, thus placing it in the proper (admittedly historicist) context of philosophical and ideological debate and understanding. Ironically, this will be done using something of the internalist methodology that was so much a part of mid-20th century understanding of the history of science, in so far as it will largely focus on the relevance of a single scientist's thought, life and legacy.

While Claude Bernard's work has been seen as part of, if not ultimately symbolic of, the increasing use of scientific methods (i.e. experiment) in medicine in the second half of the 19th century, this heritage is not without its incongruities. Observers such as Georges Canguilhem[8] have noted the vitalistic tendencies in Bernard's thought, but this aspect of his work has mostly (though not completely) been ignored in favor of a more forward-looking, positivistic view that emphasizes experimentalism and reductionism.[9] In this respect, one of the most important elements of Bernard's thinking – not his enthusiasm for the value of experiment but his realization of its limits – has been stowed away in a dark closet, far from the lighted beacon of a progressive, linear conception of the history of scientific development in medicine.[10] It would also, however, be a mistake to suggest that this is, or was, the universal view, since there is also a clear line of historiography that investigates the divided lineage of Bernard's thought. Some histories, like that of Canguilhem, apply a deep epistemological sophistication and avoid falling into the positivist trap. As such, they will be emphasized and carefully considered. Delving into Bernard's *Experimental Medicine* will hopefully illuminate what is a nuanced and subtle discussion of the scientific process as it relates to living things, and

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[8] See Francois Delaporte, ed., *A Vital Rationalist: Selected Writings from Georges Canguilhem*, trans., Arthur Goldhammer (New York: Zone Books, 1994).

[9] Much of this will figure into my analysis. A rough introduction to this argument can be found in fn. 153 of Claude Bernard, *Cahier de Notes, 1850-1860*, ed. Mirko D. Grmek (Paris: Gallimard, 1965), 243-7.

[10] This idea of Bernard's experimental skepticism has been made explicit in only one instance that I can find. See Nils Roll-Hansen, "Critical Teleology: Immanuel Kant and Claude Bernard on the Limitations of Experimental Biology," *Journal of the History of Biology* 9 (1976): 59-91. For a recent example of the kind of positivist history of scientific medicine mentioned above see

discover in this work the dialectic of what Joseph Chiari has called "physical vitalism."[11] Other writings, such as *Leçons sur les propriétés des tissus vivants* (1866) and *Leçons sur les phénomènes de la vie communs aux animaux et aux végétaux* (1878), will also be briefly considered. This will be followed by an exploration of the various interpretations of Bernard's thinking about vitalism and an attempt to situate his thought in the history of the idea of vitalism, all placed within the larger context of a more general Bernardian historiography.

*Bernard's Methodology: Physiology and the Philosophy of Experimentalism*

At the heart of Bernard's ideas about medicine and biology is the profound influence of his background as a physiologist. For Bernard, "the subject of his investigations was physiology, in the broadest and in the most modern sense, physiology conceived as the predestined foundation of scientific medicine and as the most important part of biology."[12] Bernard had tremendous faith in the value of experimental science and a "deep feeling for law [of nature]," and thought that though "the conditions in which vital phenomena come to pass are infinitely many, complex and hard to grasp, assemble and master environmentally," they do not require the invocation of a "*quid divinium.*"[13] There is a cautious contradiction here, as he concedes to something unique and even perhaps mysterious about vital phenomena, but nonetheless feels there is a means to arrive at some understanding of their function and nature.

In *Experimental Medicine*, Bernard makes it clear that he wants to move beyond the strictures and structures that have confined medicine for centuries. He sees as the key to this objective the need to abandon "systems" and become more analytical. The lynchpin of this analytical approach is, of course, experiment. As the book begins, Bernard lays out his view of the basic elements of medicine, consisting of physiology,

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William Bynum, *Science and the Practice of Medicine in the Nineteenth Century* (Cambridge: Cambridge University Press, 1994).

[11] Joseph Chiari, "Vitalism and Contemporary Thought," in Frederick Burwick and Paul Douglass, eds., *The Crisis in Modernism: Bergson and the Vitalist Controversy* (Cambridge: Cambridge University Press, 1992), 248.

[12] Claude Bernard, *An Introduction to the Study of Experimental Medicine*, trans., H. C. Green (New York: Henry Schuman, 1949), vii.

pathology and therapeutics. He then quickly switches his focus back to the importance of experimentalism.

It has been noted that Bernard's desire to emphasize experimentalism in physiology was nothing less than an attempt to provide "disciplinary justification" for a field where he stood, at the time of the appearance of *Experimental Medicine*, as both lonely practitioner and central founder: experimental physiology. Still, it is argued in the very same discussion that there are intellectual concerns transcending this more functional and sociological explanation for the source of his ideas about experiment in medicine, and it is on this "higher plane" that the focus of this analysis will be placed.[14]

In an effort to clarify and characterize the experimental method, Bernard contrasts it with the observational method, which he sees as having dominated medical understanding for some length of time. Creating a distinction between observation and experiment, Bernard further reduces the approaches to a passive and active interaction with nature, and, in the case of medicine, to some degree between acting and not acting on the body. He also wants to show how the two methods are related. It is this view that leads Bernard to conclude that there is no real difference between the pathological (an understanding of which is derived from observational sciences like anatomy) and the physiological (where Bernard sees experiment as essential to comprehension) and that they are both subject to a universal scientific approach. But here again there is a contingency allowing for the uniqueness of vital phenomena: "physiological and pathological states are ruled by the same forces; they differ only because of the special conditions under which the vital laws manifest themselves."[15]

Bernard realizes pure empiricism is impossible, and that experiment cannot exist in a complete theoretical vacuum, devoid of initial assumptions. Thus, for him, anticipation and preconception always precede experience. It is experiment, however, which transforms *a priori* conception into *a posteriori* interpretation. Moreover, in what can only be characterized as a Comtean conception of intellectual development, he sees the clear and successive evolution of the human mind moving through three stages;

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[13] Ibid., xiv.
[14] William Coleman, "The Cognitive Basis of the Discipline: Claude Bernard on Physiology," *Isis* 76 (1985): 49-70.
[15] Bernard, *Experimental Medicine*, 10.

*feeling, reason, experiment.* At a basic level, man was guided by feeling, and intuition was the most powerful framework for understanding. From this one moves to pure reason, or the deductive method, and then to experiment, which is essentially inductive. Experiment is not pure induction, however, and is compared with getting to the root of human behavior, rather than judging from outward appearances. For Bernard, experiment is the mediator between the objective and the subjective. At its core is a cautious and interrogatory attitude towards appearances, and, as he says, "the great experimental principle...is doubt."[16] This is not a skeptical position in Bernard's mind because of the certainty the experimenter has in his method and its reliability. To Bernard, the great difference between the skeptic and the doubter (i.e. experimentalist) is a belief on the part of the latter in the determinism of phenomena, and by extension, in the validity of the experimental method as a means to manipulate (and, in some way, hopefully understand) these phenomena.

In this sense, Bernard is not unlike the alchemists of the early modern period. Using instruments – alembics, tubes, pipes and vials – in their search for the Philosopher's Stone did not make them instrumentalists. Similarly, Bernard's experiments do not make him an experimentalist. As this investigation will show, Bernard's "philosophical physiology" is distinct (and distinguishable) from the nascent pragmatic and instrumental philosophies of his time.

*Is Life a Repeatable Experiment?*

While experimentalism stands as the central tenet of Bernard's scientific approach, he nonetheless realizes that the scientific study of living beings involves a complex and difficult subject that constantly challenges the deterministic ideal. On one level, this is due to the unpredictability inherent in the living, which is cited as a limit to the experimental approach. As he says: "the spontaneity enjoyed by beings endowed with life has been one of the principal objections urged against the use of experimentation in

[16] Ibid., 37.

biological studies."[17] To some extent, Bernard agrees with this essentially vitalistic position, particularly as it applies to more complex organisms:

> Every living being indeed appears to us provided with a kind of inner force, which presides over manifestations of life more and more independent of general cosmic influence in proportion as the being rises higher in the scale of organization. In the higher animals and in man, this vital force seems to result in withdrawing the living being from general physico-chemical influences and thus making the experimental approach very difficult.[18]

In contrast to this seeming indeterminism are inorganic bodies, which are devoid of spontaneity and completely understandable in physico-chemical terms. Thus, they are easily subject to experiment.

In conceding the difficulties involved in arriving at an experimental approach to living things, Bernard makes particular note of the problem of the complex interrelated whole, noting that "the phenomena of a living body are in such reciprocal harmony one with another that it seems impossible to separate any part without at once disturbing the whole organism."[19] Bernard quotes the work of Baron Georges Dagobert Cuvier (1769-1832) to express this thorny and largely irresolvable conundrum:

> All parts of a living body are interrelated; they can act only in so far as they act all together; trying to separate one from the whole means transferring it to the realm of dead substances; it means entirely changing its essence.[20]

This reminds one of the clear distinctions Bichat made between living and non-living tissues, a position that undoubtedly still cast a shadow over the science of physiology even in Bernard's time.[21]

In spite of the power of these ideas regarding experimental limits, we see in Bernard a desire to somehow transcend theory, or at the very least not be influenced by preexisting theoretical constructs. He applied this principle as thoroughly to the material as to the spiritual; "for physiological experimenters, neither spiritualism nor materialism

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[17] Ibid., 59.
[18] Ibid.
[19] Ibid.
[20] Ibid., 60.
[21] See Geoffrey Sutton, "The Physical and Chemical Path to Vitalism: Xavier Bichat's *Physiological Researches on Life and Death*," *Bulletin of Medical History* 58 (1984): 53-71.

can exist."[22] In this section of *Experimental Medicine*, it is clear that Bernard wants to unburden his experiments from larger conceptual concerns, and move beyond the systemic thinking that he believes has stifled the progress of physiological understanding. His ultimately empirical position at this point leads to some startling statements, like "the words, life, death, health, disease, have no objective reality."[23]

In taking this almost anti-theoretical position on science as the "determinate and the determinable," Bernard is not denying that there is some relevance to the vital force, but he is saying that in scientific terms it is fundamentally unknowable: "what we call vital force is a first cause analogous to all other first causes, in this sense, that it is utterly unknown." What was particularly irritating to Bernard was that vitalism in its traditional formulation had been the stimulus for what he saw as some very wrongheaded ideas, many rooted in the notion that there was no meaningful relationship between the study of living and non-living matter. This leads to a situation where one is prone to "look on life as a mysterious supernatural influence which acts arbitrarily by freeing itself wholly from determinism," and "brand as materialists all who attempt to reconcile vital phenomena with definite organic and physico-chemical conditions."[24]

Bernard realized that these ideas were deeply rooted in medicine, and he saw them as a kind of "medical superstition." The general belief in "occult causes," whether vitalism or something else, led to a "belief in an inborn, indefinable science."[25] These notions would only be eradicated by the forward progress of science and the acceptance of determinism, which, in an ironic twist on the conventional positivist stance, would reveal how much we still did not fully understand, and thus, returning to a progressive conception, inspire further investigation and the growth of knowledge:

> Confidence in absolute determinism in the phenomena of life leads, on the contrary, to real science, and gives the modesty which comes from the

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[22] Ibid., 66. This position and Bernard's struggle with its implications is discussed in Frederick L. Holmes, "Claude Bernard and the Vitalism of His Time," In *Vitalisms from Haller to the Cell Theory: Proceedings of the Zaragoza Symposium. XIXth International Congress of History of Science; 22-29 August 1993*, eds., Guido Cimino & François Duchesneau (Firenze: Leo S. Olschki, 1997), 281-95. For the mid-century "materialistic" controversy which doubtless led Bernard in the direction of such a statement see Owen Chadwick, *The Secularization of the European Mind in the 19th Century* (Cambridge: Cambridge University Press, 1993 [1975]), 165.
[23] Bernard, *Experimental Medicine*, 67.
[24] Ibid., 68.
[25] Ibid.

> consciousness of our little learning and the difficulty of science. This feeling incites us, in turn, to work toward knowledge; and to this feeling alone, science owes all its progress.[26]

Despite all these resistances to the vitalist perspective, Bernard was still willing to accept certain aspects of the vitalist position, though reformulated in a different manner. As he says: "I admit...that manifestations of life cannot be wholly elucidated by the physico-chemical phenomena known as inorganic nature."[27]

*The Milieu Intérieur*

One question gave Bernard pause and caused him to think long and hard about the relationship between the organic and inorganic; it was the divide between internal and external. Bernard, after all, coined the term "*milieu intérieur.*" This *milieu intérieur* was derived from a general acceptance on the part of early regulatory physiologists of the importance of the interaction of organism with environment (*milieu*). The *milieu*, with its arguably Hippocratic roots, was interpreted quite broadly by Bernard.[28] One can also see elements of the *milieu* in Bernard's emphasis on the idea that "the fixity of the internal environment is the condition of free, independent life."[29] For Bernard, the interior environment – the *milieu intérieur* – was where all the important activity was taking place.[30] To him, the infectious were agents of fermentation that altered the internal, cellular, environment.[31] This view of disease made it hard to fully accept some aspects of the cellular and early germ theories, and Bernard differed with Rudolf Virchow (1821-1902), for example, on what the source of a pathogen was.

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[26] Ibid., 69.
[27] Ibid.
[28] Frederick L. Holmes, "Claude Bernard, the *Milieu Intérieur*, and Regulatory Physiology," *History and Philosophy of the Life Science* 8 (1986): 3-25.
[29] Claude Bernard, *Leçons sur les phénomenes de la vie communes aux animaux et aux végétaux* (Paris: Bailliere, 1878), 113 quoted in Holmes, "Claude Bernard," 3.
[30] See Holmes, "Bernard," and Mark D. Sullivan, "Reconsidering the Wisdom of the Body: An Epistemological Critique of Claude Bernard's Concept of the Internal Environment," *Journal of Medicine and Philosophy* 15 (1990): 493-514.
[31] Georges Canguilhem, *Ideology and Rationality in the History of the Life Sciences* (Cambridge, MA: M.I.T. Press, 1988), 62.

In emphasizing the role of the internal environment, Bernard tended to downplay external vectors of disease. He argued that viruses were produced under the influence of the nervous system, and even suggested that there were cases of spontaneous manifestation.[32] In effect, by placing such primacy on the interior, the physiological vitalism of Bernard (and others) tended to ignore external factors. This explains why he paid so little attention to the work of Pasteur, whom he accused of wanting to "direct the course of nature." As Canguilhem so perceptively notes, Bernard overlooked Pasteur's ideas, "for the simple reason that he was pursuing his own, namely, the idea that disease never introduced functional innovations."[33] This conceptual emphasis on the importance of an internal dynamic which becomes, in a sense, the cause and effect of disease strongly echoes Stahlian animism and its early vitalist followers.

While conceptually vitalistic, this view of the *milieu intérieur* also insisted that an organism could regulate its functions independently of its physical environment. Bernard's ideas derived in part from early work in regulatory physiology, most notably the concept of temperature regulation developed by Carl Bergmann.[34] As an advocate of the histological view, Bernard put his arguments about internal regulation in this context, and saw cells almost as "elementary organisms," working together in relative harmony.[35] In an interesting metaphor that evokes the tradition of Saint-Simon's "organology," Bernard compared cells to "citizens of the Republic" – individuals who were "virtually autonomous elements" of a greater whole.[36] Thus, the entire construction of the idea of the *milieu intérieur* was dependent on its complement, the exterior. In Bernard's mind, the organism and its environment, the interior and the exterior, were in constant dialogue, acting and reacting, responding to each other in a myriad of ways. As he says: "In

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[32] Ibid., 64.
[33] Ibid., 63. Bernard was not alone holding this position. Sigismond Jaccoud, a student of the famous physiologist François Malgaigne, was resistant to aspects of the germ theory because of his devotion to vitalism. See George Weisz, *The Medical Mandarins: The French Academy of Medicine in the Nineteenth and Early Twentieth Centuries* (Oxford: Oxford University Press, 1995), 203.
[34] Holmes, "Claude Bernard," 3-25.
[35] Ibid., 19.
[36] Jean Gayon, "The Concept of Individuality in Canguilhem's Philosophy of Biology," *Journal of the History of Biology* 31 (1998): 305-325, 318.

physiology there are always two things to consider. 1. the organism. 2. the milieu."[37] This for Bernard was the essential condition of life, a state of mobile equilibrium. It is here, in the intersection between organism and *milieu* where an understanding of disease is found. As one author says "disease is...the incapacity of a person to maintain a stable relation with changing environmental conditions."[38]

It is from this group of ideas that Bernard derived his criticism of experiments that placed too much stress on invariable conditions. We see here a clear recognition of the inherent complexity of the living organism, and a critique of the seemingly objective results of experiments within limited parameters. For Bernard, every manifestation of an organism is dependent on a subtle linkage between a wide variety of "living units": "Different living units...play the part of stimuli, one in relation to another; and the functional manifestations of an organism are merely the expressions of their harmonious reciprocal relations."[39]

*The Vicious Vital Circle*

One becomes aware at this point of the clear criticism Bernard is leveling at the traditional notion of vitalism as a driving force – the vitalist conception of an hidden "vital force." He deals with this idea by tackling the thorny issue of how living things seem separated from and independent of their "general cosmic environment." Assuming that determinism still reigns in the inner environment, he argues that it is the very nature of a "living machine" to resist external forces, comparing this to the way in which a man-made machine also resists outer conditions:

> A living machine keeps up its movement because the inner mechanism of the organism, by acts and forces ceaselessly renewed, repairs the losses involved in the exercise of its functions. Machines created by the intelligence of man, though infinitely coarser, are built in just such a fashion. A steam engine's activity is independent of outer physico-chemical conditions, since the machine goes on working through cold, heat, dryness and moisture.[40]

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[37] Bernard, *Cahier de Notes, 1850-1860*, 39, quoted in Holmes, "Claude Bernard," 7
[38] Stuart F. Spicker, "An Introduction to the Medical Epistemology of Georges Canguilhem: Moving Beyond Michel Foucault," *Journal of Medicine and Philosophy* 12 (1987): 397-411, 404.
[39] Bernard, *Experimental Medicine*, 78.
[40] Ibid., 79.

Alas, Bernard concludes, this ostensibly independent behavior is merely an illusion, and in the same way as a machine is ultimately dependent on underlying physical conditions, so the inner environment of the living machine is reliant on an "absolute determinism that must become the real foundation of the science of living bodies."[41]

These physicalist and aesthetically mechanistic assertions must not blind one to the underlying vitalistic tendencies apparent in Bernard's work. It is in this vein that his role as a transitional figure becomes clear. The vital force as conceived of by late 18th century figures like Barthez is anathema to Bernard, but there is a clear understanding in his work of what will become some of the most important principles of vitalism and organicism in the late 19th and early 20th century. These include a subtle appreciation for two important concepts; complexity and a form of 'proto-holism': "We must recognize that determinism in the phenomena of life is not only very complex, but that it is at the same time harmoniously graded. Thus complex physiological phenomena are made up of a series of simpler phenomena each determining the other by associating together or combining for a common final object."[42] Curiously, he goes on to liken this hierarchical and interrelated complexity, a form of what in modern parlance we might call a "feedback loop," to a kind of mythic, Jungian archetype:

> The ancient emblem representing life as a closed circle, formed by a serpent biting its own tail, gives a fairly accurate picture of things. In complex organisms the organization of life actually forms a closed circle, but a circle which has a head and a tail in this sense, that vital phenomena are not all of equal importance, though each in succession completes the vital circle.[43]

This conception of life seems a far cry from the linear, cause and effect reality of a strictly mechanistic view.

From this need to see the organism as a whole, Bernard begins an exploration of the embodiment of all these various factors in the individual. He wrestles with the

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[41] Ibid., 80.
[42] Ibid., 87.
[43] Ibid., 88. This evokes the archetype of the *mandala* or *ouroboros*. See Carl G. Jung, *Psychology and the East*, trans. R.F.C. Hull (Princeton: Princeton University Press, 1978), 24. See also Ronald F. Fox, *Energy and the Evolution of Life* (New York: W.H. Freeman, 1988). It also prompts a reflection on the influence of early dynamic physiology in areas like systemic thinking and cybernetics. See, for example, Walter B. Cannon, *The Wisdom of the Body* (New York: W.W. Norton, 1932) and Norbert Wiener, *Cybernetics: or, control and communication in the animal and the machine* (Cambridge, MA: M.I.T. Press, 1948).

divided character of the organism, which must be considered "as a whole and in detail," yet "without losing sight of the peculiar conditions of all the special phenomena whose resultant is the individual."[44] This schism, and the undeniable reality of an individual who presents specific and particular circumstances of life, places a stress on Bernard's desire to maintain a strictly scientific approach. In struggling with this *problématique*, Bernard is conceding what he sees as an important contrast between his physiological concerns and those of the physician. He distinguishes the view of the naturalist and the biologist from that of the physiologist and physician, the latter being forced to contend with the details of individual conditions and specific morbid circumstances. Thus Bernard admits to a sort of vitalist reality: "The primary essence of life is a developing organic force, the force which constituted the mediating nature of Hippocrates and the *archeus faber* of Van Helmont." Nonetheless, he argues, one can find some means to achieve a sense of physical scientific structure as "whatever our idea of the nature of this force, it is always exhibited *concurrently* and *parallel* with the physico-chemical conditions proper to vital phenomena."[45] From this, Bernard concludes, it is essential that the physician "understand individualities as special cases included in a general law."[46]

This line of argument reminds one of the later work of Georges Canguilhem, whose *The Normal and the Pathological* (1966) deals with important considerations of the nature of illness as perceived (and conceived) from the point of view of specific

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[44] Bernard, *Experimental Medicine*, 91.

[45] Ibid., 92-93. Emphasis mine. In Bergson's arguments about the basic behaviorist principle of psycho-physical parallelism, there is a challenge to the conflation of internal process and external appearance, but the debate proceeds on the metaphysical, not the epistemological level. "Everything seems...to happen *as if* consciousness sprang from the brain, and *as if* conscious activity were modeled on that of cerebral activity. In reality, consciousness does not spring from the brain; but brain and consciousness correspond because equally they measure, the one by the complexity of its structure and the other by the intensity of its awareness, the quality of *choice* that the living being has at its disposal." Henri Bergson, *Creative Evolution [L'Evolution Creatrice]*, trans. Arthur Mitchell (New York: Henri Holt, 1911), 262. See also the pragmatic idealism ('fictionalism' in the author's words) of a German response to this notion of *as if* which also pays homage to the importance of British empiricism (specifically Hume, John Stuart Mill, and the central importance of English and Scottish jurisprudence) in Hans Vaihinger, *The Philosophy of "As If": A System of the Theoretical, Practical and Religious Fictions of Mankind*, trans. C. K. Ogden (London: Routledge & Kegan Paul, 1935 [1924]).

[46] Ibid., 93. This could also be viewed as an attempt to situate medicine as dependent on physiology.

individual circumstances.[47] His skeptical conclusion about the attempt to universalize and normalize disease categories (beyond, of course, the acceptance of underlying physical realities) finds some resonance here in the eclectic elements of Bernard.[48]

"Life is creation."[49] We see how Bernard, by defining life in a single, simple phrase, places special emphasis on the particular character of biological science. The statement also evokes the importance of development as a unique characteristic of living things.[50] In a sense, Bernard is struggling with much the same issue expressed in Aristotle's teleological notion of *entelechy* (which, as we will see, is taken up later by the vitalist Hans Dreisch).[51] This growth, or development, or as Bernard calls it, "grouping," is, he asserts, rooted in the physical properties of matter, but is also at the same time unique to life: "This grouping takes place only according to the laws which govern the chemico-physical properties of matter; but the guiding idea of the vital evolution is essentially the domain of life and belongs neither to chemistry nor to physics nor to anything else."[52] Clear in this statement is an aspect of what is meant by physical vitalism, that is, embracing physicalist, scientific materialism as a fundamental tool of

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[47] Georges Canguilhem, *The Normal and the Pathological*, trans. Carolyn Fawcett (Dordrecht: Reidel, 1978). See also Gayon, "The Concept of Individuality."

[48] On the "eclectic spiritualism" of 19th century academic philosophy and its relationship to the emerging human sciences see John I. Brooks III, *The Eclectic Legacy: Academic Philosophy and the Human Sciences in Nineteenth-Century France* (Newark, NJ: University of Delaware Press, 1998). The role of Bernard as a scientist in the larger "intellectual scene" of 19th century French philosophy is expertly explored in S.I.M. Du Plessis, *The Compatibility of Science and Philosophy in France, 1840-1940* (Cape Town: A. A. Balkema, 1972). This view may also connect to Bernard's affinity with medicine, an endeavor which, as described in François Dagognet's *Philosophie Biologique* (Paris: Presses Universitaires de France, 1955), constantly struggles with the opposed poles of skepticism and materialism, often settling on eclecticism as a middle ground.

[49] Bernard, *Experimental Medicine*, 93.

[50] This idea also finds echoes in Bernard's 1878 work, *Leçons sur les phénomènes de la vie communs aux animaux et aux végétaux*. In the preface to the 1966 edition of this work, Georges Canguilhem states that "la conception fondamentale de la vie exposée dans les *Leçons* tient dans l'affirmation que tout organisme offre à considérer deux sortes de phénomènes, des phénomènes de création vitale ou de synthèse organisatrice, des phénomènes de mort ou de destruction organique. 'Le premier de ces deux ordres de phénomènes, dit Claude Bernard, est seul sans analogue direct; il est particulier, spécial à l'être vivant; cette synthèse évolutive est ce qu'il y a de véritablement vital.'" Claude Bernard, *Leçons sur les phénomènes de la vie communs aux animaux et aux végétaux* (Paris: J. Vrin, 1966), 11.

[51] Hans Driesch, *The History and Theory of Vitalism*, trans. C.K. Ogden (London: Macmillan, 1914).

[52] Bernard, *Experimental Medicine*, 93

understanding with respect to life, but with an inherent realization that this doesn't entirely capture its nature and complexity. Thus, with development, we see that Bernard believes that the *process* is subject to understanding in physico-chemical terms, while the *source* remains occluded.[53]

*Bernard and Comte: The Unbridgeable Divide Between Experiment and Observation*

Ironically, despite his affinity for the loose positivistic *esprit* that endorsed a generally progressive outlook, Bernard's experimentalist stance contrasts sharply with the more passively philosophical approach of Auguste Comte (1798-1857), particularly in terms of epistemology and method in the biological realm. It is the cherished place of observation as the cornerstone of biology that Comte tried to construct and reinforce and that Bernard seeks so passionately to demolish. Comte's doubt about the experimental method, and defense of the value of observation and the comparative method, has been well documented.[54] The very same skepticism about this methodology stands as one of the most compelling reasons to question a pure strain of Comtean positivism in Bernard.

Comte and Bernard are in a greater degree of agreement about the use of statistics in medicine. More to the point, it is the inherent limitations of the statistical method that concerns them both. To Bernard, statistics were limited in their applicability because they did not reflect the particular non-quantifiable circumstances of the individual. More importantly, individuals are not, in general terms, "law-like" in their behavior, in the sense of their action being subject to repeatable certainty and determinism. The probability that statistics relies on was unsatisfying to a rigid experimentalist like Bernard. Furthermore, Bernard's physician's bias also entered into his critique of numerical analysis, in part because of its limited use in actual medical practice. Mathematics and medicine were not exactly ideal bedmates. As Bernard says:

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[53] Again in the preface to *Leçons*, Canguilhem quotes Bernard from the 1867 *Rapport sur la marche et les progrès de la physiologie générale en France*: "Si les conditions matérielles spécialles sont nécessaires pour donner naissance à des phénomènes de nutrition ou d'évolution déterminés, il ne faudrait pas coires, pour celà, que c'est la matière qui a engendré la loi d'ordre et succession qui donne le sens ou la relation des phénomènes; se serait tomber dans l'erreur grossière des matérialistes." Bernard, *Leçons sur les phénomènes de la vie*, 13.

"physicians have nothing to do with what is called the *law of large numbers*, a law which, according to a great mathematician's expression, is always true in general and false in particular."[55] This criticism reveals Bernard's "case study" bias and the importance of individual circumstances, but it also highlights his passionate quest for true scientific certainty, which for him is rooted in rigorous, experimentally derived and deterministic phenomena: "a physician needs to know...whether a patient will recover, and only the search for scientific determinism can lead to this knowledge."[56]

Bernard understood statistics as a "conjectural" science, and suggested that if medicine were based on this type of analysis, it would also be labeled as such. To him, the science of statistics was little more than an "empirical enumeration of observations,"[57] and thus limited in its applicability. Again, for Bernard, experiment and determinism were the watchwords: "Only determinism in an experiment yields absolute law."[58]

While Comte and Bernard agreed on the clearly limited application of statistics, they differed in their outlook on the proper method for biology. This is understandable given their relative interests, and the historical and scientific gap that separated the two men. Much had changed in the twenty years between the mid-1840s and 60s, and the wide-ranging philosophical controversy surrounding spiritualism and materialism in the 1850s tarnished the metaphysical methods so prevalent in Comte. Bernard was, as mentioned, forging the new discipline of experimental physiology, and needed to link his thinking to the promise of a new method, or at least the reinvigoration of a previously undervalued method. Comte was a philosopher and, in building his system, was inclined to be rather more inclusive.

In a section on the "General View of Biology" in the *Cours de philosophie positive* (1830-1842), Comte actually remained quite open about the various methodological possibilities in biology and was ambivalent about the arbitrary divisions introduced into its study. In fact, he presented a fairly strong criticism of the proliferation

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[54] Reino Virtanen, *Claude Bernard and His Place in the History of Ideas* (Lincoln, NB: University of Nebraska Press, 1960), 58-59.
[55] Bernard, *Experimental Medicine*, 138.
[56] Ibid.
[57] Ibid., 139.

of disciplinary divisions in biology. For Comte, there is the fundamentally reciprocal nature of function to consider, and the relationship between the "organ" and the "organic modification" – in other words, between the organism and the *milieu*. While Bernard adapts this principle to physiology, Comte would seem to have a wider notion in mind, and he uses the idea to argue for what can be described as a clearly anti-reductionist position. Of biology and the biologist's need to realize, and try to comprehend, the inherently complex interplay between living things and their environment, Comte says, "it is immanently important to keep this end in view in a science so intricate as this, in which a multitude of details tempts to a fatal dispersion of efforts upon desultory researches."[59] His understanding of biology was one that transcended the distinctions of past ages: "my definition excludes the old division between anatomy and physiology, because I believe that division to have marked a very early stage of the science, and to be no longer sustainable." There is an irony in Comte's view of biology given his larger programmatic goal of restructuring knowledge along positivist lines, but this impression may be misconstrued. His systematic outlook can be seen in more global terms, despite the underlying impulse to categorize and rationalize scientific ideas. Beyond this is the remarkable humanist bent in Comte's view, as he sees all biological insight as essentially lending itself to the inescapable motivation to gain greater knowledge of man. This anthropocentrism becomes increasingly absent from the positivism of the 20th century, and this trend marks a decline in humanist concerns in science more generally.

Where Bernard and Comte differ, then, is not in their *general* outlook, which places a limit on the anatomical approach and shares many basic assumptions, but in their relative emphasis with respect to method. Comte is committed to observation as the central method of the biologist and is skeptical about the application of experiment to biology's general development. This resistance to experiment is derived from his belief that while chemistry (which already is less rigorously experimental than physics) is undoubtedly applicable to understanding living things, it does not describe the phenomena of the living in its totality. Experiment is lost in the face of organic

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[58] Ibid., 140.
[59] Auguste Comte, "The General View of Biology," in *Auguste Comte and Positivism: The Essential Writings*, ed. Gertrude Lenzer (New Brunswick, NJ: Transaction, 1998), 165.

complexity: "In fact, the nature of the phenomena seems to offer almost insurmountable impediments to any extensive and prolific application of such a procedure in biology."

Beyond the seemingly unbridgeable methodological divide between Comte and Bernard lay a series of very clear similarities with respect to specific principles, aspects of which persist in the philosophy of biology on up through Bernard to the purely theoretical work of Georges Canguilhem in the 20th century. These include the inability to distinguish between normal and pathological states. As Comte so perceptively says: "The state of disease is not a radically different condition from that of health."[60] In Comte's medical doctrine, disease was largely seen as having broad social causes as well.[61] What Bernard, Comte and Canguilhem further share is an appreciation for the intersection between philosophical and medical/biological ideas. They were no mean Humean empiricists, and as such were united by an eclectic method that resisted any absolute division between thought and practice, deduction and induction, even between the ideal and the real.[62]

*Bernard on the History of Physiology: Lessons on the Properties of Living Tissues*

One arrives at some important insights about Bernard's theories by looking at how he understands the history of his discipline. This history can be found in his basic

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[60] Ibid., 169. The resonance between Comte and Canguilhem is taken up in the context of a particular tradition of French philosophy of medicine in J. F. Braunstein, "L'école française de philosophie de la médecine," *Revue des sciences philosophiques et théologiques* 74 (1990): 35-44. Braunstein also includes François Dagognet and Michel Foucault in this lineage.

[61] One late 19th century physician, M.G. Audiffrent (1823-1909) was actually directly inspired by Comte, who suggested that he study medicine at Montpellier. From this experience he produced a book about the social origins of mental diseases. See M.G. Audiffrent, *Des maladies du cerveau et de l'innervation d'après Auguste Comte* (Paris: Leroux, 1874). See also Audiffrent, *Appels aux medicines* (Paris, 1862).

[62] In an essay entitled "Pragmatism and Philosophy," Richard Rorty sees the characteristic division of 19th century philosophy as one between "transcendental philosophy" and "empirical philosophy" (i.e. between "Platonists" and "positivists"). He further proposes his own particular brand of "pragmatism" as an antidote to this age-old Platonic malaise. What he does not address, however, is the question of how it is that this schism can be found within the work of individual thinkers. This internalized mental struggle would seem to be one of the most interesting questions to try and answer in fashioning an innovative history of 19th century philosophy. See Richard Rorty, "Pragmatism and Philosophy," in Kenneth Baynes, James Bohman, and Thomas McCarthy, eds., *After Philosophy: End or Transformation?* (Cambridge, MA: M.I.T. Press, 1987), 29.

physiological lectures on the properties of living tissues. His *Leçons sur les propriétés des tissus vivants* (1866) begins with a programmatic statement suggesting an acceptance of the unique character of living things: "Everyone agrees to recognize that the living body obeys its own distinct laws, and that the phenomena it presents and its development are infinitely more complex and harder to comprehend that that of inorganic nature."[63] Despite this distinction, Bernard still believes that life can be subjected to scientific investigation, and concludes that it is perfectly justifiable to base biology on the principles of physico-chemical science.

In the *Leçons*, Bernard reiterates themes that are central to his work, such as the importance of the relationship between organism and milieu. From these ideas he derives a historical construction exploring key concepts found in the Montpellier and ideologue traditions, such as sensation and irritability. Romantic medicine clearly casts its shadow over Bernard's writing. In fact, he lays out a history of notions of irritability in medicine, and through its narrative, deals substantively with many important vitalist figures. Bernard points to Francis Glisson (1597-1677) as the first thinker to suggest the notion of "*irritabilité*."[64] Previous to this, explanations of the central character of life were fundamentally dependant on a combination of Platonic and Aristotelian animism and Hippocratic naturalism.[65] Through his historical exploration, Bernard makes some interesting connections, and identifies strange theoretical bedfellows, such as Georg Ernst Stahl and Xavier Bichat.[66] Their commonality, however, lies in their shared view of the

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[63] Claude Bernard, *Leçons sur les propriétés des tissus vivants* (Paris: Germer Baillière, 1866), 4. "Tout le monde s'accorde à reconnaître que le corps vivant obéissent à des lois qui leur sont propres, et que les phénomènes qu'ils présentent dans leurs développement son infiniment plus complexes et plus difficiles à approfondir que ce de la nature inorganique." Bernard expands on this historical portrayal in the posthumously published *Leçons sur les phénomènes de la vie* (Paris: J. Vrin, 1966 [1878]).

[64] Bernard is undoubtedly referring to the 1672 *Tractatus de natura substantiae energetica, seu de vita naturae, ejusque tribus primis facultatibus*. This almost hylozoic work attempts to prove that there is life in all physical bodies – what Glisson calls the *vita insita* (the implanted life). Using a scholastic style of argumentation, Glisson also makes reference to the *vis plastica*, which is connected to Van Helmont's *archeus*.

[65] Bernard, *Leçons sur les propriètés*, 65.

[66] They are perhaps not so strange bedfellows in so far as they both stand as major vitalist figures. Their methods, however, differ drastically despite this relative theoretical harmony. Bichat's "*pleurivitalisme*" and Stahl's animism are quite different, if only because the latter is holistic and the former is reductionist.

definition of life as the totality of functions that resist death.[67] Like Bichat and his ideas of mortalism and vitalism, Stahl sees physico-chemical forces tending to erode and destroy the living organism.[68] Stahl, however, unlike more moderate medical vitalists, denied the relevance of irritability. His animist conception of the vital force as rooted in an "immaterial substance," something resembling the Aristotelian soul, was for Bernard heading too far in the direction of the speculative and mystical at the expense of the skeptical and the experimental. Bernard continues to trace the idea of irritability through Johannes de Gorter (1689-1762), who takes up Glisson's idea, and from there to Albrecht von Haller (1708-1777), who Bernard sees as responsible for introducing experimentation into the discussion.[69] Haller, he notes, places the source of life within the body, and connects it to the nerves and muscles. Thus irritability, contraction, and nervo-muscular stimulation are in and of themselves that which characterizes the living.[70] But

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[67] Bernard is reliant on Bichat's definition: "la vie est l'ensemble des fonctions qui résistent à la mort." He translates this, for polemical purposes, to "la vie est l'ensemble des propriétés vitales qui résistent aux propriétés physiques." Claude Bernard, *Pages Choisies*, ed. Ernest Kahane (Paris: Editions Sociales, 1961), 53

[68] Bernard, *Leçons sur les propriètés*, 67.

[69] Ibid., 71.

[70] Schopenhauer, being more animist than vitalist, sees Haller as ending the investigation too soon, and raises the notion of the will as response to the classical idea of the soul. He sees this project as beginning with Kant: "The three assumptions criticized by Kant in the 'Transcendental Dialectic' under the name of the ideas of reason and accordingly set aside in theoretical philosophy, had always stood in the way of a deeper insight into nature until this great man had brought about in philosophy a complete transformation. Such an obstacle to the subject of our present investigation was the so-called rational idea of the soul, of that metaphysical entity in whose absolute simplicity knowing and willing were united and fused into an eternally inseparable unity. As long as this idea existed, no philosophical physiology was possible, the less so, as its correlative, real and purely passive matter, had necessarily to be assumed simultaneously therewith as the substance of the body, as an entity existing in itself, as a think-in-itself. That rational idea of the soul was therefore responsible for the fact that the celebrated chemist and physiologist, Georg Ernst Stahl, at the beginning of the eighteenth century, had to miss the truth to which he had come so near, and which he would have reached, had he been able to put in place of the *anima rationalis* the bare will that is still without knowledge, which alone is metaphysical. But under the influence of the idea of reason he could teach only that it was this simple rational soul that built for itself the body and directed and carried out all the inner organic functions of it, but that in this connection, although knowledge was the fundamental determination and, as it were, the substance of its true nature, this simple rational soul knew nothing of all this. In this there was something absurd that rendered the doctrine utterly untenable. It was superseded by Haller's irritability and sensibility which, to be sure, are understood purely empirically, but, to make up for this, there are also two *qualitates occultae*, with which explanation is at an end. The movement of the heart and the intestines was now attributed to irritability. The *anima rationalis*, however, remained untouched in its honor and dignity as a

what, Bernard asks, of plants? Are not plants living, even though they are essentially non-responsive to their moment to moment existence? It is this problem, Bernard argues, that prompts the invocation of vitalism as response.[71]

Bernard continues his history of irritability with mentions of John Brown (1735-1788) and his idea of "incitability", and Friedrich Tiedemann (1781-1861) and his notion of "excitability." Bernard concludes that, despite some attempts on the part of vitalists to suggest an immaterial living force, vital action, considered through the context of irritability, resides within living tissue and is properly subject to physico-chemical analysis.

Nonetheless, it is interesting to note that while Bernard wants to transcend the strictures of this historical tradition of physiology and vitalism, he still appreciates its significance. Compare this to the typical ahistorical modern scientist who is often ignorant of being a part of any tradition whatsoever. Bernard at least begins with history, even if only to try and move beyond its weighty burden. Whether he succeeds in this endeavor is another question entirely.

*Bernardian Historiography: A Myriad of Interpretations*

As Bernard's work is replete with a variety of statements about the nature of living things, so his *oeuvre* has been interpreted in a myriad of ways. Historiographically, Bernard leaves a divided legacy, between materialism and spiritualism, positivism and skepticism, certainty and doubt.[72] In the introduction to Bernard's *Pages Choisies*, Ernest

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strange guest in the house of the body, where it dwelled in the attic. 'Truth lies at the bottom of a well,' said Democritus, and with a sigh the millenia have repeated his words; but no wonder, when truth gets a rap on the knuckles as soon as it tries to come out. The fundamental feature of my teaching, placing it in opposition to all that have ever existed, is the total separation of the will from knowledge." Arthur Schopenhauer, *On the Will in Nature: A Discussion of the Corroborations from the Empirical Sciences that the Author's Philosophy Has Received Since Its First Appearance*, ed., David E. Cartwright, trans. E.F.J. Payne (New York: Berg, 1992), 34-5.

[71] For an example of how this concern plays itself out in the work of an individual early 19th century French physiologist see J. V. Pickstone, "Vital Actions and Organic Physics: Henri Dutrochet and French Physiology During the 1820s," *Bulletin of the History of Medicine* 50 (1976): 191-212.

[72] On Bernardian Historiography see Olga Amsterdamska, "The Historiography of the Claude Bernard Industry," *History of Science* 16 (1978): 214-21. This "dialectical" quality in Bernard was noted from the very beginnings of reflection on his *oeuvres*, as is evident in the following

Kahane calls Bernard "*foncièrement anti-vitaliste*," and yet, at the same time, sees his work as bridging the gap between materialism and spiritualism.[73] What everybody agrees on, however, is that Bernard's ideas have important philosophical implications and are the result of deep philosophical reflection.

Bernard has been seen in a number of different lights, as public figure and propagandist for the cause of experimental medicine, as sophisticated epistemologist and proponent of a complex philosophy of the life sciences, as mechanist and materialist and also as a kind of neo-vitalist.

Annie Petit, in an article about Bernard's ideas on the history of science, paints a complex picture of a thinker aware of the many concerns involved in the division between science and culture (in the sense of the literary), and the contemporary debates regarding the sciences and the humanities in education.[74] Acknowledging that Bernard says that one must "choose between history and science," Petit suggests that Bernard lays out a clear division between science and philosophy, or, put another way, between the practical and impractical.

Bernard's acute interest in philosophy is fully explored in Reino Virtanen's classic text about the man's place in the history of ideas. As was true for most educated men in mid-19th century France, the germinal beginning of Bernard's philosophical framework is the dualistic epistemology mapped out by René Descartes. It has been argued that Bernard owes his greatest philosophical debt to Descartes.[75] Certainly, he has

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quote from an ode to him given by Henri Beaunis at the Faculté de Médecine at Nancy in the year of his death (1876): "Claude Bernard, en effect, se trouva soumis alors à deux influences contraires, d'une part cette imagination native, audacieuse et créatrice qui entraînait vers la théorie, vers la généralisation, vers l'hypothèse, et d'autre part, cette influence de Magendie, froid, sceptique, raillant l'idéal et n'acceptant pas le fait. De là cette dualité intellectuelle si curieuse à observer dans les œuvres de Claude Bernard et qui me paraît être le trait psychologique et la clef de son charactère. Il y a en lui deux hommes, l'auteur des *Leçons de physiologie experimentale* et l'auteur des *Leçons sur les phénomènes de la vie*, le chercheur du Collège de France et le généralisateur du Muséum." Bernard, *Leçons sur les phénomènes de la vie*, 11.

[73] Bernard, *Pages Choisies*, 9. For further discussion of Bernard's position *vis-à-vis* materialism and vitalism see André Pichot, *Histoire de la Notion de Vie* (Paris: Gallimard, 1993), 701-712.

[74] Annie Petit, "Claude Bernard and the History of Science," *Isis* 78 (1987): 201-219. This reminds of the argument in C. P. Snow, *The Two Cultures and the Scientific Revolution* (London: Cambridge University Press, 1959). See also Harry Bloch, "François Magendie, Claude Bernard, and the Interrelation of Science, History and Philosophy," *Southern Medical Journal* 82 (1989): 1259-61.

[75] Virtanen, *Claude Bernard* , 27-48.

been mentioned in connection to this great philosopher a number of times, and *Experimental Medicine* has even been explicitly compared, by none other than Henri Bergson, with the *Discourse on Method.*[76] While the context of this statement will be analyzed in greater detail below, it is clear that the dualistic framework is important to Bernard. Even in Bernard's time, the Cartesian view certainly anchors French thought, and at times keeps it from drifting along favorable currents to more promising shores.

We might ask, however, in what sense Bernard is influenced by Cartesian dualism. Is his intermediary position between materialism and spiritualism a result of his responding to the mind-body duality of Descartes, or is it a kind of dynamic monism or even a neo-vitalism, that is to say a much more nuanced, subtle appreciation of the many and various interactions and interconnections between the psychological (or psychic) and the physiological? It seems the latter explanation is more compelling, particularly as Bernard's focus is contingent and biological and not purely abstract and physical. It is for this reason that his affinity with vitalism can be seen as largely founded on epistemological grounds. Unlike earlier physiological thinkers, however, the classic idea of an immaterial, incorporeal vital force is anathema to Bernard.[77] Virtanen mentions

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[76] Ibid., 13. For the original text see Henri Bergson, "La philosophie de Claude Bernard," in *La pensée et le mouvant*, 12th ed. (Paris: Presses Universitaires de France, 1941), 229.

[77] Contrasting this epistemological view again with Schopenhauer's metaphysical view provides insight into the nature of the two stances. In both cases they respond to classic assertions in vitalist thought as unsatisfying, but appreciate their importance nonetheless. "The progress made in physiology since Haller has placed beyond doubt the fact that not merely the external action accompanied by consciousness (*functiones animales*), but also the vital processes occurring quite unconsciously (*functiones vitales et naturales*) are throughout under the guidance of the *nervous system*. As regards our becoming conscious of them, the difference rests merely upon the fact that the former are guided by nerves coming from the brain, the latter by nerves communicating not immediately with that chief center of the nervous system, which is directed mainly outward, but with subordinate minor centers, with the nerve-knots, the ganglia and their network. These preside as governors, so to speak, over the different provinces of the nervous system, and guide the internal processes by external stimuli, just as the brain guides the external actions by external motives. They therefore receive impressions from within and react appropriately thereon, just as the brain receives representations and thereupon makes decisions. Each of those minor centers is, however, limited to a narrower sphere of action. On this rests the *vita propria* of each system, and with regard to it van Helmont has said that every organ has, so to speak, its own ego. From this is also explained the persisting life that continues in amputated parts of insects, reptiles, and other lower animals, whose brain does not greatly preponderate over the ganglia of the separate parts; and in the same way also the fact that many reptiles live for weeks and even months after the removal of their brain. Now if we know from the most positive experience that the *will*, familiar to us in our most immediate consciousness and in a way totally different from that in which the

other influences on Bernard's thinking, which include Leibniz and Pascal. And, as we have already seen, Bernard also spends some significant time addressing the concerns of Comtean positivism.

Clearly, the importance of Bernard's philosophical musings cannot be denied, and perhaps no concept of his is more relevant to his thought than that of the *milieu interieur*. As one historian notes, this is one of the major ideas in regulatory physiology. Like earlier vitalists, Bernard was interested in the notion that organisms could regulate their functions independent of physical environment. His interpretation of this inner "force" based conception was broad, and he was inclined to see the *milieu* question as incomplete if it did not include the *interieur/exterieur* dichotomy.

Frederick Holmes argues that with this theoretical focus on the *milieu* in Bernard's work there is also a criticism of experiment that placed too much stress on invariable conditions. It is this doubt about experimental control that leads Bernard to favor a fundamental principle of vitalism – the distinction between organic and inorganic. Another theme that Holmes connects to Bernard's *milieu* idea is a view of evolution that understands it as a process of constant movement through states of mobile equilibrium. This emphasis on the dynamic sense of the words "equilibrium" and "equilibration" is a

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central external world is known, is the real agent in the actions that are accompanied by consciousness and guided by the chief center of the nervous system, then we surely cannot but assume that the actions proceeding from the nervous system, but under the direction of its subordinate centers that keep the vital processes constantly going, are also manifestations of the will; especially since we know perfectly well the cause of their not being, like the others, attended by consciousness. Thus we know that consciousness has its seat in the brain and is therefore limited to such parts as have nerves that proceed to it, and that also ceases therein when those nerves are cut. In this way the difference between what is conscious and unconscious, and with it that between what is voluntary and involuntary in the movements of the body, are fully explained. We are left with no ground for assuming two entirely different primary sources of movement, especially as *principia praeter necessitatum non sunt multiplicanda* [principles are not to be increased unnecessarily]. All this is so obvious that on impartial reflection it seems from this standpoint almost absurd to want to make the body serve two masters by deriving its actions from two fundamentally different primary sources. Thus it is absurd to attribute the movement of the arms and legs, of eyes, lips, throat, tongue, and lungs, of facial and abdominal muscles, to the will, while, on the other hand, the movement of the heart and arteries, the peristaltic action of the intestines, the absorption of the intestinal villi and the glands, and all the movements serving secretions are represented as coming from an entirely different, eternally mysterious principle that is unknown to us and is designated by such names as vitality, archaeus, *spiritus animales*, vital force, creative impulse, all of which say nothing but x." Schopenhauer, *On the Will in Nature*, 38-40.

terminology derived from Herbert Spencer's notion of life,[78] a fascinating influence on the work of Bernard, particularly in the context of the history of vitalism. Remember that Spencer was also to be a significant force in Bergson's evolutionary ideas. Bergson freely acknowledged the influence of Spencer on his thinking, despite the challenges he levels at him, and it is the continued spread of the Darwinian creed which Spencer represents that Bergson often seems to grapple with, always eager to make its fundamental importance to vitalism known.

*Bernard's Milieu Extérieur*

To understand the many subtle aspects of Bernard's thinking it is also important to consider his life in context. A vintner's son from a small town outside of Villefranche, Bernard began life rooted in a tradition of peasant wisdom mediated by the experience of a rigorous Jesuit-guided education. Yet, his biographical details have often been naively portrayed as leading to his experimentalism and his sympathy towards positivism. Admittedly, Bernard's intellectual milieu made Comtean positivism and its relationship to science impossible to ignore, but one must also remember that biology was not the young man's first love. As he began to immerse himself more meaningfully in his studies, he was first attracted to literature. This early period of his adult life, when Bernard was studying in Lyon, also featured employment as a pharmacist's assistant, which surely introduced him to an unusual and eclectic medical world, full of bizarre superstition, charlatanism and downright ignorance. Perhaps this planted the positivist seed in Bernard as the only reasonable response, but this motivation seems overstated, particularly when one realizes that it was not altogether clear at this point that he would be headed into medical practice. More than anything, Bernard appears possessed of an affinity for practicality, which is a pronounced feature of his post-literary life. His decision to abandon writing as a profession in favor of medical school illustrates this inclination. Playwright, physician, physiologist and philosopher; Bernard was all these things. Unfortunate that, in an effort to preserve an ill-fitting positivist garb, a simplistic

[78] Frederick L. Holmes, "Claude Bernard," 3-25.

and forward-looking historical role has been sewn with only the superficial tattered bits and pieces of what should really be a rich whole cloth.

It was a knack for the basic skills of the laboratory that allowed Bernard to catch the eye of his early supporters, most notable among them François Magendie (1783-1855), who became a mentor of sorts.[79] Bernard's physician's practicality was combined with a definite talent for experimental science, and physiology seemed a natural fit. And yet, in a fundamental way, he approached his craft from a very exalted theoretical height. It is this philosopher-scientist duality that is so compelling in Bernard. It is also this multi-layered aspect of his thought that leads to an argument regarding Bernard's skepticism about the experimental model of science.

If we are to analyze Bernard from the point of view of his objectives, his reported actions and the chaos and trauma they created in his life, then a few intellectual strategies come into prominent relief. Bernard, an arch-experimentalist, resorts to history first to rationalize vivisection. He looks back to Galen and the ancients in discussing the origins of vivisectionist practice. Perhaps Bernard felt that tradition and the veils of time would protect him from the deeply impassioned wrath of his wife, who argued staunchly against her husband's stock and trade. Mme Bernard, intransigent and presumably completely inflexible on the subject of the deep moral distress her husband's laboratory caused her, left him and took away his two daughters. He continued to work, a man whose impassioned will remained immovable even in the face of this tragedy.

Bernard's position on vivisection is yet another reason to assume a very different cant to the vitalist language he proposed. His active, operative and experimental stance is a far cry from the passive observational view that is one of the hallmarks of earlier vitalist

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[79] While Magendie, particularly in his well-known 1809 polemic, was deeply critical of doctrinal vitalism, he has also been interpreted as "skeptical" in regards to the experimental approach to life and "rejected a mechanistic account of...functions, and acknowledged that many physiological phenomena remained beyond experimental reach, so that it was not possible to explain them in more basic physical terms." Thus, "because he acknowledged this distance between vital functions in living organisms and what is was possible to explain in physical terms at the time, Magendie was construed by many as a vitalist." William Bechtel and Robert C. Richardson, "Vitalism," in Edward Craig, ed., *Routledge Encyclopedia of Philosophy* (London: Routledge, 1998), 640. One could suggest that this idea is foundational for Bernard as well, who though he transcends Magendie's experimental limits, never makes a concerted effort to consciously attack vitalism. See also John E. Lesch, *Science and Medicine in France: The*

visions. From Aristotle and Hippocrates to the late-18th and early-19th century vitalists like Bichat, observation was the main programmatic model of the clinic. It was through pathological anatomy and dissection that advances in the medical arts had been charted. There are, of course, exceptions to the historical dominance of this approach, but they are notable for their relative rarity. Bernard's methods thus stand in stark relief to this. He even goes so far as to criticize the limitations of the observational method when he discusses anatomy. To Bernard, gross categorization developed in this way leads one only so far. This is, in a sense, a developing distinction between form and function, the first figuring only loosely into the core experimental drive of physiological research. In *Experimental Medicine*, Bernard places this physiology at the end of a progressive list, making it clear that the new science does not overly concern itself with distinctions in form between species; rather it makes life (i.e. function), regardless of form, its subject of study. Again a Comtean structure presents itself to Bernard's historical sensibilities, as he charts three stages of development in "the taxonomical or nosological point of view, the anatomical point of view and the physiological point of view."[80]

*Roll-Hansen on Bernard: A "Good Positivist"?*

In an interesting secondary source reading of Bernard's theoretical commitment to experimental principles, Nils Roll-Hansen compares his view with that of Immanuel Kant (1724-1804). Roll-Hansen sees both Kant and Bernard as challenging methodological reductionism. According to Roll-Hansen, Kant freely admits that there are limits to the absolute theoretical knowledge system (i.e. idealism) he proposes as a framework for science, and they lie in biology. Kant has a view of biology that is, in a way, decidedly Aristotelian, in contrast to his forward-looking, Newtonian view of the physical sciences. Of particular importance in Kantian biology is the importance of purpose and direction (*teleology*). The idea that living things possess a capacity to transcend the perfect collisions and inertia of a simple mechanistic Newtonian system leads Kant to doubt that this basic description of the physical world is all encompassing. In essence, Kant sees

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*Emergence of Experimental Physiology, 1790-1855* (Cambridge, MA: Harvard University Press, 1984).

limits to a mechanical understanding of living things. From this assumption one also derives a Kantian critique of reductionism, even an anti-reductionism, in his contrast between the mechanical and the teleological. Roll-Hansen argues that Bernard, like Kant, also sees limits to the scientific understanding of life, and disputes the many portrayals of Bernard that place undue influence on his methodology (i.e. experiment) and its effect on his thinking. As such, Roll-Hansen explores a number of instances where Bernard has doubts about the experimental method.[81] He describes Bernard's approach as a kind of "physiological determinism,"[82] which placed limits on the experimental method as applied to biology and saw physiology as distinct from physico-chemical science on the one hand and natural history on the other.

Roll-Hansen also claims that Bernard's influence was initially limited, and that, with respect to *Experimental Medicine*, "only by 1898 did it gain a large circulation."[83] This assessment needs to be approached cautiously, for while claims regarding the book's delayed distribution to a wider audience may be accurate, the impact of Bernard's thought is not. One must remember, after all, that Bernard's students, who included the likes of Paul Bert (1833-1886)[84] and Jacques Arsène d'Arsonval (1851-1940), were major figures in late 19th century physiology in their own right. In fact, d'Arsonval pushed elements of experimental physiology into the realm of the electrochemical, spawning vitalist theories of the psychic and para-psychic dimensions of electrotherapeutics.[85]

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[80] Bernard, *Experimental Medicine*, 112.
[81] Roll-Hansen, "Critical Teleology," 73-6.
[82] Ibid., 71.
[83] Ibid., 72.
[84] Paul Bert, it should be noted, was instrumental in helping popularize Bernard's work in the broader intellectual realm. We find in Bert's work some interest in the historical margins of physiology as well – on 18 January 1869 he presented the opening lecture at the Faculté des Sciences de Paris on the subject of "La physiologie générale et le principe vital." See Paul Bert, *Leçons, discours et conférences* (Paris: Charpentier, 1886).
[85] For a description of this, and a thoroughly unsympathetic account of d'Arsonval's indirect involvement in the 1903 N-ray controversy, see Walter Gratzer, *The Undergrowth of Science: Delusion, Self-Deception and Human Frailty* (Oxford: Oxford University Press, 2000), 10-11. See also Léon Delhoume, *De Claude Bernard à d'Arsonval* (Paris: J. B. Baillière, 1939). The biophysicist Jacques Arsène d'Arsonval is an interesting figure. An aristocrat from Limoges, he met Claude Bernard in Paris ca. 1870, serving as his *préparateur* in the lab. Bert and D'Arsonval thereafter establish a lab for biophysics associated with the College de France in 1882. Facinated by electricity and its possible relationship to medicine, his devices and their healing properties

In a subsection of his article entitled "positivist epistemology," Roll-Hansen quotes D. G. Charlton's *Positivist Thought in France during the Second Empire* as claiming that Bernard was one of the "true friends of positivism."[86] Roll-Hansen goes on to say that, according to Charlton, because Bernard did not succumb to metaphysical construction and adhered to empirical principles in his scientific methodology, he was more positivist than Comte, Renan or Taine. This interpretation of positivism, as merely a philosophical reflection of the methodological principles of good observational-based science, misses a deep ideological and rhetorical design behind the movement. Bernard, as has been shown in this analysis of his work, is certainly not averse to theoretical (even metaphysical) speculation, and further, his ever cautious, even skeptical approach to scientific method also suggests difficulties with the positivist straitjacket that Charlton wants to tailor for him. If Bernard is anything, he is an experimentalist. Positivism is for Bernard merely one of many philosophical systems worthy of consideration. Certainly, as Roll-Hansen suggests, Bernard "wanted to disengage science from metaphysical ideas." But does that make Bernard, as he says, a "good positivist"?[87] Not really, particularly when it is clear that Bernard did not necessarily want to disengage *himself* from metaphysical ideas.[88]

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made him a pioneer in physiotherapy. For a time, his name became a process – *D'Arsonvalization*, a term essentially synonymous with electrotherapy. "D'Arsonval believed life was vital but completely deterministic." See Charles Coulston Gillispie, ed., *The Dictionary of Scientific Biography, Vol.1* (New York: Scribner's, 1970), 303.

[86] D.G. Charlton, *Positivist Thought in France during the Second Empire* (Oxford: Clarendon, 1959); quoted in Roll-Hansen, "Critical Teleology," 77.

[87] Roll-Hansen, 79.

[88] Consider this excellent discription of Bernard's approach and its relationship to experimentalism and biology in the German context: "In barest terms experimentation was simply a matter of manipulative procedures. It was but one method, and was called upon to become the preponderant method for biology. Most experimentalists, despite the public glory of their procedure, were not free from metaphysical commitments. In the physiology departments of German universities and institutes, where the means and impulse towards experimental work was uncommonly great, mechanism and materialism were common goods. These usually assumed the form of reductionism, whereby vital processes would be 'reduced' to physics and chemistry and definite conceptual content ascribed or implied for these presumably more fundamental sciences. Bernard was philosophically less reckless, preferring to focus fullest attention on the relations between and not on the essence of biological phenomena. For his pains he found himself charged as the leader of a new vitalism." William Coleman, *Biology in the Nineteenth Century: Problems of Form, Function and Transformation* (Cambridge: Cambridge University Press, 1977), 13.

In the classic biography by Jean Louis Faure, Bernard's life is divided into three categories: *le savant*, *l'écrivain* and *le philosophe*.[89] Interesting that there is no section devoted to his life as *l'experimentaliste* or *le medecin*; suggestive again of his far-flung influence beyond the parameters of disciplinary physiology.[90] This role of *savant* bears further investigation in Bernard's case, particularly as it conforms to the classic portrait of the independent 19th century French thinker, free from broad structural or institutional constraints.[91] This independent-mindedness is certainly clear in his work, and suggests that perhaps eclecticism best describes his philosophy.[92] And yet, still the issue of his commitment (or resistance) to the idea of vitalism remains.

Characterizations of Bernard's brand of vitalism have been lukewarm. Frederick L. Holmes carefully but unsatisfyingly prefaces an argument about Bernard with the following: "We must distance ourselves at the same time from a vitalist hypothesis and a material hypothesis."[93] The evidence marshaled by Holmes, however, relies on the historical reality of vitalism's importance, noting the influence of Bichat on early and mid-19th century debates. In the end, Bernard's work is seen as rooted in a particular French physiological tradition. Holmes admits that Bernard's later work raises doubts about an "absolute" experimental approach, and that, in the end, as can be seen in his unpublished notebooks, he "softens" on vitalistic ideas.[94]

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[89] Jean Louis Faure, *Claude Bernard* (Paris: Crès, 1925).

[90] It is also suggestive of how far these two endeavors were from each other in the public eye. One source compellingly states that while there are "attempts made throughout the century to accomplish a synthesis between clinical medicine and research," still "the repeated failure to integrate the two approaches is a significant theme of French medical culture." Ann La Berge and Mordechai Feingold, "Introduction," in La Berge and Feingold, eds., *French Medical Culture in the Nineteenth Century* (Amsterdam: Rodopi, 1994), 21.

[91] See Robert Fox, "The *Savant* Confronts his Peers: Scientific Societies in France, 1815-1914," in Robert Fox and George Weisz, eds., *The Organization of Science and Technology in France, 1808-1914* (Cambridge: Cambridge University Press, 1980), 241-282.

[92] One element of this eclectic approach, it must be admitted, is a deep skepticism that seems to presage the very "stripped-down" thinking of Ernst Mach. Bernard suggests that one should be very cautious about the adoption of philosophical and scientific systems, and that: "In education we must, therefore, take care that knowledge which should arm the mind does not overwhelm it by its weight, and that rules, intended to support weak parts of the mind, do not atrophy the strong and fertile parts." Bernard, *Experimental Medicine*, 224.

[93] Holmes, "Claude Bernard and the Vitalism of his Time," 281.

[94] Ibid. This comment likely comes from the following quote by Bernard: "Il est de la plus haute importance de considérer l'influence du système nerveux sur les phénomènes chimiques de l'organisme, car c'est par cette influence que l'être vivant touche à tout, et tout peut agir alors sur

*Conclusion: Physical Vitalism*

Whether Bernard is a practitioner of "experimental rationalism,"[95] or the exemplar of an "enlightened vitalism,"[96] his divided legacy comes together as he embodies the end of the "vital force" or "vital principle" as a legitimate scientific concept. Bergson will follow philosophically, and Driesch will struggle to remake the idea in biological terms through his *entelechy*, but the terminus of traditional vitalism (as "immaterial" force) with Bernard has been presented as a historical *fait accompli.*

It will be remembered that Bernard's "vitalism" is derived from (and, in fact, may be the source of) a deep commitment to the potential of experiment tempered by a clear recognition of the limits of this very same method. In some ways, Bernard is the Newton of physiology, and like this pioneer of the physical sciences, he admits that one comes to a point, usually reached when the question of first causes begins to arise, where science fails us. The life force is thus for Bernard as much of an "occult" force as gravity was for Newton. Yet this does not prevent him from using all the tools of experimental medicine to try and understand the workings of the human machine.[97] This is Bernard's great

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lui. C'est là le vrai terrain de l'influence du moral sur le physique. Car je suis vitaliste." Bernard, *Cahier de Notes*, 85. For an important subtext of this long-running history of this moral and physical schism see Elizabeth Williams, *The Physical and the Moral: Anthropology, Physiology, and Philosophical Medicine in France, 1750-1850* (Cambridge: Cambridge University Press, 1994).

[95] Virtanen, *Claude Bernard*, 135.

[96] L. Richmond Wheeler, *Vitalism: Its History and Validity* (London: H. F. G. Witherby, 1939).

[97] This idea follows "popular" and received academic opinion on vitalism. A contemporary encyclopedia entry on the subject concludes, contrary to the idea that vitalism is "devoid of empirical meaning" and "offers no definite predictions," that " many vitalists were in fact accoplished experimentalists, including most notably Pasteur and Driesch." "Moreover, vitalists took great pains to subject their views to empirical test. Magendie, for example, insisted on the importance of precise quantitative laws. Vitalism, as much as mechanistic alternatives, was often deeply embeded in an experimental and empirical programme." William Bechtel and Robert C. Richardson, "Vitalism," 642. This may be true, but it was definitively at odds with the emerging epistemological designs of "experimentalism." However, grudgingly agreeing with this assessment, one would argue that the ultimate example of such a personage is Claude Bernard, a figure who is, strangely, not at all mentioned in the above source. One can trace this struggle, informed by vitalism, on through Bernard to Bergson and Gilles Deleuze. The ciritical questions these thinkers share regarding the idea of a purely materialist metaphysics, and the "in-between" blending of "pure spiritualism and radical materialism" as a response, merits consideration. In a recent biography, one author describes Deleuze's work as both vitalism and, in a very interesting turn of phrase, as "transcendental empiricism." This seems to encapsulate an important element

contribution, and the reason he is so emblematic of the essential, paradigmatic transition from biology, as a historically-dependant discipline of systems, traditions and philosophical argument, to biology as a strictly delimited process of experimental understanding without context.[98] Even his uncomfortable inability to deal with the natural historical issues raised by the Darwinians and evolutionists is reflective of this rigorous, empirical, experimentalist bias.

It is important, however, to make note of the distinction between this position and that of materialism and mechanism. As Joseph Chiari so perceptively notes in his essay "Vitalism and Contemporary Thought": "For the physiologist Claude Bernard, the organism was a vital machine and not a mechanical machine."[99] It is as a result of this experimentalism tempered with doubt and skepticism that Chiari labels Bernard's position as "physical vitalism."[100] From Bernard on, however, the idea of vitalism as concrete "force" becomes increasingly problematic, and vitalists, it would seem, are marginal to the mainstream thrust of reductionist "scientific" medicine.

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of the vitalist discourse, particularly as it engages with issues relating to epistemology. See John Marks, *Gilles Deleuze: Vitalism and Multiplicity* (London: Pluto Press, 1998). The phrase, I would add, also seems to capture, in the fashion of a caricature, the sense of an important element of French epistemology as historically conceived in the 19th and 20th centuries, at least in so far as it appears to be situated between the traditions of British Empiricism (Bacon, Locke, Hume) and German Idealism (Kant, Hegel, Schelling).

[98] This is certainly the argument made about the development of biology in Coleman's classic treatment. See William Coleman, *Biology in the Nineteenth Century: Problems of Form, Function, and Transformation* (Cambridge: Cambridge University Press, 1977), especially the last chapter, 160-166.

[99] Joseph Chiari, "Vitalism and Contemporary Thought," in Burwick and Douglass, *The Crisis in Modernism*, 245.

[100] Ibid., 248. As Chiari says: "The discoveries of the workings of the cell in the second half of the nineteenth century established the preeminence of chemistry, and vitalism took new directions."

## *Chapter 5*
## *Vitalism After Bernard: Biology and Ideology*

It is somewhat paradoxical to talk about the disappearance of vitalism after Bernard, since philosophically it witnesses a major rebirth – its greatest modern reincarnation – in the late 19th century. The neo-vitalist Henri Bergson (1859-1941) begins to have a clear, obvious and widespread impact on French thought in the 1880s and 90s, but there are also vitalist themes expressed in a host of other late 19th century thinkers – the Germans Friedrich Wilhelm Nietzsche (1844-1900) and Wilhelm Dilthey (1833-1911)[1] perhaps foremost. *Naturphilosophie* and the continuing shadow of German romanticism are important sources of vitalist thought in the larger late 19th century European sphere,[2] but

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[1] In the brief but brilliant entry on vitalism in *The Oxford Companion to Philosophy* Bergson, Nietzsche and Dilthey are cited as being influenced by vitalist thought. See Adam Morton, "Vitalism," in Ted Honderich, ed., *The Oxford Companion to Philosophy* (Oxford: Oxford University Press, 1995), 901-2. In a wonderful passage in an essay on Dilthey's thought, the author captures the essence of Dilthey in a kind of skeptical empiricism that challenges the Humean solution provided in a scientific ontology: "Dilthey fully shared Hume's resolutely *empirical* epistemology (as Hume puts it, none of the sciences can go beyond experience). But he found many reasons to reject the Humean analysis of that experience – to reject, in other words, Hume's psychology, which was accepted by British empiricism generally. In this empiricism, the mind is viewed as the passive recipient of 'impressions' (which it copies in the form of 'ideas'), and as governed by mechanical laws of association of such ideas. To Dilthey (here, doubtless, the heir of Romanticism), this passive and mechanical picture of the mind is false: false, not only of human life as a whole, but even of the 'knowing subject'. (In a well known passage, Dilthey charged that 'no real blood' flows in the veins of the knowing subject 'fabricated' by Locke and Hume – and also Kant.) 'The core of what we call life is instinct, feeling, passions and volitions'; and this 'whole man' must be taken 'as the basis for exploring knowledge and its concepts'. Knowledge arises not just in the mind but in 'life' – the life of a feeling, willing, passionate human being. Indeed, the German words *erleben* and *Erlebnis*, used by Dilthey to express the idea of experience in the sense he considered fundamental, are derivatives of the word for life (*das Leben*). In order to bring out the importance of this for Dilthey, *Erlebnis* is often translated into English as 'lived experience'." Michael Lessnoff, "Dilthey," in C.L. Ten, ed., *The Nineteenth Century: Routledge History of Philosophy, Vol, VII* (London: Routledge, 1994), 207.

[2] This association of vitalism with German romanticism was a main reason for it being criticized by one early 20th century mechanist. Jacques Loeb, a fierce opponent of Hans Driesch's vitalism, saw it as a manifestation of German romanticism and mysticism: "He saw such claims as mystical nonsense, introducing into biology a non-scientific metaphysics that he (Loeb) had been struggling since his student days to eradicate. It represented for him a resurgence of German romanticism, a new *Naturphilosophie* that was not only philosophically backward-looking but from a pragmatic point of view had no significant research potential. As a result of this 'romantic climate' in biology, Loeb often took an even more extreme position than he otherwise might have taken. Driving (and keeping) metaphysics out of biology required adopting an uncompromising, hardened Mechanistic line." Loeb, while he began his schooling in philosophy, could be said to

the ideological and philosophical vitalism of the period also owes a clear debt to, and can in a sense trace its lineage from, the medical vitalism of the Montpelliérains and the Paris theorists who continued to discuss the topic on into the 1850s and 1860s.

Though most biologists and medical practitioners were moving steadily towards an increasingly "scientific" approach, and the bacteriological (Pasteurian) paradigm was starting to take hold, the conceptual developments in the medical and biological sciences, particularly those surrounding questions of development and evolution, were also raising profound epistemological and even metaphysical questions among a select group of thinkers. These critics of modern biology and medicine were of two kinds – philosophers with a particular interest in the life sciences and scientists who continued to be philosophically inclined. This intersection points to a final era of intellectual cross-fertilization and multiplicity, one might even say of dilettantism, before positivism, rigidified disciplines and specialization fully took hold and created our 21st century world. In the late 19th century, the scientific world had yet to fully eradicate all metaphysical concerns in a period when religious and spiritual thinkers still thought it appropriate and necessary to engage with scientific ideas, and scientists in turn felt it necessary to reflect on the meaning of their discoveries. It is within this intellectual world that vitalism managed to survive.

*French Medical Vitalism After 1865*

In the introduction of *Le vitalisme et l'animisme de Stahl* (1864), the philosopher Albert Lemoine saw ideas like animism and vitalism as having faded from the mainstream of medical discourse. Lemoine portrayed animism as forgotten after around 1855 except for a few pamphlets and articles that repeated the same tired arguments, as he says, "*sans éclat et sans nouveauté.*"[3] He describes animism's apparent rise and fall as follows:

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have had an "anti-philosophical" bent, calling philosophy a form of "word-mongering." See Garland E. Allen, "Mechanism, Vitalism and Organicism in Late Ninteenth and Twentieth Century Biology: The Importance of Historical Context," *Studies in the History and Philosophy of Biology and the Biomedical Science* 36 (2005): 261-283; 276, 269.

[3] Albert Lemoine, *Le Vitalisme et L'Animisme de Stahl* (Paris: Germer Bailliere, 1864), i. Lemoine's book prompted a critical response from the ever diligent defender of animism in the

"After the brilliant battles concerning the nature of life, which divided French medicine into two enemy camps, this fundamental question of physiology appears for the moment to be forgotten."[4] He further noted that nobody even bothered to make known the idea of animism, and that except for the occasional passing link to Aristotle or the glorious name of Stahl, it has, in his words, been "relegated...to the dustbin of history."[5] Animism was for Lemoine a philosophy that, since the 17th century, and especially since the beginning of the 19th century, had been far from physiology, and seemed even more removed from the quarrels between the schools of Paris and Montpellier.[6] This point certainly illustrates how even though medical systems were still prominent in the mid-century, those linked to spiritual or religious conceptions of man had largely faded from view. Lemoine's classical portrait of two distinct medical ideologies, of Parisian organicism and Montpellier vitalism, is expressed here early on, only a few years after their initial appearance in popular forums like the organicism-vitalism debates of the Academy of Medicine in the mid-1850s.

But what of animism? Lemoine writes that he has taken it upon himself to study the works of Stahl, and finding in them a relevance to the question of modern physiology, has sought to show doctors that they are not idle philosophical speculation, and philosophers that they are not simply a system of medicine. Thus his book *Le Vitalisme et L'Animisme de Stahl* is an attempt to re-popularize and explain Stahl's ideas. He sees a study of Stahl as being particularly relevant in the context of the early 1860s, with its debates about spontaneous generation and the development of life, and paints a picture of the dynamic ideological struggles that made this era so seminal in the history of medicine and biology:

> Today when the beautiful experiments of Pasteur draw the attention of thinkers and the public on the question of spontaneous generation, when the books of Darwin, Lyell, Spencer and Büchner more or less remove life and the living from brute matter, when all the most varied and tenacious hypotheses come back to life as at the time of alchemists and iatromechanics, when animism is revived, Montpellier reawakens, when Parisian organicism renews its strength in

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late 19th century, Dr. Sales-Girons. See Dr. Sales-Girons, "L'animisme de Stahl; le corps fait pour l'âme, et non l'âme pour le corps," *Revue médicale française et étrangère* 2 (1864), 385-388.

[4] Ibid.

[5] Ibid., i-ii.

[6] Ibid., i.

> positivism, I have reason to think that this study of Stahl and animism has lost none of its interest or usefulness...[7]

With the disappearance of the classical, *epistemological* vitalism of the Montpelliérains after the powerful methodological and philosophical critique leveled at it by Bernard's experimentalism, *ideology* emerges as a powerful motivator for committed vitalists. Vitalism and animism become increasingly marginal viewpoints, and are held to for largely ideological motivations – whether as a critique of the harsh materialism of modern medicine (or society at large, for that matter) or because of religious or spiritual commitments ever more at odds with the Third Republic's positivist paradigm of secular scientism.[8] Even before Bernard, however, there were signs of the increasing "ideologization" of vitalist thought. We find, for example, Dr. Brochin concluding his brief 1889 summary of vitalism with a mention of the "celebrated discussion that took place at the Academy of Medicine on vitalism and organicism in 1854," providing an admirable summary of the debate written from the point of view of a pathologist by the name of Parchappe, who says the following:

> I believe that the true conception of illness is that which vitalism has espoused since the time of Hippocrates. I believe that this conception does not exclude any progress achieved or to be achieved in the vast domain of pathology; that it is not particularly hostile either to the methods of chemical or physical observation, the use of which have been of immense service, in diagnostics or in pathogens, nor to pathological anatomy, which has so powerfully illuminated science, either in the

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[7] Ibid., vii. The spontaneous generation debate was a major controversy in the early 1860s. In France, the idea – a threat to religious orthodoxy throughout the early 19th century – was defended in 1859 by Félix-Archimède Pouchet (1800-1874) in his book *Hétérogenie*. His proposal of a "*force plastique*" that led to a possibility of abiogenetic spontaneous generation was used as a defense of orthodoxy and vitalist thought, and attacked by Pasteur, who interpreted Pouchet's ideas in a decidedly more materialistic light. See John Farley and Gerald L. Geison, "Science, Politics and Spontaneous Generation in Nineteenth-Century France: The Pasteur-Pouchet Debate," *Bulletin of the History of Medicine* 48 (1974): 161-198 and Gerald L. Geison, *The Private Science of Louis Pasteur* (Princeton: Princeton University Press, 1995), 110-142.

[8] In this respect consider the following: "The beliefs that people hold about health and disease often intersect with other fundamental beliefs about the world in which they live. Among the many extramedical associations of alternative medicine, two broad features stand out, which might be labeled cultural and political. The first is sometimes called antipositivism, though that term needs to be unpacked and is in a sense a misnomer, since counterhegemonic medicine was less often antiscientific that anti-materialist and was arguably consistent with the spiritual and metaphysical components of positivism as understood by Auguste Comte and some of his disciples." Matthew Ramsay, "Alternative Medicine in Modern France," *Medical History* 43 (1999): 286-322; 290.

> source of disease or in the organic modifications that are part of their development.[9]

For Parchappe, the real problem was not the incompatibility of vitalism with modern research findings, it was that the division between the two camps, between organicism and vitalism, had become an unbridgeable gap, an antagonism that was perhaps forever irreconcilable between these two extremes:

> I believe that there is, in effect, a real and perhaps even irreconcilable antagonism between vitalist and non-vitalist doctrines; and that this antagonism finds its most extreme expression in the ultra-vitalist and ultra-organicist sects.[10]

This division, the very subject of this discussion of the post-1860 debates between the two "ultras" of vitalism and organicism, is essentially rooted in the growing gulf between the mechanistic materialists of the scientific world and the animists and spiritualists of the psychic world. It is essential to understand this divide, for it is a trend that is fundamental to the development of the associated realms of experimental biology, clinical medicine and theoretical psychology.

One point of exception is in order, however, and it again comes from the pen of Parchappe, who sees vitalism as an indissoluble and essential aspect of the medical art:

> Yet I think that vitalism, for the honor of the science and for the wellbeing of the sick, is today and always will be the dominant medical doctrine, despite all the differences that divided it and will long continue to split the domains of science and art.[11]

After the extensive and heated discourses on the relationship between animism, vitalism and Hippocraticism that took place in the 1850s, there is a general downturn in the presence of philosophical arguments in the medical literature of the 1860s and early 1870s. And yet, right at the beginning of the 1860s we see a notice regarding an ambitious project being carried out by the Parisian physician Ernest-Charles Lasègue (1816-1883) in the *chronique mensuelle* of the *Archive générale de médecine.*[12]

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[9] Brochin, "Vitalisme," in *Dictionnaire encyclopedique des sciences médicales, Vol. 100* (1889): 719-728; 727.
[10] Ibid.
[11] Ibid.
[12] Reflecting on the direction of Lesègue's career gives one further clues as to the fate of vitalism. Lesègue was a friend and colleague of Claude Bernard, who led him to discover neurology at the Salpêtrière. After graduating with the thesis discussed in 1846, and receiving his *agrégé* in 1853, Lesègue began work in 1854 in Lourcine, at the Salpêtrière, and at three other hospitals. Deeply

Lasègue's 1846 "thèse de doctorat," *De Stahl, et de sa doctrine médicale*, is a revealing document which speaks to the deep interest among mid-century medical practitioners in the history and tradition of the profession. In response to the works of a Dr. Paine, Lasègue was beginning a critical journal geared to American doctors who sought to engage in philosophical and doctrinal discussions. Produced under the title *le Vitalisme en Amérique*, the first article would treat the vitalism of the ancient world. The aim of these introductory works was to show the transformations of vitalism; how its authority declined as the circle of scientific thought, and particularly the physico-chemical sciences, grew; and also how vitalism, which took on the "great" questions, owed its resilience to the contradictions and "uncertainties" that were inseparable from these questions.[13]

This foundational skepticism was often invoked in discussions of the medical art in the mid-19th century, and was not by definition associated with vitalism. Still, in a more generalized expression of the limited applicability of physical and chemical models as frameworks for understanding biology, the skepticism inherent in medicine was an inseparable aspect of its special relationship with science. Lesègue gives us a passage that is beautifully evocative of his particular belief in the unique nature of the medical art:

> I have always applied myself to showing how medicine differs from the other sciences, and that it cannot wait, and that today's patient cannot wait until tomorrow. It is this necessity to intervene anyway – the demands of conscience – that imprints on medicine a stamp of scientific inferiority that doctors find hard to accept. The scientist only releases his formula when he believes it to be finalized, and between theory and application leaves a gap he does not feel obliged to fill; what he does not know does not exist, and generations follow without challenging him. For us, action precedes knowledge; we cannot count on the indulgence of the indifferent; our judge is the person who is suffering and will not be ignored.[14]

Lasègue admits that some errors have been made in the name of fiercely held ideologies, but he also argues that the positive effect of any belief or strong conviction has an

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involved in the debates around vitalism in the 1850s and early 60s, he was by 1870 essentially asking questions about the broad parameters of the human personality in a very psychiatric vein. Lesègue showed a particular interest in the most unusual of psychological manifestations, like hysteria and split-personality disorder. A deeply theoretical physician and psychiatrist, Lesègue leaves the impressive *oeuvre* of a markedly reflective conception of medicine. See E. Charles Lesègue, *Etudes médicales* (Paris: Asselin, 1884).

[13] E. C. Lasègue, "Du vitalisme," *Archive générale de médecine* 5 (1860): 569-71.

infectious positive effect on the patient. He thus sees medicine as inherently different from science in this respect, which for him makes vitalism a valid option:

> Vitalist doctrines also have movements that feel passion; they attract ardent conviction or pitiless attacks, and have none, or almost none, of the impassive calm of science. This defect, inexcusable everywhere else, has for the doctor certain merits that absolve him. His practice gains from it a zeal that overcomes obstacles; the doctor communicates an often healing confidence to the patient. Life, by all its rights, its ingenuity to repair disasters, which has no other motive but to save the patient, appears to be a mysterious auxillary force, on which he has learned to count. Which of us, even among the most anti-vitalist, does not wish, at the moment when illness dominates him, to be soothed by the idea that he carries within himself a force of indefinable resistance, and he is not without help in his battle. I know that none of this is called science; but we have learned that the doctor has other moral obligations, and any illusion that provides the strength to accomplish a duty, merits respect.[15]

Lesègue presents a provocative argument here, revealing of the deep distinction that still existed – even after the far-flung materialism and spiritualism debates of the 1850s – between 'science' and the art and moral imperatives of medicine.[16] We see that even as the influence of histology, neurology and eventually bacteriology continue to push the emerging discipline of scientific medicine towards a materialistic stance and the idea of disease specificity, the notion of an essentialist vital resistance grows in popularity. Alternative healing and medicine, for example, which experiences an enormous growth in the late 19th century, will make Lesègue's arguments into axioms.[17]

As the laboratory scientist, a relatively new breed of experimental biologist, emblemized in late 19th century France by Pasteur, pushed the bounds of mechanism and materialism to their logical end point, physicians, clinicians and general practitioners held

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[14] Ibid., 570.

[15] Ibid., 570-71.

[16] This perspective would retain a certain currency on into the 20th century. We find the neo-Hippocratic historian of medicine Arturo Castiglioni reflecting on this fact in his classic *A History of Medicine*: "Medicine, and this is one of the most valuable of the teachings of history, cannot remain equal to its great task without preserving for the physician his double character of scientist and worker for the people (*demiurge*), according to the classic concept. If in the exercise of his art he is guided by his knowledge of the laws of nature, then his technical knowledge, his calm judgment, and his objective reasoning should furnish him with the rules which will determine the application of these natural laws in practice. It is only thus that the clinician can be clinical in the true sense of the word, a far different matter from the mere calculation of figures and the counting of cells, in giving equal consideration to all the endogenous and exogenous factors that can contribute to modify the normal state of health." Arturo Castiglioni, *A History of Medicine*, trans. E.B. Krumbhaar (New York: Knopf, 1941), 956.

steadfast to the therapeutic value of the "vital force" and to the potential healing power of the spiritual. In fact, despite a short period in the 1890s when an understanding of Pasteur's germs appeared to hold immense promise, bacteriology and clinical medicine essentially went their separate ways until after the Second World War.[18] Thus it was only with the emergence of molecular biology that vitalism was fully eclipsed in the medical discipline. An apparent obstacle to clear theoretical thinking in physiology, the soul was also fading from view under the microscopes of the mid- and late 19th century biologist, and medicine, which had once hierarchically reigned over the natural philosophy of the living, was increasingly dependent on this reductionist biology. Regardless, the continued discussions of vitalism in medicine were at the heart of attempts to recognize and maintain elements of the art's particular qualities.

While major inroads were being made in the physiological laboratory that pushed a materialistic view of human function increasingly into the ascendance, there were also many who suggested that these findings encouraged an outlook that was different from that of pure materialism. This was an argument for a materialism of a unique sort. In an 1863 article on *Animisme et vitalisme* in the journal *Montpellier médical*, Dr. Louis Clozel tries to capture this conception of materialism by employing the term first used by the great mid-century savant and ardent materialist Emile Littré, who specifically defines his view as a "*matérialisme physiologique*." This was, as he says "quite different from materialism *per se*, since it explains by matter man in his entirety, his intellectual and moral life, whereas the other focuses on explaining the phenomena of organic life by the general properties of inorganic matter."[19]

It is essential to understand this divide between what can be called metaphysical and epistemological materialism, since most vitalists of the late 19th century focused on challenging the philosophical materialists and their most strident claims, having largely abandoned the epistemological stance of the early 19th century. By way of a plethora of experimental findings, the chasm between organic and inorganic had certainly narrowed,

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[17] See Ramsay, "Alternative Medicine in Modern France."
[18] Ann La Berge and Mordechai Feingold, "Introduction," in Ann La Berge and Mordechai Feingold, eds., *French Medical Culture in the Nineteenth Century* (Atlanta: Rodopi, 1994), 18.
[19] Louis Clozel, "Animisme et vitalisme," *Montpellier Médical* 11 (1863): 58-67, 59.

and vitalisms in the late 19th century became focused on issues that still remained unresolved, like the nature of mind and development.

*Vitalism, Determinism and the Undivided Soul*

By the 1870s, a new concept – determinism – also came to be associated with the debates surrounding vitalism. In a interesting and well-argued piece on the history of determinism, the historian and philosopher of science Ian Hacking sees it as having important roots in the history of French physiology. Hacking suggests that it is Claude Bernard who first gives the word currency in his "immensely influential" 1865 *Introduction to the Study of Experimental Medicine*. For Bernard, Hacking argues, the word had a meaning that brought it close to the notion of "mechanism," and "the doctrine that everything is caused by mechanical means." As Hacking says:

> 'Déterminisme' for Bernard denotes that which actually does the determining, although he also holds, as a doctrine that came to be known as *Déterminisme*, that there is such a determining for every physiological event. This is in part an anti-vitalist opinion.[20]

Indeed determinism, particularly this latter, mechanical and reductionist form, was an "anti-vitalist" opinion, but the way it was expressed by critics requires some elaboration. Hacking points to physiological and neurological science as the source of the new notions of determinism, particularly in the thinking of strict materialists like Emil Du Bois-Reymond (1818-1896). This view found expression, elaboration and support, argues Hacking, in the early 1870s.

> At this juncture Du Bois-Reymond's own branch of science becomes of central importance. He was an electroneurologist, a member of the 1847 Berlin group that proclaimed it would never allow merely mental causation in the study of the brain. The 1872 lecture ["On the limits of the knowledge of nature"] was a confession of doubt, of limitation about that program. Central to the program was an out and out materialism: everything mental is to be understood in terms of the material. Du Bois-Reymond was no dualist. Nor, to all intents and purposes was his French counterpart, the physiologist Bernard, who gave the word prominence in French. It is precisely the explicit materialism and the medical investigation of

[20] Ian Hacking, "Nineteenth Century Cracks in the Concept of Determinism," *Journal of the History of Ideas* 44 (1983): 455-475, 459.

> the human mind and body by chemical and electrical means which generated the new form of determinism.[21]

Hacking goes on, however, to write that "the hegemony of determinism had never been absolute." Much of this dissertation has shown how true that statement is. In fact, Hacking sees the resistance to strict materialism and determinism as primarily derived from the critiques of the vitalists: "There were always those students of the human body, and of living matter in general, called vitalists. They rejected the Laplacian dictum from the start."[22] One might add that they were not just students of the human body, but also students of physiology, psychology and the complexities of the mind-body connection.

The way these ideas surrounding materialism, determinism and the nature of the soul were discussed in the French medical world, and the complexities of these arguments in their relationship to the various visions of vitalism, requires a closer look. One excellent example of a debate is found in a pair of journal articles in the *Revue médicale française et étrangère* from 1876. The first article was entitled "Animisme et vitalisme: L'âme ne serait pas le principe de la vie organique." It was a long letter written to the *Revue* by the venerable and well-known physician Jean Bouillaud (1796-1881), and began by asking "how to demonstrate the existence of the soul without the dogmas of animism and spiritualism."[23]

Bouillaud tried to grasp the nature of animism and spiritualism through the concept of intuition. He contrasted this intuition with our perception of the external world. Both these acts of observation had their source in our intelligence. Thus he postulated that there was an "internal" sight that contrasted with our external sight:

> All beliefs in the existence of a being, whatever it is, is acquired because it relates to objects made evident to our spirit, our intelligence, via our external senses, or because it relates to objects made evident also to this spirit, to this intelligence, without the intermediary of external senses, but via direct or indirect intuition. This intuition, or, as its name indicates, this observation, internal vision, shows us objects of a spiritual or immaterial order, the soul in particular, the same way external vision shows us corporeal and material objects.[24]

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[21] Ibid., 463.
[22] Ibid.
[23] Bouillaud and Sales-Girons, "Animisme et Vitalisme. L'âme ne serait pas le principe de la vie organique." *Revue médicale française et étrangère* (20 March 1876): 353-362, 353.
[24] Ibid., 354. Emphasis in original.

We are faced here with a striking statement of the unique character of intuition, which anticipates, as we will see, the idea of Bergson's division between intellect and instinct, and yet it is importantly different. Where Bergson realizes the ineffable, elusive almost indescribable quality of a true intuitive leap, Bouillaud relies on a very orderly, neat, rationalized division of the two realms of understanding. It is a conception that is still deeply Cartesian and thoroughly dependant on rationalism. In his final analysis of this divide, Bouillaud also reflects the influence of psychological theory, mentioning, for example, the Biranian notion of the "lumière *intérieure*."[25]

The next question Bouillaud addresses is "how animism and vitalism must be distinguished from one another." He begins his discussion with a categorical statement about the soul: "The soul, as it is tied to the body by a knot, a hundred times more marvelous than the *Gordian knot*, is thus...considered the impenetrable secret of man, the soul is *one* and essentially distinct from the living"[26] This soul – sensing, thinking, intelligent, desiring – was not to be confused, Bouillaud insisted, with the principle of life. It is this clear division that Bouillaud ascribes to the thought of Barthez: "Barthez himself, the prince of modern vitalists, proclaimed this principle in the most formal manner; and he considered it inviolable and sacred."[27]

Bouillaud sees the insistence on this principle change with Barthez's disciple Lordat, following the example of Grimaud and especially Bichat, who conceives of a "*double-dynamisme*, a double *principe vital*, a double soul."[28] This dual soul, under the name of *première majesté* and *seconde majesté*, Bouillaud saw as having an ancient heritage, taught by Plato, Aristotle and Galen. Bouillaud was in agreement with these thinkers, and understood the system in terms of the important distinction between a *vegetative* and an *animal* soul, or put in Aristotelian terms, between the nutritive and sensitive soul. He is thus critical in his letter of the "*Revue médicale*, this partisan zealot of the spiritualist school" and "its eternal campaign in favor of the soul, considered as simultaneously governing *animal* and *vegetative* life."[29] He argues that this view contains

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[25] Ibid., 355.
[26] Ibid. Emphasis in original.
[27] Ibid.
[28] Ibid.
[29] Ibid., 356.

within it a fundamental contradiction: "It seems to me that underneath all this is, on the part of such a perspicacious spirit, I do not know what kind of *misunderstanding, what contradiction* even, on both a physiological and psychological level."[30]

Dr. Sales-Girons, the long-time spiritual head of the *Revue médicale* and a devoted advocate of an animistic and thus unified notion of soul, responds to these arguments of Bouillaud with the following:

> Fundamentally, we are not divided beings; we are each an individual with a self that contains all, spirit and the matter that we are made of; let the ignorant ones say that the orthodox doctrine of animism makes this a spirit over here and a body over there, like the driver and the locomotive, as Plato too spiritually dreamed it. We know ourselves that body and soul make only a single being in a man, one penetrating the other by this penetration that makes diverse components into a unified substance.[31]

Sales-Girons sees this as a key to the proper conception of a unified individual, personality and self – one that cannot be understood clearly when one divides the body so thoroughly from the influence of the soul. This to him this is linked to an untenable idealism: "Descartes and Maine de Biran dreamed like Plato."[32]

Sales-Girons, however, is also troubled by the reductionist approach to this admittedly important body brought about by physiology and especially the cellular theory, particularly as it does little to arm the medical practitioner with any better understanding of the nature of disease:

> Take a general glance at modern physiology, and you will see that the human organism is no longer one, but that it is a collection, an assembly of cells. Polyzoïsm has taken the place of monozoïsm. How to rediscover the autonomous self in this assemblage, when individuality belongs to bees? And doctors that we are before everything, how do we understand human illness, if it is cells here and there that are sick and not us.[33]

Sales-Girons understood the divided conception of the soul as one of the first instances of this tendency towards reductionism, and sees some of the ideas of the Montpellier school as leading along this slippery slope: "...where did today's Polyzoïsme begin: it began with Montpellier's Duodynamism; which we might today call *Bizoisme*."[34] From the

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[30] Ibid., 356-7. Emphasis in original.
[31] Ibid., 359.
[32] Ibid.
[33] Ibid., 359-60.
[34] Ibid., 360.

point of view of this commentator, this approach rife with reductionism was also fearfully close to strict materialism, and thus challenged cherished associated notions of liberty, free will, and the individuality and unity of man founded on a particular animist conception of the human soul. Moreover, it was a perspective that reduced sickness to nothing more than broken parts in a machine, and did little to further the understanding of a complete, unified and particular patient and his or her illness.

For Sales-Girons the animist, steeped in a unique combination of Aristotelian, Scholastic, neo-Thomist and Catholic doctrine, the vital principle as conceived by the Montpellier School was too materialized, and did not recognize the important distinction between matter and form:

> The vital principle that we would put between the body and soul is a layer that the doctrine [of animism] rejects because the intimacy of a form with the matter that shapes it excludes any space there would need to be between the two. Aristotle said it, St. Thomas repeated it, Catholic teaching, against which no system will ever prevail, confirms and supports it.[35]

Lest we assume that this was a radically religious opinion, remember that Sales-Girons saw the establishment of a strictly "Catholic" medicine as going too far, and was personally resistant to the creation of religiously inspired medical faculties in Catholic universities, which began to occur in the late 19th century. This was particularly the case in the period after the passing of the Falloux Law (1850) that gave Catholic education a certain freedom, but before the Ferry Laws (1881-86) that were thoroughly secular and universalizing in their thrust. Still, Sales-Girons and his journal represented a clear animist opinion informed by Catholic principles that was a very far cry from the scientific and medical materialism emerging as the dominant paradigm. As he says: "My zeal has never surpassed the boundaries of a catholic animism, which is the view of the *Revue médicale*."[36]

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[35] Ibid.

[36] Ibid. The Parisian Vitalist Paul-Émile Chauffard describes the *Revue médicale* in the following unflattering terms: "*La Revue médicale, je le dis à regret, s'égare jusqu'à méconnaitre toutes les notions de l'autonomie médicale: elle fait de la vie le résultat de l'action d'une âme unique, de l'âme intelligente, sur la matière organique.*" Paul-Émile Chauffard, *Lettres sur le vitalisme* (Paris: V. Masson, 1861), 49.

The most important influence on notions of vitalism after 1860 was not philosophy, the history of medicine or even history *per se*, but rather natural history. Darwin's *The Origin of Species* (1859) represented, at least on the surface, a major challenge to important precepts of the vitalist view.[37] Foremost among these was the concept of teleology, a belief in the intent, direction and purpose in living things. Aristotle believed that nature was goal-directed, and this internal teleology of nature had an important place in the philosophy of biology throughout the history of Western thought, right up to the mid-19th century. With the theory of evolution, Darwin, in one swift stroke, reduced teleology to physical causation.

This created a problem for vitalists. Inherent in the notion of a vital force, whether ephemeral and immaterial or concretely acting on living matter, was a belief in purpose and direction. From Aristotle's *entelechy* to Pierre Teilhard de Chardin's "noosphere," thinkers argued for the directed nature of living "forms," the end inevitably resting in man. Darwin, in contrast, saw evolution operating through the mechanism of natural selection, and felt there was no particular end or purpose to the whole process. Man was merely a chance occurrence.

Initially, the French reception of Darwin's theories was actually quite muted. The country already had a distinct, elaborate and well-developed tradition of natural history theory going back to Georges Cuvier (1769-1832), Jean Baptiste de Lamarck (1744-1829) and even the Comte de Buffon (1707-1788).[38] The term 'evolution' was not used in the French context, and also, it should be noted, only appeared in later editions of

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[37] One commentator says that "Although vitalism had its share of friends and opponents in the nineteenth century, it was only after Darwin's conception of evolution by natural selection was grasped that vitalism came to fall in favour very generally." Jagdish Hattiangadi, "Philosophy of Biology in the Nineteenth Century," in C.L. Ten, ed., *The Nineteenth Century: Routledge History of Philosophy, Vol. 7* (London: Routledge, 1994), 272-296; 278.

[38] For the distinctiveness of French evolutionary thinking and its impact on the reception of Darwin see Linda L. Clark, *Social Darwinism in France* (Birmingham: University of Alabama Press, 1984). For the influence of Lamarck and Lamarckism see Stuart M. Persell, *Neo-Lamarkism and the Evolution Controversy in France, 1870-1920* (Lewiston, Queenston and Lampeter: The Edwin Mellen Press, 1999).

Darwin's *Origins*.[39] Darwinism certainly never caught on in France, and discussions of evolutionary theory in the country relied heavily on the French word *transformisme*.[40] Cuvier's immense influence on French biological thought was particularly important, since this founder of comparative anatomy's assertion of the immutability of species helped create an uncongenial climate of thought that "effectively discredited" Darwin's evolutionary speculations. In fact, the general character of French science, its precision and emphasis on the empirical, made the vague theoretical generalities of evolutionary theory as expressed in *Origin* tough to swallow. One author argues that the empiricist bias of French science "militated against early acceptance of Darwinism."[41]

For many in the medical and biological realms of French science, Bernard's experimental impulse held more sway than Darwin's theories of evolution. There was, of course, the central conundrum that evolution was not experimentally verifiable. This posed a problem for the French scientific tradition, deeply rooted as it was in the Comtian distinction between science based on observation and that based on experiment. Comte was always troubled by biology, which seemed to him so difficult to tame through the controlled and rational realm of the experimental, as was not the case with physics or chemistry. Besides, theoretically speaking, biology in France already had a long and well-established tradition. This was the scientific chauvinism that led the empiricist and materialist Emile Littré to suggest that Darwin added nothing remarkable to Lamarckism.[42]

Finally, perhaps most important of all, there is the political context of France in the 1860s to consider. As we have seen in investigating the bitter disputes over

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[39] In fact the word "evolution" was coined in 1744 by the German biologist Albrecht von Haller to describe the theory of preformation – a belief popular in the 18th century arguing that embryos grew from preformed homunculi in the egg or sperm. Haller arrived at this term judiciously, for the Latin *evolvere* means to "unroll" – and the tiny homunculus theorized by the preformationists was thought to unfold from the originally cramped space of its "germ" as it increased in size during embryonic development. See Stephen Jay Gould, *Ever Since Darwin: Reflections in Natural History* (New York: W.W. Norton, 1992 [1977]), 34-5.

[40] Thomas F. Glick, ed., *The Comparative Reception of Darwinism* (Austin: University of Texas Press, 1972), 117-163. On the first reception of Darwin by biologists see J. Farley, "The Initial Reactions of French Biologists to Darwin's *Origin of Species*," *Journal of the History of Biology* 7 (1974).

[41] Martin Fichman, "Darwinism in France," in William E. Echard, ed., *Historical Dictionary of French Second Empire, 1852-1870* (Westport, CN: Greenwood Press, 1985), 165-168; 165.

[42] Ibid., 166.

materialism and spiritualism that marked the 1850s, this politicization of science was a general trend. It is thus fairly easy to make the case that "French science – particularly biology – was embedded in the political and religious controversies of the Second Empire."[43] For many, Darwinism brought with it troubling associations, like materialism, atheism, and tangentially, radical Republicanism – all of which remained controversial ideas under Napoleon III. The first copy of *Origin* translated and published in French, for example, was produced by Mme. Clément Royer (1830-1902), a staunch anti-Catholic, republican and materialist. Her polemical introduction to the 1862 work presented Darwin's theory of evolution as the "rational revelation of progress."[44] One emblematic critic of evolution was the pioneer of brain science Pierre Flourens (1794-1867), a devout Catholic, who challenged Darwinian materialism in his 1864 *Examen du livre de M. Darwin sur l'origine des espèces*.[45]

The development of the theory of natural selection and the growth of Darwinism are often portrayed, at least in the context of Victorian Britain, as leading to increasing materialism. Ideologically, they represented a challenge to fiercely held Biblical beliefs about the origin of man, and the struggle between the ideas of Darwin and the doctrines of Christianity was certainly a feature of the late 19th century Victorian intellectual sphere.

Most of his critics and contemporaries saw Darwin's view as too materialistic because there was absolutely no supernatural or teleological force involved in his conception of evolution. While the discoveries of the Scientific Revolution had challenged the strength of Christian theology, most of its pioneers were, like Newton, unwilling to wholly abandon the idea of God. This was the case even though God was portrayed as the Great Watchmaker who had set the heavenly spheres in motion and whose subtle yet discernable natural laws ensured that the whole would continue indefinitely in a smoothly mechanical manner. This was the God of the Deists, an

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[43] Ibid.
[44] Ibid.
[45] On the political and intellectual climate in France and the reception of Darwin see L. L. Clark, "Social Darwinism and French Intellectuals, 1860-1915" (Ph. D. Dissertation, University of North Carolina, 1968) and Yvette Conry, *L'introduction du Darwinisme en France au XIXe siècle* (Paris: J. Vrin, 1974).

impersonal force that did not interfere, through the miraculous, in the everyday function of his greatest creation, nature.

And yet in France Darwin's ideas never took on the same ideological shape that they did in Britain. There was no Herbert Spencer to transform them into a stridently positivist philosophical system, no T.H. Huxley to use them as a rhetorical tool to argue for the virtues of agnosticism. Rather, quite the contrary, as evolutionary thought blended with the old notion of *transformisme* and became the inspiration for neo-Lamarkian theories of human development and for a view of evolution which saw it not as a definite mechanical process, but as the key to the ultimately unpredictable development of living things. This was the interpretation of Darwin brought about in Bergson's *Creative Evolution* (1907), and was also reflected in the growing focus on science and the question of the origin of life by theologians and philosophers, especially among those who defended neo-Thomist doctrines.[46]

*Growth, Development and Vitalism*

It was, in fact, in the realm of developmental science and embryology where vitalism had its greatest early 20th century successes, as witnessed in the *oeuvre* of the German Hans Driesch. His embryological research led him to posit a force and direction in life, *entelechy* as he called it, borrowing a term from Aristotle. These were questions that also struck the sensibilities of clinicians and physicians as well.

Ironically, it was a focus on the unpredictable, developmental, evolutionary aspects of the living that led many to invoke the idea of vitalism. Rather than challenging the notion of the unique nature of living things as compared to inorganic matter, for some the emergence of evolutionary theory merely gave the vitalist greater ammunition to make his case. In an 1889 entry on "*vitalisme*" in the *Dictionnaire encyclopédique de science médicales* the author, Dr. Brochin quotes his intellectual collaborator, an eminent

[46] On evolution and neo-Thomism see H.W. Paul, *The Edge of Contingency: French Catholic Reaction to Scientific Change from Darwin to Duhem* (Gainesville: University Presses of Florida, 1979) and S.I.M. Du Plessis, *The Compatibility of Science and Philosophy in France, 1840-1940* (Cape Town: A.A. Balkema, 1972).

clinician from Strasbourg named Schützenberger. We read here a thought-provoking quote from Schützenberger's *Fragments de philosophie médicale* (1879):

> The special origin, generation, the mode of production, development, existence and conservation of organized beings, the spontaneous healing of lesions and illnesses, individuality, unity, the autonomy realized by the (concomitant multiplicity) of organs and functions, all these grand general characteristics, that so profoundly differentiate a living organism from just a body, also represent the general laws of all organization. These laws are of a fixed permanence; the idea of the living organism implies them, and without them no organization can be created. These special laws and characteristic of life establish the autonomy and the specificity of biological science and its principle.[47]

Schützenberger's comments show a clear realization of the particular "organizational" qualities of living things. This anticipated the 'organismic hypothesis,' developed in biology in the 1920s and 30s, which emphasized the irreducible, holistic aspects of the living. In contrast to this largely methodological inclination of early 20th century biology, for the late 19th century observer vitalism was also a view of life that refused to overlook the philosophical and metaphysical questions associated with the issue:

> What is the first cause of creation, of development, of existence, of conservation, of autonomous repair in the living being? *It is impossible to overlook in philosophy this question of transcendental causality*; impossible also to resolve it otherwise but by conception, by the idea of a force, a special principle inherent in the fertilized seed, presiding at its evolution, at the creation of the organism and at its vital irreducible manifestations.[48]

For Schützenberger, this view was the essence of biology, and theories of development and evolution only reinforced the uniqueness of vital phenomena. We see that this view also included a healing and restorative principle and thus bridged the gap between theory and practice. This was also vitalism as philosophy of science, as the framing influence of the life sciences and what clearly distinguished them from the other sciences. To the degree that biologists – physiologists and physicians – kept this principle as their fundamental *epistemological* model, and resisted the reduction of their sciences to the models of physics and chemistry, all doctors and biologists were essentially vitalists:

> This idea of a special first cause of the microcosm is inevitable, it imposes itself on the intelligence like the latest *raison d'etre* of organized and living bodies. The science of life will cease being an autonomous and special science from the moment it claims to negate the specialness of its own principle. Also the vital

[47] Brochin, "Vitalisme," 727.
[48] Ibid.

> force, or whatever name it is given, as first cause, remains outside any possible discussion. All organic phenomena assumes, by definition, life, and in the final analysis, is vital. From this point of view every physician, every physiologist is and can be nothing other than a vitalist.[49]

*Elements of Late Nineteenth Century French Vitalism: Localism, Occultism, Bergsonism*

In *Peasants into Frenchman*, Eugen Weber paints a complex picture of the process of modernization in rural France. He argues that through concrete logistical changes and broad social reforms, from roads and railroads, to land reform, migration and military service, the countryside of France underwent a fundamental transformation in the period between 1870 and 1914.[50] Weber also notes that the duality of thought regarding the natural world – essentially a schism between "science" and "superstition" – that had persisted since before the Renaissance is finally eroded by the emergence of modernity, speeded by modernization, in the late 19th century. In contrast, Judith Devlin's *The Superstitious Mind* argues for the persistence and even continued prevalence of superstition and belief in the supernatural within a rural context.[51]

Classic treatments of 19th century France, like those of Cobban and Wright,[52] and recent attempts at synthesis, like that of Robert Tombs,[53] agree there is an enormous gap between the rural and urban in this period. The peasantry is the dominant group in France until 1914, with the farm population reaching its peak of 6 million around 1890.

The persistence of the "folk", in medicine as much as anywhere, provides a breeding ground for a stock of ideas that support many of the underlying assumptions of vitalism. Isaiah Berlin, for example, argues that it is in the quiet, peripheral, traditional and provincial milieu of Germany that romanticism originates and thrives and, as we saw in Chapter One, this persistent romantic conception certainly helps maintain vitalism's relevance. The spread and success of industry, and the popularity of its accompanying mechanical metaphors, hold little sway against simple peasant wisdom in the countryside

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[49] Ibid., 727-8.
[50] Eugen Weber, *Peasants into Frenchmen: The Modernization of Rural France, 1870-1914* (Stanford: Stanford University Press, 1976).
[51] Judith Devlin, *The Superstitious Mind* (New Haven: Yale University Press, 1987).
[52] See Alfred Cobban, *A History of Modern France, Vol. 2, 1799-1871* (London: Butler & Tanner, 1963) and Gordon Wright, *France in Modern Times* (Chicago: Rand McNally, 1966).
[53] Robert Tombs, *France, 1814-1914* (London: Longmans, 1996).

of France. A culture tied to the land maintains a sense of that land's inherent importance for life, and the notion of *milieu* remains strong. This dichotomy of rural periphery and urban core and the discourse it engenders is not to be overlooked, even as the dawn of the 20th century signals its slow, steady decline. When we recall that Claude Bernard was born into a vintner's family in Beaujolais, it is no surprise he always considered his rural roots to be a crucial part of who he was as a scientist.[54]

While it is unlikely that the persistence of rural sensibilities had any impact on the academies and hospitals of Paris – quite the opposite in fact, as this setting emphasized a cosmopolitan, Enlightenment paradigm – in a provincial *milieu* like Montpellier this "folk" culture played an important part in helping define the medical culture of the university.[55] Other factors promoting vitalism were at work in cosmopolitan Paris.

Occultism witnessed a meteoric rise in popularity in late-19th century France, and its ideas can also be connected to vitalist thinking.[56] The origins of the occult rebirth in the second half of the century are related to the rise of "spiritism," the French term for the spiritualism movement, not to be confused with Victor Cousin (1792-1867), Charles Renouvier (1815-1903) and Felix Ravaisson's (1813-1900) philosophical position of *spiritualisme*.[57] The Second Empire-era clinician Hermann Pidoux, for example, was an advocate of this second form of *spiritualisme*, rooted in an atheological belief in the soul's survival of bodily death that was very different from the "ontological" vitalisms and spiritualisms that he so forcefully criticized. This *spiritualisme* was a fine balance between non-dogmatic spiritual concerns and what were felt to be perfectly valid and

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[54] There are shades of this outlook in Georges Canguilhem as well, who signs his first published article: "Georges Canguilhem. Languedocien. Élève a l'école normale supérieure pour preparer l'agrégation de philosophie. Le reste du temps, à la campagne, à labourer." Jean-François Braunstein, "Canguilhem avant Canguilhem," *Revue d'histoire des sciences* 53 (2000): 9-26; 11.

[55] This was briefly discussed at the beginning of Chapter 2 and is the claim made in Elizabeth Williams' recent book *A Cultural History of Medical Vitalism in Enlightenment Montpellier* (Aldershot: Ashgate, 2003).

[56] Ramsey talks about this in the context of Magnetism: "Magnetism, indeed, should be seen in the context of a much more widespread pattern of interest in the occult, prophecy, mysticism, messianism, and the miraculous, often linked to medicine. The *fin de siècle* saw an extraordinary efflorescence of medico-religious movements that were sects in the strict sense of the term." See Ramsey, "Alternative Medicine in Modern France," 304.

[57] Though there were certainly *vitalist* elements in the philosophy of Charles Renouvier and Felix Ravaisson. See Jean Cazeneuve, *La Philosophie médicale de Ravaisson* (Paris: Presses Universitaire de France, 1958).

enthusiastically embraced scientific explanations of natural phenomena.[58] While *spiritualisme* had the patina of legitimacy because of the prominent place of its main supporters within the intellectual elite, Spiritism was a bit more fringe, and farther outside of the mainstream due to its overt occult associations.

Spiritism, a blend of the naturalistic techniques of Franz Anton Mesmer (1734-1815) and mystical ideas of figures like Emmanuel Swedenborg (1688-1772), was first introduced into France in the 1850s by the writings of the physician Hippolyte-Léon-Denizard Rivail (1804-1869), more famously known as Allen Kardec. His 1857 *Le Livre des esprits* postulates that human beings are composed of three main elements – the spirit (l'*esprit*, which in some sense can be translated as "mind"), the body and the "peri-spirit" (which connects the other two and allows the spirit to act on matter).[59] One also finds in this work some lengthy discussions of the vital principle. In addition, there was a French spiritist journal, *Revue Spirite*, founded by Kardec in 1858. By 1864, there were ten spiritist journals in France run by disciples of Kardec and no doubt benefiting from his energetic popularizing impulse.[60] Another French figure, Eliphas Levi, who was once a Catholic priest, wrote the classic occult text *History of Magic* (1860), which was reprinted several times and reached a wide audience. The popularity of spiritism and other occult trends, like Madame Blavatsky's Theosophy movement, bridging western philosophy and eastern mysticism, widened the perspective of many late-19th century thinkers.[61]

Despite the dominance of a generally materialist scientific trend, even the German context produced prominent propagandists for the spiritist movement. None had a greater impact than the "speculative" scientist and industrialist Karl Ludwig Friedrich von Reichenbach (1788-1869). His interest in chemistry and metallurgy evolved into a focus on the forces of the living. Reichenbach became interested in "sensitives", especially women, from 1844 on, and began conducting some of the early "experiments" in extra-

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[58] See the arguments put forward in Hermann Pidoux, *Le Spiritualisme organique* (Paris: Asselin, 1869), 6-10, discussed in Chapter 3.
[59] Allan Kardec, *Le Livre des esprits contenant les principes de la doctrine spirite sur la nature des esprit, leur manifestation et leurs rapports avec les hommes* (Paris: Dentu, 1857).
[60] See Lewis Spence, *An Encyclopedia of Occultism* (New York: University Books, 1960).
[61] For a fascinating exploration of this cultural context see Jocelyn Goodwin, *The Theosophical Enlightenment* (Albany, NY: State University of New York Press, 1994).

sensory perception. By the early 1860s Reichenbach was speculating on the existence of a universal force, which he called the "odic force" that, "permeated all of nature but was different from electricity and magnetism."[62]

Loosely associated with alternative healing techniques like hypnotism and electrotherapy, occultism also had an impact on medical philosophy and theory. Under the pseudonym A.J.P. Philips, J.P. Durand de Gros – a physician and physiologist who had a special interest in how the body alters states of consciousness, and vice-versa – wrote a text entitled *Electro-dynamisme vital* (1855) in which he speculates on a vital force that affects the nervous system and on the relationship between conscious and unconscious acts.[63] His investigation of magnetic and electrical aspects of the physical organism led him to the work of Reichenbach, which in turn prepared him for his encounter with hypnotism and the new direction of his research.

Consider also an 1885 work by Guillaume Edard, *Vitalisme curatif par les appareils électro-magnétiques*. Edard blended electrotherapy with vitalism in promoting his new electro-magnetic healing devices. After the important discoveries of British physicist James Clerk Maxwell (1831-1879), who finally conceptually unified the electric and magnetic forces, the relationship between electrotherapy and Mesmerism became even more closely linked.[64]

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[62] See Karl Ludwig Friedrich von Reichenbach, *The Odic Force: Letters on Od and Magnetism*, trans. F.D. O'Byrne (New York: University Books, 1968).

[63] J.P. Durand de Gros [A.J.P. Philips], *Electro-dynamisme vital ou les relations physiologiques de l'esprit et de la matière, démonstrées par des expérience entièrement nouvelles et par l'histoire raisonnée du système nerveux* (Paris: Baillière, 1855).

[64] This conception of medical electricity, or as it was known at the time, "the ethereal fire," can be traced all the way back to the early 19th century. See, for example, T. Gale, *Electricity, or Ethereal Fire Considered* (Troy, NY: Moffitt & Lyon, 1802). In France, the idea goes even further back, and was interestingly elaborated on by the radical revolutionary Jean Paul Marat. See Jean Paul Marat, *Mémoire sur l'électricité médicale* (Paris: L. Jorry, 1784). When one considers the radical inclinations of Marat and Mesmer, an interesting picture of the relationship between medical and political radicalism comes into view. This relationship is commented on by one author as follows: "Robert Darnton's much controverted argument that rejection at the hands of the academic establishment embittered figures such as Jean-Paul Marat and helped turn them to the path of insurrection may not go far towards explaining the general origins of the French Revolution, but it does not illuminate the radically egalitarian streak in certain forms of French alternative medicine." Matthew Ramsey, "Alternative Medicine in Modern France," *Medical History* 43 (1999): 286-322; 300. See also the source of Ramsey's point, Robert Darnton, *Mesmerism and the End of the Enlightenment in France* (Cambridge, MA: Harvard University Press, 1968).

The convergence of vitalism, alternative medicine and occult philosophy often revolved around the assertion of the importance of the soul in any complete conception of the human being, but even when no explicit claim to the idea of a "force" or substantive soul was made, these outlooks represent a deep challenge to the modern scientific worldview and its effect on the individual:

> Whether or not they explicitly evoke the concept of the soul, spirit, or nonmaterial forces, counterhegemonic medicines typically claim to restore the personhood putatively denied by modern biomedicine. Those that purport to derive their efficacy from forces inaccessible to conventional science promise not only to restore health but also to recover a realm of human experience stunted or suppressed by the dominance of the modern scientific world view.[65]

There were still some important echoes of the old Montpellier school in this new era of vitalist thought. The Montpellier physician, internist and vitalist Joseph Grasset (1849-1918) wrote about the history of occultism and the value of so-called "pseudo-" or alternative medical ideas.[66] Grasset linked medical vitalism and occultism, which he defined as not hidden from science but apart from science, though he hoped it could be one day a part of science.[67] Grasset also wrote the most exhaustive late 19th century biography – based on manuscripts and local archival sources – of the vitalist "founding father" François Boissier de Sauvages.[68] One of Grasset's students, Léon Delarbre, classified Sauvages as an "animo-vitaliste," a term he also used to categorize the resurgent vitalism taught by his teachers at Montpellier in the early Third Republic.[69]

The study of the psyche was always destined to be an uncertain endeavor. While early elements of behaviorism and functionalism were slowly forming a strong research programme around the large N problems of the many, psychical research and parapsychology fiercely challenged this approach. In response, the proponents of an open-ended psychic science suggested an outlook that assumed a near limitless potential in the psychic capacities of man and saw each individual as completely unique. In

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[65] Ramsey, "Alternative Medicine in Modern France," 291.
[66] See J. Grasset, *L'Occultisme, hier et aujourd'hui* (Montpellier: Conlet, 1908) and *Idées paramédicales et médicosociales* (Paris, 1912).
[67] Grasset, *L'Occultisme*, 21.
[68] Joseph Grasset, *Le médecin de l'amour au temps de Marivaux: Etude sur Boissier de Sauvages d'après des documents inédits* (Paris: G. Masson, 1896).
[69] Léon Delarbre, *Etude sur Sauvages, ses ouevres et sa doctrine* (Montpellier: Imprimerie centrale du Midi, 1880). See also Williams, *A Cultural History of Medical Vitalism*, 106.

contrast to the statistical and laboratory methods of modern medical science, psychical researchers emphasized the *empirical* study of unique psychic talents: mediums and those placed, through hypnosis, in trance states. They also took an anthropological interest in ritual, faith, mysticism, and the full spectrum of variants of alternative and non-Western healing practices. That these concerns should find strong echoes in the history of vitalism as presented to this point should come as no surprise. The anthroposophy of German occult philosopher Rudolf Steiner (1861-1925) with its emphasis on the "occult sciences" is also loosely in harmony with a vitalist approach. There is an important tension in the interpretation of "man" here, between anthropology and anthroposophy, or between thought (*logos*) and wisdom (*Sophia*). There were undoubtedly bridges spanning these two realms but one must also consider the unbridgeable divide between reason and belief, head and heart, material mechanistic mind and immaterial vitalistic soul.

While "critical" vitalism, exemplified by Bergson, abandoned the notion of a vital force that had any concrete, ontological validity, traditional elements of vitalism were kept alive on the fringes of alternative medicine, occultism and spiritism. Hyppolite Baraduc's (1850-1902) book *La Force vitale* (1893) dealt with what he called the "biometric vital force."[70] Another fringe figure, Gabrielle Delanne (1857-1926), wrote *L'Évolution animique* in 1897, providing a guide for living based on a spiritistic view of nature. Delanne's thought relied on the tradition of physiological psychology, and explored the ramifications of an intimate and intertwined "mind" (in many cases in Delanne's context better understood as l'*âme* – the soul) and body.[71] In many ways the mind-body arrangements speculated on by these late 19th century researchers remain still, a hundred years later, on the vanguard of speculations about human possibility.

This medico-occultism and its numerous practitioners supplied an impetus for the emergence of psychical research, which got its French start in 1890 with the establishment of the *Annales des sciences psychiques* (*ASP*). The *ASP*, which sprang from the ashes of the Société de Psychologie Physiologique, received a good deal of intellectual support from physiologist Charles Richet, who filled Bernard's chair at the

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[70] Hyppolite Baraduc, *La force vitale: Notre corps vital fluidique, sa formule biométrique* (Paris: Georges Carré, 1893).
[71] Gabrielle Delanne, *L'Évolution animique: Essai de psychologie physiologique suivant le spiritisme* (Paris: Chamuel, 1897).

Collège de France. One author writes about Richet's Bergsonian notion of the self as a product of "organic memory," noting the teleological and vitalist aspects of Richet's physiological thinking.[72]

The "scientific" investigation of fringe phenomena like somnambulism and the psychic manifestations of mediums were born of an interest in the essential tension between spiritualism and materialism. Parapsychology may represent, like aspects of vitalism, a challenge to the mechanistic philosophy of action by contact that had become in the 19th century the paradigmatic vision of the natural world.[73] The questions raised by the strict division of mind and body established by Descartes, and reinforced by the mechanical enterprise of science since the 17th century, were becoming a central part of critical philosophical thinking in late-19th century France, embodied in the person of Henri Bergson.[74] Bergson's popularity in the period is further related to his attempt to find a place for human spirituality in the interstices between natural science and religious doctrine. The central figure in French neo-vitalist thought, he dealt with the mind-body problem in his address as president of the Society for Psychical Research in 1913.[75]

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[72] Kenton Kroker, "Immunity and its Other: The Anaphylactic Selves of Charles Richet," *Studies in the History and Philosophy of Biology and the Biomedical Sciences* 30 (1999): 273-96. See also Stewart Wolf, *Brain, Mind and Medicine: Charles Richet and the Origins of Physiological Psychology* (New Brunswick, NJ: Transaction, 1993). For contemporary biographies of Richet see E.Osty, 'Charles Richet (1850-1935),' *Revue Métapsychique* (Janvier-Fevrier, 1936): 1-42 and Marisila Juri, *Charles Richet, physiologiste, 1850-1935* (Zurich: Juris, 1935). Richet himself wrote a memoir of his professional life as a doctor, see Charles Richet, *Sovenirs d'un physiologiste* (Paris, 1933).

[73] David Ray Griffin, *Parapsychology, Philosophy and Spirituality: A Postmodern Exploration* (Albany, NY: State University of New York Press, 1997).

[74] Another figure that gives an interesting impetus to French philosophy in the late-19th century is the educator and mathematician Antoine-Augustin Cournot (1801-1877), who, in 1875, writes *Matérialisme, vitalisme, rationalisme*, which challenges the applicability of scientific rationality to certain questions regarding the living, also in the process raising penetrating doubts about 'objective' observation. See A. A. Cournot, *Matérialisme, vitalisme, rationalisme: Etude sur l'emplois donnes de la science en philosophie* (Rome: Bizzarri, 1969). Like Bergson, Cournot also struggles with questions of teleology and purpose. See also J. Segond, *Cournot et la psychologie vitaliste* (Paris: Felix Alcan, 1911).

[75] Henri Bergson, "Presidential Address," *Proceedings of the Society for Psychical Research* 26 (1913): 462-79. On the relationship between Bergson's thought and the occult in general see the chapter entitled "The Occult Revival" in R. C. Grogin, *The Bergsonian Controversy in France* (Calgary: University of Calgary Press, 1988), 37-67.

"By nature, man is a metaphysical animal."[76] So proclaims the French Catholic philosopher Etienne Gilson, who argues in *The Unity of Philosophical Experience* (1937) that the first principle of human knowledge is being, and that problems in metaphysics are in large part a result of failing to recognize this immutable fact. He questions, for example, what he calls the "mathematism" of Descartes, suggesting that the motivation to reduce all things to simple geometric constituents, while admirable as a challenge to the skepticism of 17th century philosophy, was flawed:

> It had been a great idea to substitute algebraic signs for geometric lines and figures, but algebraic signs would never do in metaphysics, not always in physics, still less in biology, in medicine and in ethics.[77]

This critique of Descartes mirrors the conception of "*critical vitalism*," a position a step beyond the *epistemological* criticisms of late 18th and early 19th century vitalism that states that the causes of some (or all) organic processes are not reducible to spatially localized events.[78] Thus, life, particularly conscious human life, is a unique, individual, unitary phenomenon. After the notion of concrete vital force had been largely abandoned, this became the new battle line drawn by those who wished to criticize the strict mechanistic and materialistic position in biology.[79] It is a position that Henri Bergson typifies, and his view requires both elaboration and examination.

In his 1896 work *Matter and Memory*, Bergson really begins the project of rectifying the divided philosophical realms of idealism and realism. Compared by William James to Kant's *Critique of Pure Reason* and Berkeley's *Principles of Human Knowledge*, *Matter and Memory* anticipates some of the more probing arguments that Bergson makes in *Creative Evolution*. In *Matter and Memory*, Bergson challenges the

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[76] Etienne Gilson, *The Unity of Philosophical Experience* (New York: Charles Scribner's Sons, 1937), 307.
[77] Ibid., 142.
[78] Moritz Schlick, "Philosophy of Organic Life," in Herbert Feigl and May Brodbeck, eds., *Readings in the Philosophy of Science* (New York: Appleton-Century-Crofts, 1953), 523-36.
[79] To quote Joseph Chiari: "The discoveries of the workings of the cell in the second half of the nineteenth century established the preeminence of chemistry, and vitalism took new directions." Chiari, "Vitalism and Contemporary Thought," in Frederick Burwick and Paul Douglass, eds., *The Crisis in Modernism: Bergson and the Vitalist Controversy* (Cambridge: Cambridge University Press, 1992).

simple representational notion of perception, arguing that one can only abstractly separate brain, body and world.

In the introduction to *Creative Evolution* (1907), Bergson asserts his belief that "intellect," narrowly conceived, is fundamentally designed to apprehend inert matter, to, as he puts it, "think matter."[80] Thus he claims that logical rational thought is "incapable of presenting the true nature of life."[81] How, after all, can a product of a given process, in this case life, properly conceptualize its source and origin? Admittedly, much can be learned from observing and understanding the effects and relationships within and between living things. This scientific approach, however, seems to fail us almost immediately when addressing the question of cause. Not only are we restricted by this apparent limitation, but even the understanding we do achieve through science is arguably only an idealized reflection of the actual fact of life. Bergson comments on this conundrum, and suggests that we beware of our sense of satisfaction at a limited mastery of life along rigid, mechanistic lines:

> Must we keep to that mechanistic idea of it [life] which the understanding will always give us – an idea necessarily artificial and symbolical, since it makes the total activity of life shrink to the form of a certain human activity which is only a partial and local manifestation of life, a result or by-product of the vital process?[82]

The solution to this problem, as Bergson sees it, is found in an attempt to combine a theory of knowledge with a theory of life. In Bergson's *Creative Evolution*, the two spheres are seen as inseparable.

Bergson begins *Creative Evolution* with a basic and self-evident assertion; that, at root, existence is change. There is in this view a shadow of the Heraclitan concept of flux. We move from state to state – constantly. Yet our rational conception of this fact fails us from the very beginning, since while we change without ceasing, our mind is compelled to break up and compartmentalize what is actually a kind of flowing "duration." Thus, "what we actually obtain in this way is an artificial imitation of the internal life, a static equivalent which will lend itself better to the requirements of logic

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[80] Henri Bergson, *Creative Evolution [L'Evolution Creatrice]*, trans. Arthur Mitchell (New York: Henry Holt, 1911), ix.
[81] Ibid.
[82] Ibid., xii.

and language, just because we have eliminated from it the element of real time." By abstracting actual experience into something manageable, we come in a sense to lose the essence of reality. For Bergson, a crucial element of this essence is time. It is this notion of "lived" time that forms a major part of Bergson's idea of duration. Duration is what has come before, what has been lived and is living. It is a curious concept that in some sense defies abstraction, for it the very opposite of the abstract. Life is duration, and duration is life. It is the source of the present, but also transcends any one moment as a result of its continual presence. Of the many ways Bergson describes it, perhaps the following best captures an element of its immanent, inescapable quality: "the continuous progress of the past which gnaws into the future and which swells as it advances."[83] If anything, this description at least conveys some sense of the importance of the past – essentially the combined effects that result in our current situation and a large part of the source of our character – which is so important to Bergson's understanding of the nature of life and further reflects the influence of earlier vitalist thought.

Arriving at a sense of the ineffable nature of time as experienced through life is, however, a fundamental challenge for the rational mind. In fact, it is in some sense antithetical to our present rational selves. "In vain does immediate experience show us that the very basis of our conscious existence is memory, that is to say, the prolongation of the past into the present, or in a word, duration, acting and irreversible." The more we try and grapple with this reality through our reason, rendering it as an abstraction, the farther away we get from its true nature and aspect. The impulse to break things up into manageable parts, into a mechanistic system, is pervasive. "The mechanistic instinct of the mind is stronger than reason, stronger than immediate experience."[84] Time in a mechanistic system becomes something transient and abstract, it is disconnected from the reality of life, and cannot carry with it the necessary burden of duration. The root of this vision of time is seen as mathematical, and, even more specifically, Cartesian. For Bergson, time can only be truly understood when its relationship, and even more specifically – for the word "relationship" fails us in describing the proper link – its indivisibility from life is considered. Perhaps this is why one commentator has suggested

[83] Ibid., 4.
[84] Ibid., 16-17.

that "philosophy for Bergson is in the style of the science of biology" and that, for all intents and purposes, Bergson's philosophy signifies the end of "*l'ère cartésienne*," and the "mathematical philosophy" of Descartes.[85]

It is Bergson's fundamental realization of the importance of the biological sciences as a tool for philosophical insight that lays the groundwork for many of his conclusions. A devotee of the thought of the positivist and utilitarian philosopher Herbert Spencer (1820-1903) early in his career, the problem of evolution becomes for Bergson an important trope, one that influences his thinking and leads to many of his ideas about duration and time. Criticizing mathematical time, Bergson says, "the world the mathematician deals with is a world that dies and is reborn at every instant – the world which Descartes was thinking of when he spoke of continued creation." "But," he adds, "in time thus conceived, how could evolution, the very essence of life, ever take place?"[86] Evolution is duration, not the constant, unending creation and destruction of time. Thus, he argues, "to know a living being or natural system is to get at the very interval of duration, while knowledge of an artificial or mathematical system applies only to the extremity."[87]

So, we ask, is Bergson a vitalist? Certainly not in the conventional *epistemological* sense of that word. His position as "critical vitalist" is more a matter of being skeptical about the scientific endeavor as applied to living things. As Bergson notes, there were "two lines to follow in contemporary neo-vitalism." The first was characterized by "the assertion that pure mechanism is insufficient," and the second embraced "the hypotheses which this vitalism superposes on mechanism." These hypotheses include, for example, the idea of *entelechy* and the teleological nature of evolution. Bergson admits that "of these two parts, the former is perhaps the most interesting."[88] Vitalism is seen by Bergson as a cautious position, a kind of mediating skepticism in the face of mechanistic self-assuredness: "the 'vital principle' may indeed

[85] Henri Bergson, *Oeuvres* (Paris: Presses Universitaires de France, 1970 [1959]), xiv.
[86] Bergson, *Creative Evolution*, 22.
[87] Ibid., 22-23.
[88] Ibid., 42.

not explain much, but it is at least a sort of label affixed to our ignorance, so as to remind us of this occasionally, while mechanism invites us to ignore that ignorance."[89]

One of the most inappropriate characteristics of traditional vitalism, as Bergson saw it, was the notion of radical teleology. Teleology, otherwise known as finalism, was a belief in the idea of life as a goal-directed, purposive process. From Aristotle's *entelechy* to the Darwinian revolution of the late 19th century, teleology was part and parcel of most philosophical understandings of the nature and origin of life. The idea of a clear direction and purpose in natural processes can also be conflated with a certain religious outlook, and the link between Aristotelian thought and Christian doctrine as manifested in scholasticism (and its neo-Thomist permutations) certainly keeps this connection alive through the late 19th and early 20th centuries. With Darwin's *Origin*, the theory of evolution essentially reduced teleology, through the process of natural selection, to a matter of simple physical causality. This brought mechanism to bear quite heavily on the question of evolution and the origin of life.

Bergson was unsatisfied with both of these positions, and saw little difference between radical mechanism and radical finalism. As an example of radical mechanism, he cited the words of the late 19th century biologist Du Bois-Reymond, who resoundingly echoes the 18th century Enlightenment thinker Pierre Simon de Laplace (1749-1827):

> We can imagine the knowledge of nature arrived at a point where the universal process of the world might be represented by a single mathematical formula, by one immense system of simultaneous differential equations, from which could be deduced, for each moment, the position, direction, and velocity of every atom of the world.[90]

Bergson, of course, was thoroughly unsatisfied with expressions of this kind of naive, somewhat absurd brand of deterministic mechanism. Perhaps most egregiously, in his mind it placed far too much faith in the ability of mathematics to provide an accurate simulacrum of reality, and denied the importance of the incalculable nature of duration:

> Radical mechanism implies a metaphysic in which the totality of the real is postulated complete in eternity, and in which the apparent duration of things expresses merely the infirmity of a mind that cannot know everything at once. But duration is something very different from this for our consciousness, that is to say, for that which is most indisputable in our experience. We perceive duration as a stream against which we cannot go. It is the foundation of our

[89] Ibid.
[90] Ibid., 38.

> being, and, as we feel, the very substance of the world in which we live. It is of no use to hold up before our eyes the dazzling prospect of universal mathematics; we cannot sacrifice experience to the requirements of a system. That is why we reject radical mechanism.[91]

Thus Bergson repudiates strict mechanism on a number of different fronts.

Bergson is just as resistant to "radical" finalism, though he admits that it is an idea of a very different character. Finalism, he says, is not "like mechanism, a doctrine with fixed rigid outlines." On the contrary, for it is subject to a number of possible interpretations, and is held as an idea for a variety of different motives. In addition, unlike mechanism, which must be abandoned if faced with contradictory evidence, finalism cannot be definitively refuted. As Bergson says, "its principle, which is essentially psychological, is very flexible."[92] At a certain level, however, he sees a clear similarity between finalism and mechanism in that neither theory admits to an inherent chaos in the nature of life, what Bergson calls "an unforeseeable creation of form."[93] Both positions are also similar in that they are essentially complete in and of themselves, and allow no other possibilities. They are, in essence, purely speculative and ideological, and do not make any concessions to the vagaries of real existence. Attempting to understand life, they also stand outside of life – they are "only external views of our conduct."[94] Thus, for Bergson one of the greatest problems with both these ideas is that they do away with time, and particularly time as experienced through duration. They are intellectual understandings of life, and miss a critical essence of its nature. "We do not think real time. But we live it, because life transcends intellect."[95]

*Intelligence and Instinct*

The above quote captures an essential distinction in Bergson's thought between what he calls intelligence and instinct. While these two ways of knowing are what Bergson describes as "interpenetrating," there is nonetheless a clear divide between them.

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[91] Ibid., 39.
[92] Ibid., 40.
[93] Ibid., 45.
[94] Ibid., 47.
[95] Ibid., 46.

Intelligence is correlated with tool use and the manufacture of artificial objects. Instinct, on the other hand, is involved in the use of innate or inborn tools, what Bergson calls "organized instruments."[96] These are seen then as a choice life makes between two different "modes of acting on the material world." One "can either effect...action directly by creating an organized instrument to work with; or else...effect it indirectly through an organism which, instead of possessing the required instrument naturally will itself construct it by fashioning inorganic matter." On one level then, "instinct and intelligence...represent two divergent solutions, equally fitting, of one and the same problem."[97]

Where they diverge, however, is in the internal structure of a given organism (or species). In this sense, the two manifestations imply radically different kinds of knowledge. Bergson highlights these differences by invoking the concept of consciousness. Essentially, he sees consciousness, in this argument, as the difference between potential and real activity. Consciousness "is the light that plays around the zone of possible actions or potential activity which surrounds the action really performed by the living being. It signifies hesitation or choice." Thus, "the consciousness of a living being may be defined as an arithmetical difference between potential and real activity. It measures the interval between representation and action." We can certainly arrive at a feeling for this phenomenon by thinking about the hesitation and paralysis that follows from a moment of self-conscious reflection. Intelligence and instinct are polarities in this formula, and the latter is a deficit of consciousness that impedes the organism from employing its intelligence to act, as is its natural inclination, on inert matter to construct unorganized instruments. "In short, while instinct and intelligence both involve knowledge, this knowledge is rather acted and unconscious in the case of instinct, thought and conscious in the case of intelligence."[98] Their realms of understanding, while they can intersect to some degree, are in principle thoroughly exclusive. "Intelligence, in so far as it is innate, is the knowledge of form; instinct implies the knowledge of a matter." More specifically, of a living matter. Understood in philosophical categories, the nature of the knowledge acquired by means of instinct is categorical, while that derived

[96] Ibid., 139-40.
[97] Ibid., 142-3.

from intelligence is expressed hypothetically.[99] The divide between intelligence and instinct is difficult to get at, but revolves around the subject of contemplation – matter. Intelligence is external to and abstracting of matter, and instinct is integral to and embodied in matter. Bergson expresses this curious, contradictory position in a somewhat poetic passage about the elusive nature of the instinctual: "There are things that intelligence alone is able to seek, but which, by itself, it will never find. There are things instinct alone could find; but it will never seek them."[100]

The apprehensions of intelligence are compartmentalized, broken up into units. This is because its central focus is construction and fabrication. "Our intelligence, as it leaves the hands of nature, has for its chief object the unorganized solid." What is lost through this type of understanding is the dynamic continuity of material extension, what Bergson would describe as duration. "Of the discontinuous alone does the instinct [of intelligence] form a clear idea."[101] There is, to Bergson's mind, a practical reason for why intelligence, which can be in many instances quite contemplative, is also expressed in a manner that has much to do with what it is trying to accomplish, and that it is, in effect, trying to accomplish anything at all:

> Action, and in particular fabrication...makes us consider every actual form of things, even the form of natural things, as artificial and provisional; it makes our thought efface from the object perceived, even though organized and living, the lines that outwardly mark its inward structure; in short it makes us regard its matter as indifferent to its form. *The whole of matter is made to appear to our thought as an immense piece of cloth in which we can cut out what we will and sew it together again as we please.*[102]

This seems to be not only an interesting description of intellect, but also a powerful prescriptive and warning of the possible dangers of "engineering" life through the use of intellect.[103]

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[98] Ibid., 144-5.
[99] Ibid., 149.
[100] Ibid., 151.
[101] Ibid., 153-4.
[102] Ibid., 156. Emphasis mine.
[103] This idea would appear to be echoed in critical theorist Jürgen Habermas' recent book, *The Future of Human Nature*. For Habermas, this question surrounds the intractable moral distinction between "the grown" and "the made." He goes on to say that "the logic of...forms of action which, in Aristotle, were still tailored to corresponding regions of being, has lost the ontological dignity of opening up specific perspectives on the world. In this dedifferentiation, modern

Furthermore, Bergson understands that intelligence is also the tool we use by default to attempt to grasp the living, and that this condition of existence is often fallible and contradictory. "We see that the intellect, so skillful in dealing with the inert, is awkward the moment it touches the living." Thus an acceptance of that most classic of vitalist presumptions; the difficulty inherent in the schism of, and seeming divide between, the inorganic, unmoving matter around us, and the living, dynamic character of life.

The rigidity of the intelligence of the rational mind as applied to living things is also demonstrated to Bergson, it is clear, through the history medicine. He talks of the "pedagogical" system of medicine, by which he surely means the rote, abstracted and compartmentalized tradition of pathological anatomy in medicine, at ease only with the compartmentalized and rigid body; the dead body. This is the error that results from an intellect that is focused on what is easily made discontinuous, broken up into lifeless segments. This is the unavoidable and, curiously, the natural inclination of all intelligent attempts to understand and preserve the living, an objective that is also a compelling and cardinal need. Bergson says:

> The history of hygiene or of pedagogy teaches us much in this matter. When we think of the cardinal, urgent and constant need we have to preserve our bodies and to raise our souls, of the special facilities given to each of us, in this field, to experiment continually on ourselves and on others, of the palpable injury by which the wrongness of a medical or pedagogical practice is both made manifest and punished at once, we are amazed at the stupidity and especially at the persistance of errors. We may easily find their origin in the natural obstinacy with which we treat the living like the lifeless and think all reality, however fluid, under the form of a sharply defined solid. We are at ease only in the discontinuous, in the immobile, in the dead. The intellect is characterized by a natural inability to comprehend life.[104]

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experimental sciences played an important role. They combined the objectivating attitude of the disinterested observer with the technical attitude of an intervening actor producing experimental effects. The cosmos was no longer perceived as an object of pure contemplation; and "soulless" nature, as seen by nominalism, was subjected to a different kind of objectivation. This gearing of science to the task of converting an objectivated nature into something we may control by technological means had an important impact on the process of societal modernization. In the course of their redefinition by science, most fields of practice were impregnated and restructured by the "logic" of the application of scientific technologies." Jürgen Habermas, *The Future of Human Nature* (Cambridge: Polity Press, 2003), 45.

[104] Ibid., 165.

On some level, there is no "solution" to this *problématique*. Bergson, after all, has maligned reason and questioned the power of intelligence to turn inward and understand the living, which achieves him a good deal of fame and notoriety in the first decade of the twentieth century. There is a reflection of various vitalist philosophies in the acknowledgment of a certain unknowable aspect to the living. Bergson's skepticism, however, is tinged, like many a neo-romantic thinker, with a light dusting of hope. He is not the true skeptic that a few of his critics accuse him of being, though he is without a doubt an "anti-intellectualist" of sorts.

If he were a skeptic in the classic Pyrrhonian sense, he would not have provided a "way out" of the dilemma of comprehending life, and he certainly has, by exploring a way of knowing that is not beholden to intelligence and its neat, orderly abstractions. It is an understanding that "is molded on the very form of life." It is instinct.

Instinct is for Bergson an entirely different means of interpreting the world, rooted in a non-mechanical, organic, living reality. Unlike intelligence, it is an amechanical, vitalistic method of comprehension. "While intelligence treats everything mechanically," Bergson writes, "instinct proceeds, so to speak, organically."[105] The most basic and primary instincts are vital processes, the intuitions and built-in impulses that constitute what he calls "*l'élan vital*." In one sense, Bergson's *élan vital* is his term for what the Montpelliérains and their successors called the 'vital principle' or 'vital force.' In evolutionary terms then, Bergson sees intelligence and instinct as two responses to the necessities of existence, the former resulting in the conscious rational mind of man, the latter witnessing its full flowering in the insect order *hymenoptera*. As the most adaptable and diverse of insects, *hymenoptera*, and in particular the ants, are the culmination of instinct in the same way as man is the culmination of intelligence.[106]

Bergson suggests that the mistake made by most philosophers since Aristotle was to view these two divergent strategies for relating to one's environment as hierarchical, and thus place the *anima rationalis*, the rational soul, on a continuum with the *anima vegetativa* and *sensitiva*. Setting aside for a moment the difficulty of equating instinct exclusively with the sensitive or animal soul, the most important thing to note here is the

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[105] Ibid.
[106] Ibid., 135.

fact that Bergson sees the two phenomena of intellect and instinct as branches on an evolutionary tree.

> The cardinal error which, from Aristotle onwards, has vitiated most of the philosophies of nature, is to see in vegetative, instinctive and rational life, three successive degrees of the development of one and the same tendency, whereas they are three divergent directions of an activity that has split up as it grew.[107]

Taking a page, and numerous examples, from J. H. Fabre's *Souvenirs entomologiques*,[108] Bergson describes animal actions in terms of their possible "human" interpretation, calling the precise ability of certain *hymenoptera* (wasps) to paralyze their victims without killing "surgeries."[109] He would not, however, confuse the manifestations of intellect and instinct except in so far as it illustrates the point that both types of knowledge can provide a "solution" to a given set of problems. The same cannot be said of the modern behaviorist biologist, who happily compares instinct and intelligence, and does not see any great divide between the two strategies. Thus, one is faced with the example of the thought of E. O. Wilson, entomologist and pioneer of sociobiology, who equates the activities of the "social" insects with human society.[110] Obviously, he is not a close reader of Bergson, who would see the folly of this kind of universalized mechanism. After all, are they not, as Bergson would surely suggest, two divergent responses to the problem of organization, the first a result of purely instinctual processes, the latter an expression of the full flowering of intelligence and its capacity for abstract categorization. This is precisely what Bergson says: "In insect societies there is generally polymorphism, the subdivision of labor is natural, and each individual is riveted by its structure to the function it performs. In human society, on the contrary, fabrication and

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[107] Ibid., 135.

[108] J. H. Fabre, *Souvenirs Entomologiques*, trans. A.T. de Mattos (London: Hodder & Stoughton, 1917). The Frenchman Jean Henri Fabre (1823-1915) is an interesting character. He received a *baccalauréat* from Montpellier, and his theoretical work follows a true autodidactic path – from the empirical world of entomology to a focus on instinct (and its indefinability). Fabre above all emphasized the unique character of organic structure. He was, in many ways, a vitalist. See L. Richmond Wheeler, *Vitalism: Its History and Validity* (London: H.F.G. Witherby, 1939).

[109] Bergson, *Creative Evolution*, 172.

[110] Edward O. Wilson, *Sociobiology* (Cambridge, MA: Harvard University Press, 1975). The criticisms leveled at this theory include S.J. Gould, *An Urchin in the Storm: Essays About Books and Ideas* (New York: W.W. Norton, 1987), esp. chapters 2 and 7. See also a more generalized critique in Richard C. Lewontin, *Biology as Ideology: The Doctrine of DNA* (Concord, ON: Anansi, 1991), 61-3.

action are of a variable form, and, moreover, each individual must learn his part, because he is not preordained to it by his structure." These two situations require two very different uses of communication, or language, such that the "instinctive sign is adherent," and "the intelligent is mobile."[111]

This view also provides a window into Bergson's perspective on the failure of scientific apprehensions of living actions, which tend "to resolve instinct completely either into intelligent actions, or into mechanisms built up piece by piece like those combined by our intelligence."[112] In other words, intellect is the one and only framework for understanding. There is a certain irony here in the modern scientist who claims to want to transcend anthropomorphism, and yet ends up thinking of human actions in terms of his intellectualized conceptions of how and why animals act. Perhaps a little anthropocentrism is in order, at least as a self-conscious guide to the limits we face when trying to understand the nature of other living things. Arguably, the sociobiological ideas of those like Wilson may actually derive from a loosely framed Aristotelian teleology, in which we sit atop a chain of developments leading purposefully towards the refinement of intelligence. As Bergson says:

> If our biology was still that of Aristotle, if it regarded the series of living beings as unilinear, if it showed us the whole of life evolving toward intelligence and passing, to that end, through sensibility and instinct, we should be right, we, the intelligent beings, in turning back towards the earlier and consequently inferior manifestations of life and in claiming to fit them, without deforming them, into the moulds of our understanding. But one of the clearest results of biology has been to show that evolution has taken place along divergent lines. It is at the extremity of two of these lines – the two principal – that we find intelligence and instinct in forms almost pure. Why, then, should instinct be resolvable into intelligent elements? Why, even, into terms entire intelligible?[113]

These seem the words not of a pure skeptic, but rather of someone who is skeptical of the scientific endeavor as applied to the living.

What then is this elusive and even unintelligible thing called instinct. "Instinct is sympathy."[114] So says Bergson, by which he surely means that instinct is sympathy towards life. In so far as the apprehension of intellect is the inert and external, the focus

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[111] Bergson, *Creative Evolution*, 157-8.
[112] Ibid., 174.
[113] Ibid.
[114] Ibid., 176.

of instinct is the living and internal. "If this sympathy could extend its object and also reflect upon itself, it would give us the key to vital operations – just as intelligence, developed and disciplined, guides us into matter." Intelligence can only circle around the nature of the living, never giving a true rendering. Through science, it comes to encompass the living, but only as an abstraction of physical operations. Yet intuition is something different. "But it is to the very inwardness of life that intuition leads us – by instinct I mean instinct that has become disinterested, self-conscious, capable of reflecting upon its object and of enlarging it indefinitely."[115]

Though both intelligence and instinct are fundamentally opposed in their character, they are nonetheless dependent on one another in the sense that they come together in the living, evolving being. This duality is thus for Bergson a central rationale for the importance of metaphysics to any meaningful understanding of the problem of knowledge and its relationship to the experiential character of life:

> On the one hand, indeed, if intelligence is charged with matter and instinct with life, we must squeeze them both in order to get the double essence from them; metaphysics is therefore dependant upon theory of knowledge. But, on the other hand, if consciousness has thus split up into intuition and intelligence, it is because of the need it had to apply itself to matter at the same time as it had to follow the stream of life. The double form of consciousness is then due to the double form of the real, and the theory of knowledge must be dependent upon metaphysics. In fact, each of these two lines of thought leads to the other; they form a circle, and there can be no other centre to the circle but the empirical study of evolution.[116]

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[115] Ibid. There is in this conception of instinct something of a reflection of the neo-Platonic, even gnostic, tradition. At root, Bergson's division of intelligence and instinct relies on the distinction between the sensible and the intelligible (the '*nous*'), which in the Platonic tradition is a kind of intuitive faculty; a "higher" reason. This idea finds an interesting interpreter in the middle Platonist Apuleius of Madaura. Consider the following: "By intellect, Apuleius does not mean what passes for the intellect today, that is, the abstract binding power of reason – that which binds ideas in coherent patterns and assigns measure and proportion to them. Apuleius means something operating by the energy of intelligence – it is a light one sometimes sees in the gardener's or craftsmen's eye when he or she comes to approach the very substance of their labours – the meaning of their contact with nature. It is a natural power and begins with the observation of nature, then extends to a communication with nature and then to the 'nature of nature' herself. An abstracted, opaque and concrete world is well suited to blocking out this faculty altogether. The rational man of today tends to despise the very supposition of such an energy of perception or may begin to speak of the paranormal. What is normal?" Tobias Churton, *The Gnostics* (New York: Barnes & Noble, 1997 [1987]), 35. See also R. Van Den Broek and W.J. Hanegraaff, *Gnosis and Hermeticism from Antiquity to Modern Times* (Albany: State University of New York Press, 1998).

[116] Bergson, *Creative Evolution*, 178.

Consciousness as Bergson understands it in the above passage is essentially a living being's power of choice; it is the ability to break away from the moment, to reflect on experience and adapt to changing conditions rather than being simply carried along by them.

With respect to his ideas about consciousness, Bergson provided a clear impetus to the thought of French Jesuit paleontologist and philosopher Pierre Teilhard de Chardin (1881-1955). Not only did Teilhard de Chardin's wide-ranging philosophical reflections on anthropology, biology, cosmology and theology continue to suggest the latent influence of a "*science de l'homme*" methodology, but many of his most potent conclusions resound with echoes of vitalism and bergsonism.[117] In *The Phenomena of Man* (1955), de Chardin mirrors some of Bergson's thoughts on the unique character of human development as the ultimate aim of evolution.[118] He aims in this book to provide an ambitious three-fold synthesis; between past and future, variety and unity, and the material/physical and the mind/spirit. The cumulative, pseudo-teleological aspect of Bergson reminds one of de Chardin, who in his later book, *Man's Place in Nature* (1956), discusses how matter becomes "vitalised" and how the biosphere leads to the noosphere (the thinking sphere), a unique domain of man. In addition to the quasi-emergentist perspective, there is also in this view the idea that life is not a random or accidental part of matter but the culmination of ordered matter. Throughout, brain (i.e. cognitive) development, called "cerebralization" by de Chardin, is essential. For living things, it is the "true index of their vitalisation."[119] Man is at the center of this process, and transcends strictly mechanistic origins. The eventual direction of this development in de Chardin is – after a period in the late-19$^{th}$ and early-20$^{th}$ century in which "individuation" reaches its height – towards a convergence of thought. One moves from consciousness, to

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[117] This is a link made often enough, but expanded on in only one source known to this author. See Madeleine Barthélemy-Madaule, *Bergson et Teilhard de Chardin* (Paris: Edition de Seuil, 1963).

[118] See F.J. Ayala, "The Evolutionary Thought of Teilhard de Chardin," In *Biology, History and Natural Philosophy*, eds., A. D. Breck & W. Yourgrau (New York: Plenum Press, 1972), 207-16.

[119] Pierre Teilhard de Chardin, *Man's Place in Nature: The Human Zoological Group*, trans., René Hague (London: Collins, 1966). See also Pierre Teilhard de Chardin, *The Phenomena of Man* (New York: Harper, 1959) and *The Appearance of Man*, trans., J.M. Cohen (London: Collins, 1965).

consciousness of consciousness to the unconscious, all signifying increasing erosion of the ego. The ultimate end of this process for de Chardin is a convergence in the "omega." While there is a universalist, Catholic tone to this idea, it nonetheless reflects a holistic view. It is also a clear attempt to integrate the spiritual into science, and furthermore, rectify the contemporary scientific understanding of the cosmos with religious thought. In this motivation de Chardin shared commonalities with a host of other late 19th and early 20th century neo-Thomist thinkers. Few, however, combined the knowledge of science, philosophy and theology that made de Chardin's work such a success.

Like de Chardin, Bergson also discusses consciousness as an ultimate end of the living, particularly in terms of evolution. He speaks, for example, of the "anthropomorphism of life."[120] He sees life as in some sense directed towards the goal of being conscious, and attempts to answer to the chance materialism of Darwin with a humanistic teleology wherein man is, at least ideally, constitutive of an objective goal.

*Bergsonian Context and Historiography*

Bergson's ideas come at a very interesting point in the history of science. His early works (ca. 1889-90) emerge at a time when physics, still apparently rooted within the firm soil of Newtonian mechanics, was struggling with the inconsistencies in a system that was seen as all but complete. The questions surrounding ideas such as the *aether* – a medium invoked to explain the passage of light through the apparently empty reaches of space – were not viewed in any controversial manner, and in any event were, from the point of view of most contemporary observers, eminently solvable. The Michaelson-Morley Experiment, however, placed the debate in an entirely new context and, from this point on, the nature of theoretical physics would be forever altered. Unlike Bernard, whose faith in the underlying deterministic order of mechanistic Newtonian science surely filtered into his musings about the nature of living things, Bergson's work appeared at a time when great chasms were forming between old and new visions of the physical world, or put another way, between the comforting, orderly certainties of Newtonianism (and its mechanical analogs) and the seemingly chaotic and somewhat confusing

[120] Bergson, *Creative Evolution*, 185.

landscape of early 20th century physics. The physical world was being rendered as immaterial and subject to the effects of incredible, yet in the macroscopic world, largely invisible forces (viz. the many mysteries surrounding the structure of the atom). The very nature of time and space were being put into question, particularly by the work of Einstein.[121] In effect, the Newtonian world was collapsing, and along with it a series of certainties about physical science that had been in place for almost two hundred years.

There was even a distinct aspect to the way physics was done in France, and this had an interesting resonance in the realms of medicine and philosophy. France was a country that possessed a unique physics tradition, a country with a chair in "medical physics" well into the 20th century.[122] The famed N-ray controversy seems to be a clear example of the particular vitalist affinities in French science.

The first to claim to have seen N-rays was a physicist by the name of René Prosper Blondot. Blondot was from an academic family and, interestingly, his father was a physiologist. These first observations were followed by the claims of Augustin Charpentier, professor of biophysics at Nancy, who in 1903 reported that living things appeared to give off mysterious emanations he called N-rays. This was followed by a period of intense debate in 1903-4. Among the supporters in favor of the N-rays was the electrophysiologist Arsene d'Arsonval. While N-rays were eventually debunked by physicist R.W. Wood (1868-1955) and others, the entire episode reveals the unique character of early 20th century French science. In many ways N-rays represent a residual element of the old vitalist controversies of the late 18th and early 19th century, and at the same time remind us of the dynamically evolving theoretical world of physics. That perception and subjectivity, and the fallibility of human observation even with the use of

[121] A meeting between Bergson and Einstein actually took place in April 1922 at the Collège de France in Paris, where the philosopher and the physicists attempted to exchange their views on the nature of time. Einstein believed there was an unbridgeable gulf between the time of the physicist and that of the philosopher, the latter being a complete mystery to him. See Keith Ansell Pearson and John Mullarkey, eds., *Henri Bergson: Key Writings* (New York: Continuum, 2002), 26.

[122] George Weisz, "Reconstructing Paris Medicine," *Bulletin of the History of Medicine* 75 (2001): 116-117.

precise modern scientific instruments, were central to the entire question of N-rays, is perhaps the most intriguing aspect of the story.[123]

The inherent subjectivity of knowledge was also the basis of Neils H.D. Bohr's (1885-1962) idea of "complementarity." Not only was the Copenhagen approach a deep criticism of the idea of classical mechanics, but it also had vitalist undertones in the idea that knowledge was derived from action, and that experiment was an unavoidably nebulous inductive process.[124] One of Bohr's cohorts, the German physicist Pascual Jordan (1902-1980), continued to emphasize these curiously "uncertain" aspects of modern physics throughout his career – one could certainly call him a sort of "vitalist physicist." Jordan was one of many scientists in the 1930s who saw the relationship between physics and the life sciences as in flux, and sought to reconcile organicism and the rejection of mechanistic theories in biology with the changing quantum nature of modern physics. This lead to the conception of a kind of "quantum biology."[125]

It is against this background of an understanding of the physical world in crisis that Bergson's work must be seen. In *Creative Evolution* the importance of Darwinian ideas is patent, less so the relevance of physics. Arguably, Bergson's assertion that life does not conform to the regularities of a mechanical Newtonian world is in part a response to the collapse of that very same world.

This is precisely the context that contemporary historiography has placed him in. In *The Crisis in Modernism*, Richard Lehan observes that Bergson:

> ...un-did the notions of mechanism and teleology, undercut both Enlightenment and Darwinian assumptions, gave weight to the modernist belief that art is the highest function of our activity, and helped establish the modernist belief that the universe was inseparable from mind and that the self is created out of memory. If the moderns did not have Bergson, they would have to invent him.[126]

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[123] For the N-ray controversy see Walter Gratzer, *The Undergrowth of Science: Delusion, Self-Deception and Human Frailty* (Oxford: Oxford University Press, 2000), 1-10. See also Mary Jo Nye, *Before Big Science: The Pursuit of Modern Chemistry and Physics, 1800-1940* (London: Prentice Hall, 1996).

[124] See, for example, Bohr's address to the Second International Congress for the Unity of Science in Copenhagen in June, 1936, reprinted in *Philosophy of Science*. Neils Bohr, "Causality and Complementarity," *Philosophy of Science* 4 (1937): 289-298.

[125] See Richard H. Beyler, "Targeting the Organism: The Scientific and Cultural Context of Pascual Jordan's Quantum Biology, 1932-1947," *Isis* 87 (1996): 248-273.

[126] Richard Lehan, "Bergson and the discourse of the moderns," in Burwick and Douglass, *The Crisis in Modernism: Bergson and the Vitalist Controversy* (Cambridge: Cambridge University Press, 1992): 306-329, 311.

Bergson's unrivaled popularity in the pre-World War One period suggests that in some sense the moderns did invent him, insofar as many of his ideas became "so widespread that it was common to speak of an international 'Bergson mania.'"[127] While it is no doubt true that "no one would dispute Bergson's central importance to modernism," it is also equally clear that "we are, more than a hundred years after the publication of *Time and Free Will* (1889), far from reaching a consensus on the extent or the consequences of that influence."[128]

Bergson was certainly a philosopher born of a dynamic world, hurtling headlong into an unprecedented wave of modernization; about to be mass-democratized, industrialized, bureaucratized, hyper-mechanized. His celebration of the world in flux as a natural and imminent thing, however, at times also ran contrary to the evolving spirit of the age. His ideas, like those of the iconoclast Giordano Bruno before him, were an *éloge* to a world that came before and a world that could be. And, like Bruno, Bergson explored and discussed the fringes of knowledge, whether psychic or parapsychic.[129]

Bergson's "critical vitalism" is archetypal in the sense that his characteristic philosophy imbued with metaphysical, mystical and anti-mechanistic elements becomes emblematic of thought in the period between 1900 and 1914. It becomes a system that is deeply anti-system, a *bergsonisme*. This very term captures its popularity and influence at the time, a status based largely on the success of *Creative Evolution*. This book encapsulates his thought at its most vitalistic, and it is the main wellspring of the pre-war spike in his celebrity. Thus one can make a case that "Bergsonian" thought, widely disseminated through *Creative Evolution*, is a kind of archetype of vitalist thought, a critical philosophy which has as its target the mechanistic tradition laid down by figures like Galileo and Descartes, and carried forward in the late 19th century by the positivism of Comte and his many disciples. Perhaps if the war had not had such a devastating effect

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[127] Tom Quirk, "Review of The Crisis in Modernism: Bergson and the Vitalist Controversy and Inventing Bergson: Cultural Politics and the Parisian Avant-Garde," *Modernism/Modernity* 1 (1994): 175-78, 175.
[128] Ibid.
[129] F.A. Yates, *Giordano Bruno and the Hermetic Tradition* (Chicago: University of Chicago Press, 1964).

on the French (and European) psyche, this archetype may not have suffered the fate of becoming so deeply buried in the collective thought of the 20th century, condemned to resurface only in the highly personal and seemingly fresh green shoots of existentialism. Yet it is difficult to deny that this fertile ground was not first turned and prepared by the "Bergsonian" archetype of "*critical vitalism.*"

There are a bewildering, even dizzying, array of French treatments of Bergson's thought, life and philosophy, but one of the most compelling books, in its reach as a summary of many of the diverse portrayals of the man, is written in English.[130] Leszek Kolakowski's *Bergson* is a solid reading, to say the least. It provides the launch pad for the most salient aspects of the many diverse readings of Bergson's *oeuvre.*

First and foremost there is the issue of Bergson's relative obscurity in the contemporary intellectual world, in contrast to his eminent and central place in the years before the Second World War, albeit one notes a recent renewed interest (of which this dissertation is admittedly a part) in his ideas:

> When we look at Bergson's position – or rather lack of position – in today's intellectual life, we find it hard to imagine that some decades ago he was not just a famous thinker and writer; in the eyes of Europe's educated public he was clearly the philosopher, the intellectual spokesman *par excellence* of the era.[131]

Bergson's fame is difficult to overstate. His impact as the Great War approached was substantial, but, even beyond this, "his influence was widely felt all over Europe in the twenties and thirties."[132]

A recent edited collection, *The New Bergson*, has argued for Bergson's central role in early 20th century philosophy. The introduction, for example, notes that Bergson "reset the agenda of philosophy and its relationship with science, art and even life itself."[133] This collection also features essays on Bergson's contribution to questions of time and relativity, the mind-body problem, the philosophy of mind and the nature of identity, evolutionary theory and even environmentalism.[134]

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[130] For an exhaustive and thorough list one can consult P.A.Y. Gunter, *Henri Bergson: A Bibliography*, 2nd ed., (Bowling Green, OH: Bowling Green State University, 1986).
[131] Leszek Kolakowski, *Bergson* (Oxford: Oxford University Press, 1985), 1.
[132] Ibid.
[133] John Mullarkey, ed., *The New Bergson* (Manchester: Manchester University Press, 1999), 1.
[134] Timothy S. Murphy, "Beneath Relativity: Bergson and Bohm on Absolute Time"; Frédéric Worms, "*Matter and Memory* on Mind and Body: Final Statements and New Perspectives"; Eric

The philosophy of Bergson was influential, for example, in the thought of Alfred North Whitehead (1861-1947), whose 1926 book *Science and the Modern World* represented a deep critique of the certainties of mechanistic science and the alternative visions prompted by the new post-Newtonian physics. Whitehead's work constituted a challenge to what he called "scientific materialism". He found that the modern scientific system of materialism and mechanism was strangely conjoined with a belief in self-determining organisms, and while he recognized vitalism as the traditional solution to the mechanism-organism problem, he nonetheless found it unsatisfactory. He instead developed a philosophy of organism that saw sub-atomic particles as "organisms". Whitehead credits Bergson for having most fully embraced organic concepts in his philosophy and for moving away from static materialism.[135] His philosophy, like Bergson's, was one that focused on the ideas of the organism and the unknown, and also reflected a heavy debt to the discoveries and findings of modern physiology. For Whitehead, it was essential to develop a philosophy of science that replaced the idea of dead matter with the open-ended notion of dynamic organisms, for in a sense the whole of science revolved around the question of these "enduring organisms."[136] Ethically, Whitehead was concerned that mechanistic materialism unconsciously created a focus on things rather than values, the mindset that led to the establishment of the industrial age, which at the time the *Science and the Modern World* was published, surely seemed to him to be rife with shortcomings. In this sense Whitehead and Bergson were united in their opinion about the drawbacks of the emerging dominant scientific "world-view". They both found a way out of skepticism in the adaptive and evolutionary power of intellect, conceived in the broadest of terms. While Bergson celebrated the ineffability and unique quality of instinct, Whitehead followed by trying to give the instinctual, "organic" reading of scientific phenomena a more defined and rational face.

The thinking of Bergson and Whitehead led to a more general interest in 'organismic' and biological thinking. No example is more pointed that Jan Christian

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Matthews, "Bergson's Concept of a Person"; Keith Ansell Person, "Bergson and Creative Evolution/Involution: Exposing the Transcendental Illusion of Organismic Life"; P.A.Y. Gunter, "Bergson and the War Against Nature," in Mullarkey, *The New Bergson.*

[135] Alfred North Whitehead, *Science and the Modern World* (Cambridge: Cambridge University Press, 1953 [1926]), 183.

Smuts' *Holism and Evolution* (1926), which is heavily reliant on Bergsonian thought. In his book, Smuts sets out as his objective the elaboration of 'holism', which for him is a thought-style designed to curb what he sees as the dominance of the materialistic and mechanistic view of life. He struggles with many of the same issues as the 19th century vitalists: the relationship between matter, life and mind; materialism and spiritualism; and the mechanistic view of evolutionary development popularized by Darwinian thought. In characterizing 19th century science, Smuts also cleverly introduces a few other issues relating to the limits of science, determinism and even the simplistic scientific vision of causality that Bergson so ably challenged:

> The science of the nineteenth century was like its philosophy, its morals and its civilization in general, distinguished by a certain hardness, primness and precise limitation and demarcation of ideas. Vagueness, indefinite and blurred outlines, anything savouring of mysticism, was abhorrent to that great age of limited exactitude. The rigid categories of physics were applied to the indefinite and hazy phenomena of life and mind. Concepts were in logic as well as in science narrowed down to their most luminous points, and the rest of their contents treated as non-existent. Situations were not envisaged as a whole of clear and vague obscure elements alike, but were analyzed merely into their clear, outstanding, luminous points. A "cause," for instance, was not taken as a whole situation which at a certain stage insensibly passes into another situation, called the effect...Everything between this cause and this effect was blotted out, and the two sharp ideas or rather situations of cause and effect were made to confront each other in every case of causation like two opposing forces. This logical precision immediately had the effect of making it impossible to understand how the one passed into the other in actual causation.[137]

Smuts' holism was a kind of *bergsonisme* (and to a significant extent, vitalism) for the English-speaking world, and his terminology caught on to such a degree that from the mid-1920s on the word holism largely replaced 'vitalism' in the English language, especially since the latter term was so often conflated with spiritual and mystical connotations. As such it has been branded with the taint of pseudo-scientific obscurantism ever since.

In biology, the *organismic hypothesis* that gained popularity in the 1930s was often associated with vitalist sympathies, and its proponents were labeled as such. Organism can be clearly linked to the constantly reiterated vitalist pre-occupation with organization. This situation reached a fairly fevered pitch in the mid-1930s, and one

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[136] Ibid., 241.

author sought to clarify the issue within the pages of *Philosophy of Science*. Writing in 1935 on "Mechanism, Vitalism and the Organismic Hypothesis," Karl F. Muenzinger noted that philosopher and biologist J.B.S. Haldane and Gestalt psychologist W. Köhler were both seen as espousing elements of a vitalist view, and yet both resisted this characterization. Haldane is quoted as saying that:

> I am not, and have never been, a vitalist, although simply because I am unable to accept the traditional mechanistic biology of the last few decades I am often regarded as a vitalist. Vitalism in any form has the same fundamental defect as the mechanistic theory of life.[138]

In response to the same criticism, Köhler writes: "I wish to make the following statement expressly: These dynamic concepts do not contain a single thought in the direction of vitalism....Dynamical ideas...are no more the discovery of the vitalist than of the mechanists."[139] By the end of the 1930s, a salient observer would be inclined to agree with Köhler; but carefully add that while "dynamical ideas" may not be inherently vitalist, it was the issues surrounding the question of "dynamism" in biology and medicine, and the particular complexities involved in understanding living function, that kept vitalism very much on the map in the 1920s and 30s. Much like the French medical iconoclast Alexis Carrel in his *L'Homme, cet inconnu* (1935), what these two men repudiated was both mechanism and the animistic vitalism of the 19th century.[140] There is actually something poetic and transcendental, echoing the romantic and anti-modern, in the project Carrel lays out. "The science of man will be the task of the future." This he sees as an attempt to "trace only rough sketches of ourselves," that will "ignore vitalism and mechanism, realism and nominalism, soul and body, mind and matter."[141] Carrel's

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[137] J.C. Smuts, *Holism and Evolution* (London: Macmillan, 1926), 16-17.
[138] J.B.S. Haldane, *The Philosophical Basis of Biology*, 31, quoted in Karl F. Muenzinger, "Mechanism, Vitalism and the Organismic Hypothesis," *Philosophy of Science* 2 (1935), 518.
[139] W. Köhler, *Gestalt Phsychology*, 146, quoted in Ibid.
[140] While he likely appreciated some of its tenets, Carrel, medical heretic to the end, rejected the historical both in vitalism and neo-Hippocatism. Carrel, for example, was apparently invited to the First International Neo-Hippocratic Congress, which met in Paris in 1937, but "declined to attend because he insisted that medicine should not be bound by doctrines like vitalism and pythagorianism, and that it required more, rather than less, laboratory experimentation and observation which was preferable to the history of medicine, 'a science of uncertain presumtions.'" George Weisz, "Hippocrates, Holism and Humanism in Interwar France," in David Cantor, ed., *Reinventing Hippocrates* (Aldershot: Ashgate, 2002), 269.
[141] Alexis Carrel, *Man, The Unknown* (New York: Harper, 1935), 56.

method is pure *science de l'homme*, that is to say amethodological. It is the open-ended, anti-disciplinary approach, and thus seeks a broad, humanistic and spiritualized vision of humanity: "We are obliged to consider all the different aspects of man, physiochemical, anatomical, physiological, metaphysical, intellectual, moral, artistic, religious, economic, and social."[142]

A quick look at the writings of British polymath and sinologist Joseph Needham helps to further explore this point about holistic thinking. In his 1936 text *Order and Life*, Needham sees the terminus of the old idea of vitalism in the work of J.H. Woodger. Paraphrasing Woodger's *Biological Principles* (1929), Needham suggested that "for the future the term 'vitalism' should be restricted to theories which postulate some entity in the living organism *in addition to* the chemical elements, C, H, N, O, P, etc., plus organizing relations."[143] And yet, Needham also recognized a particular and valuable role played by vitalist thinking: "the perennial service of old-fashioned vitalism in all its forms was that it continually drew attention to the real complexity of the phenomena, and opposed the tendency, so common among mechanists, of putting forward over-simplified hypotheses."[144]

This interest in dynamism, complexity and organization in living things had definitive origins in the ideas of the physiological vitalists of the 19th century, and relied heavily on their groundbreaking reflections. The nature of the discourse had changed, however, since by the early 20th century the term vitalism had clear *ideological* connotations, and the old *epistemological* discourses of the past century were seen to have been resolved by discoveries in fields like chemistry and neurophysiology. And yet biology still continued to struggle to demarcate itself from the physical sciences, and its practitioners realized that, more than ever, the life sciences dealt with subject matter that had unique and irreducible elements. It was this acceptance of the ineffable character of organization in the living that led many thinkers in biology to buck the trends of scientific and philosophical thinking as a whole and move towards synthetic, holistic and

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[142] Ibid., 38.
[143] Joseph Needham, *Order and Life* (Cambridge: Cambridge University Press, 1968 [1936]), 7. See also J.H. Woodger, *Biological Principles* (London: Keegan Paul, 1929).
[144] Needham, *Order and Life*, 7-8.

organismic theoretical frameworks. This would start to change in the post-Second World War period.

*Neo-Thomism and Vitalism*

Neo-Thomism, representing as it did a revival of interest in the thought of Aquinas, was stimulated by Pope Leo XIII's 1879 encyclical *Aeterni Patris*. This document called for a new emphasis on the age-old principles of Thomism, and its foundational balance between reason and faith, as a way to meet the intellectual and social challenges of modernity. It is with the thought of neo-Thomist Jacques Maritain (1882-1973) that one arrives at the essential link between Bergsonian ideas of vitalism and the Thomist philosophies of the late 19th and early 20th century. Neo-Thomist thinkers like Maritain owe a good deal to the questions that absorbed late 19th century French philosophy. Maritain in particular is indebted to the thinking of Henri Bergson, which he first explores in his 1913 book *Bergsonian Philosophy and Thomism.*[145] For Maritain, Bergson is an inroad to Christian philosophy and Thomism. There is in Maritain a significant emphasis on the nature of time, and he struggles to elaborate the ethical consequences of Bergson's notion of "duration." Maritain praises Bergson's enterprise of challenging the mechanistic approach to the living, noting that this Bergsonian effect on science was becoming increasingly widespread: "In every country today we see the sciences of life throw off the rationalist and mechanistic yoke, and strive to understand the irreducible originality of their object."[146]

For Maritain, Bergson's philosophy challenges the statistical determinism of science by countering with the choice, action and indetermination of the living. Time in science, Maritain says, is mathematical rather than physical. He cites Aristotle, Saint Thomas and Bergson as thinkers who all endeavored in "reproaching mechanism for

[145] Jacques Maritain, *Bergsonain Philosophy and Thomism*, trans. Mabelle L. Andison (New York: Philosophical Library, 1955 [1913]). In fact, Maritain is indebted to Bergson for saving him from death, preempting his deep metaphysical despair and the suicide pact he made with his fiancée.
[146] Ibid., 36.

suppressing time and movement."[147] Maritain addresses the question of determinism and replies to it with the undeterminable nature of the "historical unfolding of universal duration."[148] The source of Maritain's thinking is significantly vitalist in the Bergsonian sense, as when he makes claims about the inseparability of theories of knowledge from theories of life, or when he sees the universe as in a constant state of creation.[149] Further, Maritain speaks of the "vital impulse" and accepts a metaphysical view that insists there are two distinct realms of reality, both a vital and a geometric order.[150]

The origins of French neo-Thomism cannot be separated from the history of philosophy and science in France in the late 19th century.[151] This was a vital time for Catholic thinkers. Vital because of the infusion of a new philosophical spirit, and a new set of profound questions raised by the biological sciences, but also vital in the sense of the essential, since this was, in many ways, the last stand of religion and spirituality as a guiding paradigm in the "nature of life" debate.

Again, as is apparent from its struggle with questions of spiritualism and materialism, teleology (purpose, goal-directedness), and the need to understand the perennial centrality of moral principles in the history of Western philosophy, Thomism was born as a response to the important secularizing principles of post-Enlightenment philosophy. By invoking the spirit of reason in the early Thomist tradition, French neo-Thomists sought to challenge the post-Kantian idea that metaphysics had no meaningful place in modern philosophy. This position was interesting too for its thoroughgoing historicism. A perfect example of these elements is to be found in Etienne Gilson's *The Unity of Philosophical Experience.*[152]

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[147] Ibid., 55.
[148] Ibid., 50.
[149] Ibid., 75.
[150] Ibid., 76-81.
[151] This is effectively argued in Harry W. Paul, *The Edge of Contingency: French Catholic Reaction to Scientific Change from Darwin to Duhem* (Gainesville, FL: University Presses of Florida, 1979). This excellent source also points to the origins of Catholic responses to scientific change in the late 19th century, which are seen as largely focused on the questions raised by Darwin.
[152] Gilson, *The Unity of Philosophical Experience.* Some excellent discussions of Thomism and its connection to science are to be found in S.I.M. Du Plessis, *The Compatibility of Science and Philosophy in France, 1840-1940* (Capetown: A. A. Balkema, 1972).

There was in the Thomist response to the questions raised in the late 19th and early 20th century life sciences something of a revival of vitalist thought as well. There are numerous French examples of this, but an interesting English treatment is Bertram C.A. Windle's 1920 book *Vitalism and Scholasticism*. Windle begins with an observation about the "corporeal souls" of lower animals noted by Aquinas, and seeks to develop this idea of the soul as a principle of life.[153] He also observes that the nascent, pre-Enlightenment forms of vitalism and scholasticism witness a parallel decline around the same time.

For Windle, there is an important distinction between scholasticism (wherein he includes Thomism) and dogma. No truth, he suggests, can be derived from a rigid source of authority. He thus begins his critical examination of Thomism as historically rooted in Aristotelian thought, and focuses in particular on Aristotle's preoccupation with two differing aspects of the living – "matter" and "form".[154] This emphasis on the Aristotelian roots of scholasticism leads Windle to a discussion of the three levels of form. The first, the "*anima vegetativa*," he sees as the form that separates a collection of chemical constituents from a true organic unity. The second, the "*anima sensitiva*" is portrayed as the animal form or soul. It is a source of self-consciousness, but is viewed by Windle as "totally immersed in matter."[155] Finally, he goes on to describe the nature of the "*anima rationalis*", the human soul, which for him marks the point where one moves from perceiving to conceiving. This form is for Windle the source of meaning and its essence (*esse*) is, he argues, independent of matter.[156]

Windle lays out the framework of his argument through an investigation of contemporary scholastic philosophy, but the substance of his text is devoted to biological ideas. He touches, for example, on the phenomena of rheotaxy, a plant's tendency to grow towards the sun, as a primitive example of intent in the living. The dynamics of development in cell division and mitokinetism seem also to Windle to be types of vital force.[157]

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[153] Bertram C.A. Windle, *Vitalism and Scholasticism* (London: Sands, 1920), 17.
[154] Ibid., 41.
[155] Ibid., 47.
[156] Ibid.
[157] Ibid., 101.

In French neo-Thomism one of the most fundamental issues was individuality and unity, which evolved into a philosophy of personalism. This view of personalism was distinct from the version that flourished in the United States and argued that all reality was ultimately personal. Rather these French personalists, the neo-Thomist and scholastic thinkers Emmanuel Mounier (1905-1950), Maritain and Gilson saw the combination of the infinite person (God) and distinct, finite persons as the essence of value. They did not necessarily view the natural order, however, as intrinsically personal. This view has its origin in the insistence of the necessary and essential coherence of the human being elaborated over and over by the devotees of animism. In their fierce anti-reductionist stance, they here provide a link between personalism and the irreducible individuality in elements of late 19th century vitalism.

Clearly, not all those who responded from a religious, Thomist perspective to the problems of the life sciences were vitalists. In 1876, a Jesuit priest and teacher at the Université de Louvain named Dèsaulx wrote a work criticizing the atheistic and materialistic claims of the British scientist John Tyndall (1820-1893). In a précis of Dèsaulx's work in the *Revue médicale*, Dr. Sales-Girons argues that Tyndall "speaks ill of the bible, laughs at theologians and poetically remembers martyrs to the church like Galileo and Giordano Bruno."[158] In response, the Jesuit Dèsaulx provides a physiological doctrine derived from Saint-Thomas wherein all physiological function is reducible to the physical and chemical: "Because the physiology of the reverend Father returns totally to the physico-chemistry of our most advanced modern materialists."[159]

This avowal of materialism by a single Jesuit scholar could be dismissed, but for Sales-Girons, it was more troubling because he felt it represented a general trend:

> If the Reverend Father of Louvain, believe me, was alone in his opinion, if he were only one isolated individual, we would have let him fade away like a solitary and lost voice. But he is, you should know, the organ of a system that under the cloak of religion threatens the Church's scientific doctrine. It is an innovation that began a few years ago with its source in the triumphant theory of the transformation of forces. Everything that is and everything that does in plants and animals is nothing but transformed forces.[160]

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[158] Dr. Sales-Girons, "Le Vitalisme physiologique et inattendu d'un Père jésuite," *Revue médicale française et étrangère* (1876): 705-713; 706. For the quintessential example of Tyndall's positivism see John Tyndall, *Frangments of Science, 2 Vols.* (New York: Appleton, 1898).
[159] Ibid., 707.
[160] Ibid.

Thus, Sales-Girons sees that the danger of the materialist position was that everything, even the living, was reduced to simple physical forces. From the point of view of this observer, this was the ultimate result of the materialist dominance of late 19th century science. As Sales-Girons notes, however, there may not be any "vital force" in Dèsaulx's system, but there was soul. As he says:

> Everything leads us to believe that in the organism of higher animals, and humans in particular, vegetative phenomena arise directly and exclusively from atomic forces. In keeping with this opinion, the soul presides over all functions of sensitive life, it is in man the principle of intellectual life, it is also what determines the voluntary movements of organs. But its action stops there.[161]

This was a view that also saw no fundamental philosophical divide between organic and inorganic. As Sales-Girons says, even a positivist could agree to it, with the exception of the belief in a soul that guides the sensitive and intellectual operations of man. This was the dualism of old, a revival of the "two substance" problem, and a coup for the Cartesians. But, as Sales-Girons cleverly adds: "But we will soon see, if, in physiology, one can logically be at once both Cartesian and Christian!" He further asks, in conclusion, "Are we to aspire to the advent of medicine in Catholic universities?"[162] This final conclusion seems clearly related to the political context of the time. In 1875 a law was passed by the young, still conservative and Catholic sympathetic Third Republic that granted freedom in higher education, freeing it from the secular constraints that had been in place since the Falloux Laws. In response, a Catholic medical faculty was established at Lille.[163] Though in 1880 the republicans would regain control over qualifying examinations and the awarding of degrees, and the Ferry Laws would entrench a system of universal secular education, at the time Sales-Girons wrote, the possibility of a distinct Catholic medical community loomed.

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[161] Ibid., 708.
[162] Ibid., 713.

*Conclusion: Vitalism in Transition from Force to Resistance*

This chapter ends with the thoughts of a British physician and microscopist by the name of Lionel Smith Beale (1826-1906). Beale was the son of a London surgeon and a graduate of King's College, where he was trained in chemistry, zoology and medicine. In 1851, the same year the great Crystal Palace was completed, Beale received his medical degree from the University of London and soon after established a private lab. A pioneer in the use of the microscope, Beale considered the instrument essential in the teaching of pathological-anatomy, something he did from the early age of twenty-five as professor of physiology and anatomy at King's College.[164] Beale was actually fairly *avant-garde* for a British physician in the mid-century, enamored of the new experimental methods popular among physiologists on the continent. In contrast, most other British physicians of the period were notably "old-fashioned" about their approach to clinical medicine, seeing it as a quasi-artistic form of "incommunicable knowledge."[165] That Beale was also a devotee of the principles of vitalism at this point in the 19th century is interesting, since many of his colleagues in France and particularly Germany, fellow laboratory scientists, were generally ardent materialists. Beale has been portrayed as a staunch vitalist of the old ideological type, a defender of outdated ideas.[166] This portrayal conveniently melds his vitalism with the Montpellier school, and thus misses an important distinction between the *epistemological* and the *ideological* stripes of vitalist thought. Many of these debates surround a problem raised by Bernard in his histories of physiology, the apparently distinct qualities of animals and plants. The cell theory and the protoplasmic theory were increasingly invoked in the 1860s to show the similarity between these two living forms. And, in a sense, the protoplasmic theory and its wide acceptance signaled

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[163] Matthew Ramsey, "Alternative Medicine in Modern France," *Medical History* 43 (1999): 286-322; 299.

[164] The bulk of this biographical material is taken from Beale's profile in the Charles Coulston Gillispie, ed. *The Dictionary of Scientific Biography, Vol. 2* (New York: Scribner's, 1970-1990), 539-541.

[165] See Christopher Lawrence, "Incommunicable Knowledge: Science, Technology and the Clinical Art in Britain, 1850-1914," *Journal of Contemporary History* 20 (1985): 503-520.

[166] Gerald L. Geison, "The Protoplasmic Theory of Life and the Vitalist-Mechanist Debate," *Isis* 60 (1969): 273-92. See also the entry on Lionel Smith Beale in the *DSB*.

the triumph of mechanistic over vitalistic views of life.[167] Looking at the British context of this theoretical debate, Gerald L. Geison contrasts Huxley's Humean Skepticism with the positivistic materialism of Comte.[168] For Geison, the protoplasm theory is Huxley's tool to try and eclipse vitalist explanations. Seen as little more than a foil for Huxley's arguments is the physician and pathologist Beale, a one-time critic of the grand old man of the discipline in Germany, Rudolf Virchow (1821-1902).

Beale, however, stands quite well on his own as a visionary regarding the development of biology, and his vitalist views fall on the more radical end for the late 19th century. In pulling vitality out of the realm of pure physical understanding, Beale was early to anticipate the new battleground in the philosophy of biology. His thoughts on the nature of life are a perfect illustration of the transition from *epistemological* to metaphysical or *ideological* vitalism. On a mechanist/materialist-vitalist/spiritualist scale with Huxley at one end and Beale at the other, Geison places Bernard somewhere in the middle. In looking briefly at Beale's ideas in his 1871 book *The Mystery of Life*, I hope to refine Geison's scale a little, and explore the relationship between Beale and Bernard.

At the outset of *The Mystery of Life*, Beale makes clear his position: "Life is a power, *force, or property of a special and peculiar kind, temporarily influencing matter and its ordinary forces, but entirely different from, and in no way correlated with, any of these.*"[169] He thus makes a clean conceptual break between life and any purely materialistic explanation for it. This is obviously not the same stance taken by Bernard, who is less convinced of the idea of a life force above and beyond the regular, though ever so elusive, physiological processes discoverable through experiment.

Beale proposes to refine the idea of vitalism by re-interpreting it and re-naming it. For him, it is the elusive quality of *vitality* that seems so difficult to comprehend and define in strictly mechanical terms. As he says:

> The evidence in favour of *vitality* being an agency distinct from mere *force*, – being the power by which all living things are characterized, and which absolutely separates them from the non-living, is so strong that it seems to me we

[167] Geison, "The Protoplasmic Theory of Life and the Vitalist-Mechanist Debate," 279.
[168] Ibid., 282.
[169] Lionel S. Beale, *The Mystery of Life: An Essay in Reply to Dr. Gull's Attack on the Theory of Vitality in his Harveian Oration for 1870* (London: J. & A. Churchill, 1871), 2.

> can only escape from the conclusion if we deny or ignore incontrovertible facts.[170]

Thus Beale points to an important evolution in the thinking of hard-line vitalists, as he abandons, in some sense, the idea of force altogether, being as it is a concept dominated by scientific (and more specifically mechanical) paradigms.

Beale spends a good deal of time criticizing and analyzing the use of mechanical metaphors as explanatory frameworks for an understanding of life. He proposes, in contrast, a proto-organicist notion of *bioplasm*. It is, unsurprisingly, in the realm of development in the living where mechanism seems most unsatisfactory. In this respect, he is not unlike Bernard in his thought, since the latter would surely not deny the important distinction between function and form.

Beale makes interesting use, also like Bernard, of medicine. In much the same way as medical (clinical) ideas are seen as distinct from physiological phenomena in Bernard, Beale regards medicine as a realm where purely physico-chemical explanations are least satisfying. It is specifically in the explanation of disease where this is most apparent. "It would surely be difficult to find remarks having any pretension to scientific accuracy more pitiful than many of those which have been advanced as physical and chemical explanations of the phenomena of disease."[171]

Moreover, mechanical explanations were equally unsatisfying. For Beale, again like Bernard, there seems no meaningful distinction between the normal and the pathological function of a living body. His conclusion regarding this apparent distinction was far less optimistic, however: "To fully explain any disease whatever by mechanics must be impossible, unless the phenomena of health are also susceptible to mechanical explanation."[172]

In his fierce polemic, Beale refuses to accept the reductionist principle, arguing that "physiology and medicine are not branches of physics, and, like many other departments of human knowledge, cannot be comprised in mechanical philosophy."[173]

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[170] Ibid., 7-8. Emphasis in the original.
[171] Ibid., 47.
[172] Ibid.
[173] Ibid., 51.

He, like many vitalists before him, is more interested in what cannot be explained than in what can. As he says: "Vitality is, then, after all, a *mystery*."[174]

In contrast to the growing mechanistic and materialistic certainties of his age, Beale is decidedly anti-positivist in his inclination. Rather than see growing scientific understandings of life as a confirmation of the philosophies of the age, he argues that increasing insights only reveal the degree of ignorance and the many unknowns regarding our knowledge of the living.

> There is a mystery in life. A mystery which has never been fathomed, and which appears greater the more deeply the phenomena of life are studied and contemplated. In living centres, far more central than the centre as seen by the highest magnifying powers – in centres of living matter where the eye cannot penetrate, but towards which the understanding may tend, – proceed changes of the nature of which the most advanced physicists and chemists fail to afford us the faintest conception.[175]

He asks, fundamentally, how it is possible to quantify innately qualitative aspects of life, moving the context of debate about the nature of life out of the realm the physico-chemical. Here the idea of *force* is problematized when understood in physical terms entirely: "...it may be well to consider if our own will, feelings, thoughts, emotions, hopes, desires, can be expressed in *force* terms, or measured by *force* standards."[176]

Beale sees the writing on the wall in a sense, and perceives in modern science the desire to "mechanize" the idea of mind, rendering it subject to all the limitations of that understanding. He presents an interestingly humanist critique of this trend, taking to task assumptions driven by the emerging evolutionary perspective gone awry:

> Dr. Gull, with many more, at present shrinks from regarding mind as correlated force, and therefore does not at this time look upon man as mere mechanism. But unless it shall be shown exactly where the lower forms of life are marked off from the higher, this is a position obviously untenable. The man-germ has no more mind than the dog-germ or the cabbage-germ. At what period of development, then, according to the view above referred to, does the man-germ become distinct from all other beings, and acquire those properties which make man "a being apart?" At what period of his being is that "immeasurable and impassable gulf" excavated, which is supposed to separate him so decidedly from the rest of creation, and by what method of investigation is the gulf to be rendered evident to the senses?[177]

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[174] Ibid., 53. Emphasis in the original.
[175] Ibid., 54.
[176] Ibid., 55. Emphasis mine.
[177] Ibid., 59-60.

Beale not only presents a strong critique of the positivistic assumptions of the biological thought of his time, he is also critical of the hubris and mechanistic self-assuredness of modern physics. It is the assumption of the possible reduction of all qualities to physical quantities that seems most absurd in his mind: "The most sanguine physicists are *perfectly sure* that *thought* and *life* itself will *some day* (!) be summarily transformed into a new undiscovered correlate by the might of unthinking force."[178]

In the final analysis, Beale's thought seems curiously modern – skeptical, critical, independent, and yet fully acquainted with the tools of his field. Thus Beale's interest in vitalism and vitality is as much a rejection of the emerging mechanistic and purely physicalist explanations of living phenomena. In this final quote, one sees this idea combined with a clear awareness of instrumental realities – yet these instrumental realities come to Beale as a source of wonder and amazement rather than quiet, self-satisfied assurance:

> People are beginning to doubt whether, after all, living things are really so like machines and crystals and physical bases, and complex albuminoid matters in a state of rapid chemical change, as they have been led by the disciples of the new philosophy to believe them to be. And people are also beginning to doubt if those who have spoken so *positively* on the physical side really know that much more than any one else knows about the nature of life; although, from their very decided manner, it was natural to believe they possessed very peculiar and perfect knowledge of the secret.
>
> Whether the physical theory of life would have resisted much better the "*furious onslaughts*" that have been made against it, if some other course had been pursued, is a matter of opinion; but it is quite certain that some of the strongest supporters of the doctrine are modifying their views, and are preparing to modify them still further. Those who have watched for ten minutes, under a high magnifying power, the varied movements of living matter, and have thought over the question of the nutrition of that living matter, will not easily be brought to believe that such phenomena are due to physical and chemical changes only. The number of such observers increases daily.[179]

This conclusion to Beale's work seems almost inspired, anticipating the importance of growth, development and other dynamic views of biology that would become central to late 19th century debate. The application of pure physical laws to understanding the "living matter" seen under microscopes in the end seems problematic to Beale if for no other reason than it is colored by a deep positivist thrust.

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[178] Ibid., 63. Emphasis in the original.

For Beale and many others, vitalism had made its transition from force to resistance – an idea which may not so much explain life as take a stand against the dominant trends of positivism, materialism and mechanism. Vitalists of the late 19th century *ideological* stripe like Beale were the vanguards, the canaries in the coal mines, of a critical stance towards the assumptions of the modern scientific paradigm and its relationship to medicine. Not only did vitalists criticize, however, they also created the frameworks for new ways of thinking and being, whether in helping shape the basic assumptions of alternative medicine, discussing the philosophical consequences of determinism or evolutionary thought, or merely insisting on the continued relevance of the human soul in an increasingly scientific world.

[179] Ibid., 70-71.

## *Conclusion*
## *Vitalism: Alive and Well*

With striking regularity, vitalism makes its appearance whenever there arises a question of boundaries. It has already been said herein that vitalism is essentially a "middle way" between the overarching claims of animism, spiritualism and idealism on one side and mechanism, materialism and realism on the other. But this claim needs some final refinements. What has hopefully become clear in the discussions presented is that vitalism often appears as a marker when conflict arises and transformation ensues. It is, in other words, a term that appears in the medical and biological discourse whenever thinkers are struggling at the liminal point of two disparate claims – often between an old paradigm and a new one. In the 19th century philosophical, scientific and medical worlds, these dualities centered on a series of issues and, by looking at why vitalism is invoked, these debates come into sharper relief.

The first and most basic of these divides is between the material and the spiritual, which in larger philosophical terms can also be seen as a debate between a mechanical scientific view and idealist philosophical view. In fact, the deep division between these two views really only comes into being in the 19th century, and it is the questions surrounding vitalism that highlight the growing tension between the once closely allied cosmologies of science and philosophy.[1] The second is the essentially *epistemological* divide between the reductionistic and the holistic.[2] This is a debate that often ends up about the nature of biology, a science whose outlines were only first sketched in the early

[1] Consider the following quote regarding the emergence of a deep distinction between science and philosophy: "The schism in modern thought between the thoroughgoing mechanists and those who sought to put mechanism in its proper (and diminished) place in the grand idealist scheme begins with the clash between Newton and Leibniz. Unlike the seventeenth century, the eighteenth marks a deepening separation between natural philosophy and moral philosophy. By the nineteenth century this division became established. The word 'philosopher' came to be reserved fro an apologist for idealism or perhaps an opponent of thoroughgoing mechanism in any form, and the expression 'scientist' came into use for the thoroughgoing mechanist who followed the experimental method of investigation. These two professions came to inhabit different parts of the university, and came to adopt different curricula, and thus and only so were able to keep the peace." Jagdish Hattiangadi, "Philosophy of Biology in the Nineteenth Century," in C.L. Ten, ed., *The Nineteenth Century: Routledge History of Philosophy, Vol. 7* (London: Routledge, 1994), 272-296; 276.

19th century, and its proper relationship to the other natural (and more particularly physical) sciences. It also speaks to the unique logic of an organic outlook in contrast to a mechanical one. The third is the schism separating biology and the general sciences of life writ large from the art and practice of medicine. Connected to, but nonetheless distinguishable from, this issue is a divide within the understanding of medicine itself between the dynamic, living, physiological conception and the static, dead, anatomical view.

Some points also need to be made about the evolution and transformation of vitalism in the 20th century, particularly as it filtered into the realms of history, politics and culture. In this sense vitalism as a term finally migrated entirely out of mainstream medicine and found its way into the lexicon of those who became critics of a thoroughly 'scientistic' modernity.[3]

*Vitalism and Philosophy*

The appearance of vitalist debate often cut to the very heart of the role of philosophy in the scientific world. Were conceptions of the nature of the living 'truer' when expressed as universals, or when they were found in the particular? This was a question that had at its source the unavoidable schism between the objective and the subjective but, in a more general philosophical sense, also touched on the role of metaphysics. This was the argument offered in Chapter One, which suggested that in the romantic era, in so far as there had yet to be a clear and unbridgeable division between natural and moral

[2] Neil W. Tennant, "Reductionism and Holism in Biology," in T.J. Horder, J.A. Witkowski, C.C. Wylie, eds. *A History of Embryology* (Cambridge: Cambridge University Press, 1986).

[3] The critics of "scientism" are legion, but perhaps none is more compelling than the philosopher of science Paul Feyerabend, who cleverly portrays science as merely one of a number of "myths" humans have created as a means of understanding. "...science is much closer to myth than a scientific philosophy is prepared to admit. It is one of the many forms of thought that have been developed by man, and not necessarily the best. It is conspicuous, noisy and impudent, but it is inherently superior only for those who have already decided in favor of a certain ideology, or who have accepted it without ever having examined its advantages and its limits." Paul Feyerabend, *Against Method: Outline of an Anachistic Theory of Knowledge* (London: Verso, 1978 [1975]), 295.

philosophy, science still had 'soul'.[4] At the beginning of the 19th century metaphysical thinking was also inseparable from understandings of the mind and its relationship to the body, but as the century progressed, physiological thought pushed the material body increasingly to the fore. This meant that philosophy, specifically moral philosophy, became by association increasingly subservient to psychology, and in particular to a form of psychology that was fundamentally dependant on the findings of neurophysiology. In France, one notes, for example, Jules Soury's incredibly popular *Le système nerveux central* (1899). This remarkable book gave an extremely detailed, up-to-date account of what had been learned since the beginning of Western history about the nervous system. It also reflected the growing general interest professionals and the *intelligentsia* took in this still new realm of cortical localization, which would develop as the 20th century began.[5] This was one of the essential, constant and undeniable influences of scientific positivism.

This debate between the immanent and the transcendent nature of being came to a head in the materialism-spiritualism controversy of the mid-19th century. It is critically important to reflect on how fundamental the development of biological thought was as a background to these debates. This realization further highlights the importance of vitalism, and of its ebb and transformation in the second half of the century, for one can conclude that there is an important and undeniable metamorphosis in the European mind in this period. In the early 19th century many scientists dealing with the question of life allowed the speculations and ideas of metaphysics, spirituality and moral philosophy to

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[4] In the Introduction to David Cahan, ed., *From Natural Philosophy to the Sciences: Writing the History of Nineteenth Century Science* (Chicago: University of Chicago Press, 2003), Cahan says that the enterprise of the time was "the transformation of natural philosophy and natural history into a set of well-defined, specialized scientific disciplines." 8. On the distinction between natural history (and its inherently moral and ethical imperatives) and the emergence of experimental biology see Paul Lawrence Farber, "The Naturalist Tradition: A Natural History," in Kurt Bayertz and Roy Porter, eds., *From Physio-Theology to Bio-Technology: Essays in the Social and Cultural History of Biosciences: A Festschrisft for Mikulas Teich* (Amsterdam: Rodopi, 1998), pp. 180-196.

[5] Jules Soury, *Le système nerveux central. Structure et fonctions. Histoire, critique des théories et doctrines, 2 Vols.* (Paris: Carré et Naud, 1899). One notes here that there were those like the Montpellier neurologist Jules Grasset whose interpretations of modern scientific findings still allowed for broad philosophical speculation. For a recent critique of this kind of mental reductionism see William R. Uttal, *The New Phrenology: The Limits of Localizing Cognitive Processes in the Brain* (Boston: M. I. T. Press, 2001).

filter into and influence their theoretical thinking. By the end of the 19th century the trend had reversed, and findings in biology and the life sciences became foundational to philosophical and moral speculation. One thinks here, for example, of Social Darwinism and its far-ranging consequences.[6]

*Vitalism and Science*

This work began by suggesting that the words "biology" and "vitalism" are coined at almost the same time, and that this is no accident. Clearly, the widespread expression of vitalist principles in the 19th century was born of the monumental influence of the new science of biology on the Western mind. In many respects vitalism is an apt descriptor of the general trends in 19th century thought, much as mechanism was of the 17th century. This should come as no real surprise, since biology was arguably as important to 19th century thought as physics was to the thinking of the 17th century. There is a case to be made that the development of biology in the 19th century and its impact on society and culture constitutes, in a sense, a second Scientific Revolution, much as the development

[6] This absolutely seminal issue of the applicability of science and its methods to the human realm in essence constitutes the debate surrounding positivism. It is an argument that cuts to the heart of many of the most sacred assumption of modernity and its Enlightenment foundations. Consider in this respect the description of the debate, and its wide-ranging historical persistence, in Isaiah Berlin's essay on the Counter-Enlightenment: "It was further believed that the methods similar to those of Newtonian physics which had achieved such triumphs in the realm of inanimate nature could be applied with equal success to the fields of ethics, politics and human relationships in general, in which little progress had been made; with the corollary that once this had been effected, it would sweep away irrational and oppressive legal systems and economic policies the replacement of which by the rule of reason would rescue men from political and moral injustice and misery and set them on the path of wisdom, happiness and virtue. Against this, there persisted the doctrine that went back to the Greek Sophists, Protagoras, Antiphon, and Critias, that belief involving value-judgments, and the institutions founded on them, rested not on discoveries of objective and unalterable natural facts, but on human opinion, which was variable and differed between different societies and at different times; that moral and political values, and in particular justice and social arrangements in general rested upon fluctuating human convention. This was summed up by the Sophist quotes by Aristotle who declared that whereas fire burned both here and in Persia, human institutions change under our very eyes. It seemed to follow that no universal truths established by scientific methods, that is, truths that anyone could verify by the use of proper methods, anywhere, at any time, could in principle be established in human affairs." Isaiah Berlin, "The Counter-Enlightement," in *Dictionary of the History of Ideas, Vol. 2*, ed. Philip P. Weiner (Cambridge: Cambridge University Press, 1973), 100-112; 101.

of electrical and chemical technologies in the late 19th century are seen as a second Industrial Revolution.

Vitalists initially insisted that understanding "life" as a scientific problem was a categorically different endeavor from understanding the physical sciences. This argument was, after all, the origin of the *epistemological* vision of vitalism. This was also one of the central arguments in Chapter Two, which ascribed a good deal of credit to the Montpellier school for this innovation. In their insistence on the principle of *epistemological* vitalism, the Montpelliérains helped shape the very essence of biological thought as a form of knowledge that differed conceptually from the other sciences. Biological ideas, particularly those relating to concepts like growth and development, seemed possessed of their own particular concerns and issues that made them quite different from the models that the physical and chemical sciences offered. As the 19th century progressed, however, many important developments in fields like organic chemistry and thermodynamics (particularly the discovery of the conservation of matter and energy) pushed the *epistemological* vitalism of the late 18th and early 19th century farther out onto the periphery.[7]

And yet, at the same time, biological discoveries in fields like embryology and evolutionary theory were interpreted as proof that defining organisms solely in terms of their physical or chemical composition was both limited and highly unsatisfying. One thinks here of the arguments in favor of *entelechy* and vitalism offered by Hans Driesch. And so biology continued to be seen by many as a scientific discipline with a unique and irreducible logic all its own.

By the early 20th century one is witness to a thoroughgoing attempt to base biological thought on strict mechanistic principles. One of the foremost figures in this endeavor was Jacques Loeb, a developmental biologist working at the Rockefeller

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[7] One author says that "Between the time of Bichat and Bernard, the tide seem to have swung against vitalism in physiology, though the full demise of vitalism had to await the twentieth century. The debate between vitalists and mechanists is a fine example of a thoroughly scientific controversy, in which experimental results and good arguments played an important role in the eventual outcome. As the difficulties for vitalism mounted and those for mechanists diminished, the tide of opinion swung against the vitalists." Hattiangadi, "Philosophy of Biology in the Nineteenth Century," 277.

Institute in New York.[8] Though mechanists like Loeb made great strides in the early years of the century, holistic and vitalistic visions of biology remained solvent and challenged the complete triumph of mechanism.[9] Some of the greatest biological theorists of the 20th century, thinkers like J.B.S. Haldane, Julian Huxley, Joseph Needham and Ernst Mayr, can be seen as "neo-vitalists" in the sense that they developed a view of biological thought as putatively discrete from the reductionistic, linear, and mechanistic logic of the physical sciences.

The argument has been made that vitalism completely disappears from biological thought as a result of events in the post-DNA era. The double helix seems to provide an "answer" to many of the questions vitalism poses, and has been used as a rationale to assert the "death" of vitalism.[10] And yet, as modern biomedicine proceeds along its reductionist path, grave questions remain unanswered by a philosophically weak counterpart.[11] Since the Second World War, physics has fully reassumed its central role as the defining framework for philosophical musings on the nature of life, in part because so many physicists went into the promising field of molecular biology after the war, achieving what on the surface appear to be incredible results. These successes, however,

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[8] See Jacques Loeb, *The Mechanistic Conception of Life: Biological Essays* (Chicago: University of Chicago Press, 1912). In an address delivered in Hamburg at the First International Congress of Monists on 10 September 1912, Loeb spoke on the subject of "The Mechanistic Conception of Life." It was the object of his essay to discuss "whether our present knowledge gives us any hope that ultimately life, i.e., the sum of all life phenomena, can be unequivocally explained in physico-chemical terms." If this question was answered in the affirmative, then he argued it would necessarily follow that "our social and ethical life will have to be put on a scientific basis and our rules of conduct must be brought into harmony with the results of scientific biology." He began his discussion with a reminder that "it should be remembered that modern biology is fundamentally an experimental and not a descriptive science," and in what followed, presented a history of this experimental impulse as applied to the understanding of life and its function. This historical *precis* began with the visionary experiments of Lavoisier and Laplace in 1780, who compared the heat produced in a warm-blooded body with the burning of a candle, noting that the discovery of the formation of carbon dioxide suggested that they were, for all practical purposes, identical. He continued with some mention of the synthetic production of certain organic compounds (i.e. Wöhler) and further suggested – with something of a positivist conceit – that despite gaps in the contemporary understanding of life, "nothing indicates...the artificial production of living matter is beyond the possibilities of science." 3-5.

[9] See Garland E. Allen, "Mechanism, Vitalism and Organicism in Late Nineteenth and Twentieth-Century Biology: The Importance of Historical Context," *Studies in the History and Philosophy of Biology and the Biomedical Sciences* 36 (2005): 261-283.

[10] Francis Crick, *Of Molecules and Men* (Seattle: University of Washington Press, 1966).

have brought us to the point where we face grave questions about the "engineering" of life, and ignore the legitimate and powerful arguments of philosophers like Bergson at our own peril.

The development of a holistic, ecological "thought-style" and the rise of environmentalism also seems a reassertion of certain vitalist ideas. Rachel Carson's (1907-1964) *Silent Spring* concerns itself with, at root, the classical Hippocratic notion of a healthy place.[12] Carson's miasmas, however, are man-made. In France, the modern environmental movement presents a complex face, partly marked by the battle over nuclear technology and, ironically, embracing a positivistic faith in technological fixes. Still, the underlying notion of place, and a harking back to an idealized agricultural, peasant past, are themes that remain solvent even today.[13]

*Vitalism and Medicine*

Medicine has always possessed a kind of urgent, applied character that made it fundamentally different from the other sciences. The often pressing need to 'do something' in medicine means that it cannot rest solely in the theoretical realm, inured to the bloody and painful reality of human life. And yet in the confusing medical world of the 19th century, where many therapeutic approaches were often thoroughly suspect, theory was often all physicians had at their disposal in an otherwise nebulous arsenal.

It is perhaps this reality more than any other that explains the continued appeal of vitalist thought, and particularly the element that related to the idea of a healing or medicating force, in the 19th century medical sphere. In a medical world replete with

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[11] For an interesting popular critique of these ideas, see Richard C. Lewontin, *Biology as Ideology: The Doctrine of DNA* (Concord, ON: Anansi, 1991).
[12] Rachel Carson, *Silent Spring* (Boston: Houghton Mifflin, 1962).
[13] Michael D. Bess, "Ecology and Artifice: Shifting Perceptions of Nature and High Technology in Postwar France," *Technology and Culture* 36 (1995): 830-62. The first uses of the word "ecology" are ascribed in one work to early 20th century French botanists whose ideas were based on the "geographic" traditions of the 19th century. See Patrick Matagne, "L'écologie en France au XIXe siècle: résistances et singularités," *Revue d'historire des sciences* 49 (1996): 99-111. See also Jean-Paul Deléage, *Histoire de l'écologie: une science de l'homme et de la nature* (Paris: Editions de la Découverte, 1992). Farmer and Activist José Bové, an ardent contemporary critic of fast food and big agribusiness, reflects this trend. In a recent interview, he called genetic

frustrations and unknowns, the idea of a vital body left to its own devices that had tremendous recuperative power could be quite appealing.

The most important division between vitalist and non-vitalist medicine was in the way the patient body was perceived. Medical tradition in the late 18th and early 19th century was deeply immersed in the largely static traditions that extended all the way back to the medieval university – anatomy, nosology and the classical *materia medica*. In contrast, what medical vitalism emphasized was the dynamic physiological body – a kind of neo-humoralism: complex, interacting with its environment and in a constant state of development, growth, rejuvenation and flux. Thus one of the reasons that vitalism was so widespread in the first half of the 19th century was because of the tensions surrounding the introduction of physiological thinking into medical practice. Discussions of vitalism are in large part the result of the tension between the dynamic, physiological conception of the living and the static, anatomical model.

In addition, as was made clear in Chapters Two and Three, medical 'systems' continued to have a significant impact on medicine and, in a medical world sorely lacking a clear consensus, were often the rhetorical stock and trade of elite physicians. Thus the roles of philosophy and history remained centrally important in medical understanding and explanation, and were only really eclipsed by the rise of experimentalism and a more rigidly scientific medicine in the late 19th century.[14] In France this trend is emblemized by

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modification a "totalitarian technique." See Emily Eakin, "Unhappy Meals: Questions for José Bové," *New York Times Magazine*, 6 January 2002, 13.

[14] In fact vitalism provides a perspective for understanding the very development of "scientific medicine" in the 19th century. In a recent collection of essays on the historiography of nineteenth century science, we find an essay on "Scientific Medicine" by historian Michael Hagner. Hagner says that "given the remarkable impact of nineteenth-century medicine, some questions seem inevitable." These questions include: "What do we understand by 'scientific medicine'? Can it be strictly separated from the 'art' of medicine, as some nineteenth century protagonists claimed? When and why did representatives of scientific medicine begin to draw such a sharp divide between the traditional practice of medicine and the sciences, and why did this divide become so meaningful? Was this a rhetorical move through which specific practical innovations were enhanced in value and through which medicine – a heterogeneous subject that also includes such fields as Hippocratism, phrenology, mesmerism, and homeopathy – attempted to unite itself and to shape its own borders? And how can we describe the relationship between medicine and science? How did medicine work as part of science? Do we have an alternative to either praising medical progress or calculating the cost of its supposed progress? Is scientific medicine completely heterogeneous or can we find overarching structures?" An investigation of vitalism like this one helps answer all these questions, and further highlights the centrality of the vitalism

Claude Bernard, and is discussed in Chapter Four. Even after these innovations came to the fore, clinical medicine continued to argue for its unique role as 'art' requiring a basic experiential empirical knowledge, in contrast to the more programmatic knowledge developed in the experimental sciences. This argument was made in Chapter Five.

Chapter Two and Three also maintained that all vitalists, whether they were part of the Montpellier school or the neo-Hippocratic 'Paris School', were consistently focused on seeing the individual body as inseparable from and existing within a particular *milieu*; thus the emphasis on characters, constitutions and types. This was the essence of the "*science de l'homme*" approach. These social and anthropological views of health have had a dark legacy, largely associated with the concept of race, but have also been immensely important to our modern understanding. There are, after all, differences between people – that this has such negative connotations in certain historical contexts is really no fault of the vitalists, for it was in their deepest and most fundamental interest to celebrate and understand this fascinating diversity, rather than make it a point of division and conflict. If there is a culprit responsible for leading these 'constitutional' conceptions of man down a dark, contentious path, then it is not found in these pioneers of medical and philosophical anthropology, but rather in the structure of the modern nation-state, which has used these differences to exacerbate conflict and develop notions of otherness for its own, too often malicious, purposes. The "*science de l'homme*" aspect of vitalism, properly understood, is really the beginning of understanding and appreciation of life in all its pluralist and multi-faceted diversity.

*Vitalism and Psychology*

Conceptions of the mind-body relationship in France are heavily indebted to the Cartesian paradigm. Descartes' dualism was an intentional attempt to carve out a space for the *anima rationalis*, the rational soul, in modern philosophical conceptions of man. As materialist theories developed in the 18th century, however, this space began to shrink,

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in the 19th century scientific and medical sphere. See Michael Hagner, "Scientific Medicine," in Cahan, ed., *From Natural Philosophy to the Sciences*, pp. 49-87; 51.

and the concept of a rational, thinking soul started to fade. And yet many of the most serious questions relating to the mind-body relationship remained.

What developed was a clear divide between the views of the materialists and the animists. On one side were the materialists, increasingly gaining ground through the expansion of scientific thought, though there were still many who challenged their simple metaphysical assertions. The German materialists of the mid-19$^{th}$ century were laboratory men, deeply suspicious of any spiritual element in human life, seeing all as merely matter and force. They attempted to finally put to rest the "two substance" problem that had been a part of Western thought since the time of the scholastics. German philosophy, however, was also marked in the mid-century by important challenges to the materialists, none more prominent than Schopenhauer. The physicist and philosopher Gustav Theodor Fechner (1801-1887) was another important influence. Preoccupied with the mind-body problem, Fechner advanced theories in experimental psychology that assumed both mental and physical components, and sought to develop a science elaborating the relationship between the two. Many of the French thinkers discussed in this work clearly shared Fechner's dualistic bias.

It is through animism that we find the vitalist link to spiritualism. The animist assertion of the unique realm of the rational soul also leads in the direction of dynamic psychology and the fascinating relationship between mind and body. This was the project of Dr. Sales-Girons and the journal *Revue médicale*. One finds in this discourse an emphasis on individuality and unity. Animists asserted that the realm of the mind (soul) was superior to the body, which it controlled. Through this view are explored the ideas of mental healing, as well as the unique spiritual realm of man.

In influencing and helping to create a framework for a critical outlook towards modern biomedicine, this animist vitalism encourages one to question the bold assertions of our contemporary paradigm on the nature of mind. Much of recent philosophy of mind has fallen victim to the materialist claims of neurophysiology. But what are these claims? Are happiness and sadness, states of being that are infinitely variable and individually distinct, really nothing more than a question of serotonin levels? Are these often very

personal and indefinable qualities really just quantifiable imbalances gone undiagnosed? In this respect modern biomedicine is deeply anti-vitalist.[15]

Animism also took on different meanings by the end of the 19th century. The development of a "scientific" anthropological and sociological approach was important in this respect, since the word was increasingly associated with putatively "primitive" religious beliefs. A classic, positivist-inspired work in this respect is Emile Durkheim's (1858-1917) *The Elementary Forms of Religious Life*.[16] Another work in the British tradition by an early pioneer in the discipline of anthropology is Sir Edward Burnett Tylor's (1832-1917) *Primitive Culture* (1871).[17] Most of late 19th century anthropology and sociology, however, was under the heavy influence of positivism, and demystified all non-bourgeois Christian spiritual and religious beliefs. Works of this sort sought to show the cultural relevance of belief, but in their insistence on a rational and scientific explanation, were unsympathetic to alternative metaphysical or ontological explanations. A rare exception to this was Sir James George Frazer's (1854-1941) *The Golden Bough*, an exhaustive and elaborate study of the principles and origins of sympathetic magic. Still, the overwhelming effect of anthropological discourse in the late 19th century was to marginalize animism in any form and to make belief seem primitive. Superstition was simply wrong-headed.

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[15] Consider the following: "One other curious particularity to biomedicine, at least in its present-day form, is its anti-vitalism. Traditional Chinese medicine, like many traditional systems of healing, centres on the idea of a vital power – in this instance, *qi* (energy that is associated with movement) – at the center of health and disease. The source of disease is not traced to a particular organ, but to the disharmony of *qi* circulating in the body. Nor is the pulse and circulation of the blood understood only in the physical anatomical sense of the beating heart, but in terms of inspiration and expiration – and the techniques of breath control, *qigong*, 'the work of breath *qi*'. Ayurvedic medicine and ancient Greek medicine shared a somewhat similar conception. Vitality, efficacy, power – all capture the idea of a force of life that animates bodies/selves. Biomedical materialism decries a vital essentialism. Things are simply things: mechanisms that can be taken apart and put back together. It is a thoroughly disenchanted world-view. There is no mystery, no quiddity. Therapy does not, cannot, work by revitalizing devitalized networks – neuronal or social. There is no magic at the core; no living principle that can be energized or creatively balanced. Thus, though depression feels like soul-loss to many persons around the globe, there is no possibility for a lost soul in psychiatry." *Companion Encyclopedia of the History of Medicine*, 21.

[16] Emile Durkheim, *The Elementary Forms of Religious Life*, trans. Carol Cosman (Oxford: Oxford University Press, 2001.

[17] Edward Burnett Tylor, *Primitive Culture: Researches into the Development of Mythology, Philosophy, Religion, Art, and Custom* (London: J. Murray, 1871).

Politically, vitalism stands out at the periphery. As mentioned in the Introduction, it was opposed to the most universalizing tendencies of modern (i.e. 19th century) liberalism. This meant that it was associated with both conservatism and radicalism at certain points. As we saw in Chapter One, vitalism had an intimate link to romanticism and thus became a critical element of many counter-Enlightenment discourses.[18] In this respect vitalism, particularly in its association with alternative medicine and occultism, became a challenge to the secularism and positivism of the French Third Republic.[19]

By the early 20th century vitalism blossomed through a number of different avenues. Its connection with spiritualism and the occult, for example, came to be influential in the world of psychical research. But the true challenge derived from those who tried to shatter the entire edifice of late Victorian thought, like Bergson and Whitehead. These architects of modernity helped shape a dynamic world in the interwar years, full of intriguing possibilities.[20] Wilhelm Reich's theory of 'orgone' energy, which flourished in the mid-20th century, was dependent on the tradition of vitalism and came to be associated with a radical political outlook.[21]

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[18] In the *Oxford Encyclopedia*, Kathleen Wellman says that "from the late eighteenth century, the vitalists adamant rejection of materialism and staunch advocacy of life forces led to an alliance with the romantics and with conservative political and intellectual movements." As I argued in the Introduction, this influence was just as likely to lead towards radicalism on the other end of the political spectrum.

[19] In the conclusion to his essay on alternative medicine in France, Matthew Ramsey says that "Medicine attracts such intense attention and provokes such animated debates not only because as a practical matter health is so central to our well-being, but also because medicine makes a profound statement about who and what we are. It is a debate we can expect to continue and intensify. A biomedicine that deconstructs human nature gives rise to its dialectical opposite." Matthew Ramsey, "Alternative Medicine in Modern France," *Medical History* 43 (1999); 286-322; 322. Ramsey's whole article makes a convincing case for the socio-political dimensions of alternative medicine in its association with anti-positivism, anti-materialism and even anti-modernism.

[20] See, for example, Christopher Lawrence and George Weisz, ed., *Greater than the Parts: Holism in Biomedicine, 1920-50* (New York: Oxford University Press, 1998).

[21] See Edward W. Mann, *Orgone, Reich and Eros: Wilhelm Reich's Theory of Life Energy* (New York: Simon & Schuster, 1973) and Robert S. Corrington, *Wilhelm Reich: Psychoanalyst and Radical Naturalist* (New York: Farrar, Straus and Giroux, 2003). In the context of politics it is worth noting that the two most widely-read and influential figures floating in the background of the 1968 movement were Herbert Marcuse and Wilhelm Reich.

Many were those after the Second World War, like Jacques Ellul, who challenged the modern technoscientific endeavor.[22] Holism, an idea that owed a heavy debt to the vitalists and was first outlined by J.C. Smuts, was foundational to the highly politicized environmental movement that emerged in the 1960s. Lovelock's "Gaia" hypothesis is fundamentally holistic in this sense.[23]

One final note is in order, and it is in regards to vitalism's essentialist, individualist and moral imperatives. As Charles Taylor has made clear, the origins of these notions of inwardness and the internal sense of self have deep romantic roots.[24] I would also argue that, by association, vitalism is an essential component of this view. Politically, this outlook presents a somewhat mixed balance sheet, but the point to be made here is that this influence, whatever its results, is surely a powerful one.

*Canguilhem and Vitalism: Normality and its Discontents*

Through the history of medicine vitalism has found a home, and, as mentioned in the Introduction, much of vitalism is essentially historical. In the French context two thinkers, Georges Canguilhem (1904-96) and Michel Foucault (1926-1984), stand out in this respect and deserve greater attention.

There are clear strains of vitalism visible in the mainstream of French history and philosophy of science in the 20th century. The work of Georges Canguilhem is the clearest example. Recent works on Canguilhem have noted his contemporary relevance, his early critical philosophical stance on "technique," his stoicism and his opposition to the Logical Positivist tradition that embraced the unity of science, which he resisted in favor of a focus on the centrality of life and a critique of reductionism. Finally, there is some discussion of his central role as a historian of biology, and the undeniable theoretical sophistication he brought to this field.[25]

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[22] See Jacques Ellul, *The Technological Society*, trans. John Wilkinson (New York: A. A. Knopf, 1970 [1964]).
[23] J.E. Lovelock, *Gaia: A New Look at Life on Earth* (New York: Oxford University Press, 1979).
[24] Charles Taylor, *Sources of the Self: The Making of the Modern Identity* (Cambridge, MA: Harvard University Press, 1989).
[25] See Claire Salomon Bayet, "Introduction," *Revue d'histoire des sciences* 53 (2000): 5-8; Jean-François Braunstein, "Canguilhem avant Canguilhem," 9-26; Jacques Lautman, "Un Stoïcien

In an introduction to Canguilhem's *The Normal and the Pathological*, Michel Foucault identifies a divide in the post-war European intellectual scene between a "philosophy of experience" (whose most representative figures are Sartre and Merleau-Ponty) and "a philosophy of knowledge, rationality and concept." The most important practitioner of this latter tradition is Canguilhem, who takes up the torch from Gaston Bachelard, asking pointed questions about the methodology, epistemology and supposed objectivity of scientific knowledge.[26]

According to François Dagognet and Jean Gayon,[27] Canguilhem's thought can be divided into three distinct periods. The first began with the publication of his dissertation, *The Normal and the Pathological*, in 1943, and could be classified as philosophy of medicine. The second started after the war and is best represented by two major works, *La Connaisance de la vie* (1952) and *The Formation of the Concept of Reflex in the 17th and 18th Centuries* (1955). In this period Canguilhem delved into the history of biology and looked at the ideas surrounding vitalism, mechanism and the rise of experimentalism in the life sciences. The final period began with his appointment as professor of philosophy and history of science at the Sorbonne in 1955 and is the longest of the three, marking a move towards broader themes in the philosophy of science characterized as "epistemological history."[28] Gayon calls the connection between these preoccupations "the development of a characteristic kind of reflection about the ultimate significance of

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chalereux," 27-45; Marjorie Grene, "The Philosophy of Science of Georges Canguilhem: A Transatlantic View," 47-63; Johnathan Hodge, "Canguilhem and the History of Biology," 65-81; Michael Morange, "Georges Canguilhem et la biologie du XXe siècle," 83-105.

[26] See S. Zabakalam, "Ideology and Rationality in Canguilhem's Epistemology," *Physis* 33 (1996): 267-287. Gaston Bachelard (1884-1962) was a visionary philosopher of science who anticipated the ideas of Thomas Kuhn. The foundation of Bachelard's thought is based on a rejection of the Cartesian claim that knowledge must be founded in first truths. He suggests a kind of "applied rationalism" that is always one step from the object. There is a deep pedagogical thrust in Bachelard's work, best exemplified in *La Formation de l'esprit scientifique* (1938), which was designed to introduce scientists to the epistemological problems related to non-Newtonian science.

[27] François Dagognet, "Une Oeuvre en trois temps," *Revue de métaphysique et de morale* 90 (1985): 29-38 and Jean Gayon, "The Concept of Individuality in Canguilhem's Philosophy of Biology," *Journal of the History of Biology* 31 (1998): 305-325.

[28] Gayon, "Individuality," 307.

the existence of living beings," paying particular attention to the concept of individuality in "Canguilhem's vitalism."[29]

On a basic level, Canguilhem reflects Hegel's ideas about living things. Various authors have commented on this influence, mentioning the quintessentially Hegelian statement that "life is concept."[30] Hegel's argument that organisms are self-individuating finds reflection in Canguilhem's "individual norm," and his personal rather than abstract, ideal and universal standard of health. For Canguilhem, pathology exists only in a specific individual context, not in the idea of an abstract absolute quantity. Normal and pathological have to be interpreted in terms of "vital values," and a "return" to health must be seen as a permanent alteration or transformation rather than a re-establishment of accepted norms. Thus, life is not an on/off, normal/pathological, healthy/sick switch mechanism, but an ever transforming, teleological, and, one may say, vitalistic reality.

Canguilhem plays a critical role in exploring the ramifications of the history of physiology, and concludes in his focus on Claude Bernard that there is no essential difference between the pathological and the physiological. Highlighting the importance of statistical analysis in determining notions of "normal" and "healthy," as well as "abnormal" and "diseased," Canguilhem reflects a skepticism about claims to universal biological truths.[31] He argues that the individual case study, one of the basic tools of the medical practitioner, is not scientific, and that only statistics can give scientific certainty, if that is attainable. As Stuart F. Spicker asks: "Can medicine be a science of particulars or must an enterprise laying claim to scientific legitimacy insist on discovery of only a few natural laws?"[32] It is in this respect that Canguilhem stresses the conceptual and theoretical problems of medicine.

Gayon suggests that in *The Normal and the Pathological*, Canguilhem's idea of normality is influenced by neurologist Kurt Goldstein's book *The Structure of the Organism* (1934). This is most clearly reflected in the distinction that Goldstein makes

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[29] Ibid., 324.
[30] See Gayon, "Individuality," and Mark D. Sullivan, "Reconsidering the Wisdom of the Body: An Epistemological Critique of Claude Bernard's Concept of the Internal Environment," *Journal of Medicine and Philosophy* 15 (1990): 493-514.
[31] Stuart F. Spicker, "An Introduction to the Medical Epistemology of Georges Canguilhem: Moving Beyond Michel Foucault," *Journal of Medicine and Philosophy* 12 (1987): 397-411.
[32] Ibid., 407.

between "anomaly" and "illness."[33] While Goldstein's influence cannot be denied, the unique character of Canguilhem's cultural and intellectual setting provided the real groundwork for his early thought. George Weisz points to the importance of a long vitalist tradition in France which was experiencing a revival as "ideological holism" in the 1930s and notes that Canguilhem characterized this vitalism as something greater than a strict resistance to exclusively physico-chemical explanations of life, seeing it as an "identification with nature." Thus, "humans in their relationship to nature had to adapt to rather than conquer, contemplate rather than master."[34] France's "hollow years" were surely a fertile milieu for challenges to the dominant trend of positivistic and mechanistic self-assuredness.[35] The industrial machine was also showing signs of failure, breakdown and lack of vitality, further putting into question its validity as a metaphor for understanding the function of living things.

Canguilhem explores the importance of the Montpellier medical school in the phenomena of vitalism, and the tension between positivistic science and its critics in the 19th century, focusing in particular on Bernard's criticism of Comtian positivism. He thus brings historical attention to the role of experimentalism in biological science, and the powerful pull towards instrumentalism, which he sees as the ultimate positivism.[36] Canguilhem also explores the deep attraction of the question of milieu in Bernard's work, and the general importance of philosophical questions to the development of late-19th century biology and medicine. Vitalism, then, becomes a biological view for physicians

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[33] Gayon, "Individuality," 310.

[34] George Weisz, "A Moment of Synthesis: Medical Holism in France Between the Wars," in Lawrence and Weisz, *Greater Than the Parts*, 68-93; 70. See also George Canguilhem, "Aspect du vitalisme," in *La Connaissance de la vie* (Paris: J. Vrin, 1992), 83-100.

[35] Eugen Weber, *The Hollow Years: France in the 1930s* (New York: W. W. Norton, 1994).

[36] Instrumentalism, broadly conceived, is the doctrine that experience (or use) determines the value of anything; hence, the doctrine that ideas are true and valid according to their usefulness. This position obviously has a certain affinity with pragmatism. In many ways, the history of science is, writ large, the history of instruments. What then is the value of a history of vitalism? Crude instrumentalism becomes a kind of narrow and intolerable pragmatism. Acknowledging the relevance of vitalism argues then that science should be more than the mastery and control of nature, driven in large part by a quest for order. Science should also be an appreciation and contemplation of the natural. In sum, an exercise in humility rather than hubris. To understand the history of vitalism and its continuing relevance is to try and grasp an important aspect of this complex, interconnected, transcendent and ultimately unknowable nature. It is at this level that science and mysticism intersect.

"skeptical of the healing power of medication."[37] Perhaps most interesting of all is not Canguilhem's historical treatment of vitalism, but his reflection on its ethical value. For Canguilhem, vitalism is more imperative than method, more ethical system than theory. *"Le vitalisme est une exigence plutôt qu'une méthode, une morale plus qu'une théorie."*[38]

*Foucault, Deleuze, Bernard and Vitalism: Waves of Influence*

Canguilhem was Foucault's supervisor and mentor and one could argue that the intellectualized essence of Canguilhem's vitalism became a kind of method to Foucault, much as Bergson came to influence existentialists like Sartre. Foucault is difficult for some academics to handle, in large part because he stands somewhat apart from both philosophy and "disciplinary history." His willingness, even intent, to transgress disciplinary boundaries is representative of a more organic, holistic and broad method, suggesting a certain affinity with vitalism.[39] Foucault is not interdisciplinary, but anti-disciplinary, and much of his focus is centered on a fiercely anti-reductive challenge to

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[37] François Delaporte, ed., *A Vital Rationalist: Selected Writings from Georges Canguilhem*, trans. Arthur Goldhammer (New York: Zone Books, 1994). This connection of vitalism with skepticism helps explain its decline, for progress in medical therapeutics through the 19th century was extensive. This at least is the portrayal of the development of therapeutics provided in Charles Rosenberg, "The Therapeutic Revolution," *Perspectives in Biology and Medicine* 20 (1977): 485-506. It at times seems difficult to share Rosenberg's materialist progressivism in respect to 19th century therapeutics, which is seen to culminate in the German laboratory of Koch. Given the recent failings of antibiotics, this may not be as long-lived a sense of progress as originally hoped.

[38] Cazeneuve, *La Philosophie médicale*, 97. "Vitalism is an impulse more than a method, a morality more than a theory." Canguilhem himself credits this observation to the German Emanuel Radl. Canguilhem paraphrases Radl's argument in the following: "Man...can look at nature in two ways. He *feels* that he is a child of nature and has a sense of belonging to something larger than himself; he sees himself in nature and nature in himself. But he also *stands before* nature as before an undefinable alien object. A scientist who feels filial, sympathetic sentiments toward nature will not regard natural phenomena as strange and alien; rather he will find in them life, soul, meaning. Such a man is basically a vitalist." François Delaporte, ed., *A Vital Rationalist: Selected Writings from Georges Canguilhem*, trans. Arthur Goldhammer (New York: Zone Books, 1994), 288. See also a recent essay on Canguilhem and vitalism: Monica Greco, "On the Vitality of Vitalism," *Theory, Culture and Society* 22 (2005): 15-27.

[39] Though, ironically, if asked Foucault would likely have denied any affinity with humanism as contradictory to his larger objective of challenging all privileged or entrenched forms of discourse.

disciplinary conventions.[40] In this respect, Foucault's work invokes his mentor Canguilhem, and in exploring the intersection of the political and the biological, Foucault is practicing what one could call a vitalistic program of philosophical complication.[41] In "The History of Medicine According to Foucault," François Delaporte says that "for Foucault vitalism as a concept was incapable of accounting for the discovery of pathological anatomy."[42] To Foucault, Bichat created a system where only death could provide the means to a medical understanding of life, and thus "the irreduceability of the living to the mechanical or chemical is secondary to the fundamental connection between life and death. Vitalism appears against this background of 'mortalism'."[43] Yet, by employing a method focused on an exploration and critique of a disciplining power, whether it be a knowledge system derived from mortalism or a surveillance system evoking the archetype of the panopticon, Foucault is arguably adopting a kind of individualistic and spirited vitalism in the face of all the regimented, structured and mechanized constraints on the living.

Gilles Deleuze treats Foucault as the embodiment of important aspects of the vitalist tradition, of life as the "capacity to resist force."[44] Deleuze himself continues a tradition of French philosophy where vitalism is an important framework worthy of searching theoretical concern. To explore this lineage, Deleuze's remarks on Bergson and vitalism serve as a logical starting point. For Deleuze, Bergson begins first and foremost with a particular method, based in large part on intuition. Much depends on the observer, and the importance of the life center that drives this reality, this "duration." As Bergson is quoted in *Le Bergsonisme*: "la construction de l'organisme est à la fois position de problème et solution."[45] This invokes Deleuze's interest in the notion of "collective"

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[40] Allan Megill, "The Reception of Foucault by Historians," *Journal of the History of Ideas* 48 (1987): 117-141.
[41] Françoise Duroux, "L'Imaginaire biologique du politique," In *Georges Canguilhem: Philosophe, historien des sciences*, ed., Bibliothéque du Collége International de Philosophie (Paris: Albin Michel, 1993), 49-57.
[42] François Delaporte, "The History of Medicine According to Foucault," In *Foucault and the Writing of History*, ed. Jan Goldstein (Cambridge, MA: Blackwell, 1994), 147.
[43] Ibid.
[44] Gilles Deleuze, *Foucault* (Paris: Les Editions de Minuit, 1986), 98, quoted in John S. Ransom, "Forget Vitalism: Foucault and *Lebensphilosophie*," *Philosophy and Social Criticism* 23 (1997): 33-47.
[45] Gilles Deleuze, *Le Bergsonisme* (Paris: Presses Universitaires de France, 1966), 5.

subjectivity, and the vitalism that is found in individuals as "multiplicities."[46] This unifying force also finds expression in Bergson; in man, *l'élan vital* becomes, in a sense, self-aware. Within this frame of thought one can include the notion of struggle, particularly of life in the face of obstacles, impediments, and imprisoning structures. Deleuze, citing ideas in *Creative Evolution*, shows how Bergson characterizes matter as an obstacle that life must navigate.[47] Thus, *l'élan vital* provides man with the means, in materiality, to achieve a certain liberty, to triumph over mechanism (as origin) and transcend the narrow determinism of nature.[48] One very representative example of this phenomenon is the formation of societies and the need to take on obligations, bringing to mind Saint-Simon, who linked biology and society with the notion of "organization." For Saint-Simon, the body was a metaphor for society (and here the double meaning of "members" is employed) that offered a model of community wherein individuality was an essential condition of wholeness. Like Canguilhem, and to a lesser extent, Foucault, the medical influence on Saint-Simon's philosophy is clear. And, like Bergson, Saint-Simon placed significant emphasis on the value of intuition as a guide to understanding.

For many of these thinkers, the importance of society is a reflection of the significant preoccupation with place, or as it is more commonly known in French circles, *milieu*. Deleuze's "geophilosophy," for example, can be read as a particular interest in the question of *milieu*.[49] At root this can be viewed as a form of pseudo-anthropological, neo-Hippocratic thought, a clear trend in French medicine through the 19th and early 20th century, but more concretely has much to do with Bernard's *milieu intérieur*.[50] While at some level vitalistic, the notion of *milieu intérieur* was dependent on the idea that an organism could regulate its functions independently of its physical environment. Bernard's ideas on this theme were derived from early work in regulatory physiology,

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[46] John Marks, *Gilles Deleuze: Vitalism and Multiplicity* (London: Pluto Press, 1998), 1.
[47] Deleuze, *Le Bergsonisme*, 106.
[48] Ibid., 112.
[49] Marks, *Gilles Deleuze*, 37.
[50] For a history of geography in French medicine, which also notes its Hippocratic roots, see Michael A. Osbourne, "The Geographical Imperative in Nineteenth-Century French Medicine," In *Medical Geography in Historical Perspective*, ed. Nicholas A. Rupke (London: Wellcome, 2000), 31-50.

notably the notion of temperature regulation developed by Carl Bergmann.[51] As an advocate of the histological view, Bernard put his ideas of internal regulation in this context, and saw cells almost as "elementary organisms."[52] He noted that cellular elements worked together in relative harmony, and in an interesting metaphor that evokes the tradition of Saint-Simon's "organology," Bernard compared them to "citizens of the Republic," in other words, as individuals who were "virtually autonomous elements" of a greater whole.[53] Thus the entire construction of the idea of the *milieu intérieur* was dependent on its complement, the exterior. In Bernard's mind, the organism and its environment, the interior and the exterior, were in constant dialogue, acting and reacting, responding to each other in a myriad of ways. As he says: "In physiology there are always two things to consider. 1. the organism. 2. the milieu."[54] This, for Bernard, was the essential condition of life, a state of mobile equilibrium. It is here, at the intersection between organism and milieu, where an understanding of disease is found. As one author says "disease is...the incapacity of a person to maintain a stable relation with changing environmental conditions."[55]

This "dynamic of the living" connects to many of the other thinkers mentioned in this work, like Bergson and Deleuze, who emphasizes movement and transition in his idea of "becoming." As we have seen, dynamism is a fundamental aspect of vitalistic thinking in all its forms, whether it is a matter of the concrete transformations that occur in living things or whether it involves a change in perspective and understanding in the realm of pure thought, although there is not always a clear dividing line between these two aspects of being.

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[51] Frederick L. Holmes, "Claude Bernard, the *Milieu Intérieur*, and Regulatory Physiology," *History and Philosophy of the Life Sciences* 8 (1986): 3-25.
[52] Ibid., 19.
[53] Gayon, "Individuality," 318.
[54] Claude Bernard, *Cahier de notes, 1850-1860*, ed., M. D. Grmek (Paris: Gallimard, 1965), 39, quoted in Holmes, "Claude Bernard," 7.
[55] Spicker, "An Introduction," 404.

Is life meaningless? Instinctively, we as human beings respond to this question with a deep level of anxiety and trepidation. Unless we embrace the deepest and darkest recesses of nihilism – a position that is essentially untenable for any prolonged duration without bringing on the sense of nothingness that Jean-Paul Sartre (1905-1980) described in his novel *Nausea* (1938) – then clearly meaning comes from a feeling of the unified and irreducible nature of our very existence. The meaning of life, then, comes after this profound existential crisis from its very fact. In this sense there are as many meanings given to life as there are lives lived.

And yet there is another way that this question of life's meaning can be understood, and it is in its abstract sense. What, then, is the meaning of "life" in this context. For the mid-19th century French medical thinker Paul-Émile Chauffard life was considered as a "law" – and the first condition imposed by the vitalist doctrine on the human being. This vitalist view of life was further rooted in the notion of "continuous activity."[56] There is an analogue to this theoretical conception of life in the thought of Canguilhem, who employs Hegel's term that "life is knowledge itself existing."[57]

These two clearly differentiated interpretations of the question of life's meaning provide a basic schism in the development of philosophical thought in the 20th century between the experientialist and rationalist modes of understanding. This dissertation explored a period, the 19th century, when these two divergent paths had yet to be marked out. It was clearly a time when the question of life's meaning in both its personalistic, subjective sense and its scientific, objective sense were inseparable.

We also exist in a social and intellectual world that is deeply schizophrenic. As Marxists tradition reminds us, society is constructed and constrained by class, economics and the control of the means of production. Thinkers from the Frankfurt School extend the idea of limits and constraint into the academic and aesthetic realm, speaking of

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[56] Paul-Émile Chauffard, *Lettres sur le vitalisme* (Paris: V. Masson, 1861), 23.
[57] Jean Gayon, "The Concept of Individuality in Canguilhem's Philosophy of Biology," *Journal of the History of Biology* 31 (1998): 305-325 and Mark D. Sullivan, "Reconsidering the Wisdom of the Body: An Epistemological Critique of Claude Bernard's Concept of the Internal Environment," *Journal of Medicine and Philosophy* 15 (1990): 493-514.

"instrumental rationality"[58] and "the culture industry." Foucault showed us how our very minds and bodies are ordered and disciplined by dominant knowledge forms that in turn have shaped our most basic institutions. His project of trying to intervene in this normalizing process with his deep quasi-psychiatric treatment of post-Enlightenment society met with mixed results. Post-modern thinkers like Jean-François Lyotard and Jacques Derrida have added further complications, undermining the notions of grand narratives and even the possibility of meaning. At times it seems we are constantly being thrown headlong into a chaotic, endlessly confusing, frustratingly relativist world. Few still really revel in this intellectual morass without even vague guideposts, much as it does at times provide for playful and dynamic aesthetic outbursts.

And thus we are left with life. Life constantly ordered, organized, constrained, systematized, analyzed, institutionalized, disciplined, prescribed, described and, sadly at times, senselessly destroyed. But, despite these factors, life is a constant reminder of the small, essential truth of vitalism. It remains, sometimes only in simple, subtle ways, sometimes only in fits and starts, ultimately unpredictable in any universal sense. This ultimately unknowable, elusive, occluded mysterious quality in life was, after all, one of the most cherished assumption of the vitalists going all the way back to Barthez. Life, as life, possesses its own unique force, indefinable in terms of the strictly concrete and physical. No ordered, scientific, mechanistic or technocratic system, regardless of its scale, can completely consume and control life in its endlessly unpredictable and dynamic process of becoming.

[58] On "instrumental rationality" and the "iron cage" see Charles Taylor, *The Malaise of Modernity* (Toronto: Anansi, 1991).

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