

THE EVOLVING DEFINITION OF MAN: LAMARCK'S NATURAL PHILOSOPHY AND LITERARY LEGACY

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Submitted to the faculty of the University Graduate School
in partial fulfillment of the requirements for the degree
Doctor of Philosophy
in the Department of French and Italian
Indiana University
October 2018

Accepted by the Graduate Faculty, Indiana University, in partial fulfillment of the requirements for the degree of Doctor of Philosophy.

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September 21, 2018

For Nick and Didi, for the past eleven years and for the future

Acknowledgments

I am grateful to my committee members, whose sage advice is not always reflected in this dissertation to the degree that I hoped. You have battled my bad writerly habits with me, challenged me to make bigger claims and better arguments, and offered timely encouragement.

I would like to thank Margaret and Harry S. Butler; Margaret, for feeding her own and others' life of the mind through reading, travel, tea, and excellent conversation; Harry, for having lived the life academic that I might hope for; for his pursuit of meaning in Balzac's *La Comédie humaine*: I didn't know how important Balzac would be for my research. On top of all that, for having established a scholarship which took me to France and Switzerland in pursuit of Rousseau. Madeleine Butler, for her *bonne foi* and effervescent dialogues on all kinds of ideas, and for having defined what New Criticism was and what it did not do in such a helpful way.

Mary Behrends and *Madame* Spittle helped me express my contrariness by teaching me French; I desperately needed another language and another identity, and the one you gave me represents an entire cultural history of resistance. And Casey, for speaking French well.

Many thanks to Lisa Gasbarrone and Cindy Yetter-Vassot, for correcting, informing, and inspiring my beginnings in French literature and culture. Janet, Mark, Judith, Curt, Dean, Ben, Annalisa, James, David, Brady, David, Jim, Roger, Marie, Carl, and others whose brilliance and kindness lit my path. Carolyn Fay and A. C. Capehart for gentle guidance as I became a college professor. Also, Jütta, Kitty, Heather, Ann, Lucile, Adeline, Linda, Greg and Mariana.

Jacques Merceron, Kelly Sax, Margot Gray, Sonya Stephens, Johannes Türk, Catriona Seth, Julia Douthwaite, Sophie Laniel-Musitelli, Éric Méchoulan, Rebecca Spang, Jérôme Brillaud, Eric MacPhail, Aiko MacPhail, Sonia, Jutta, Kathleen, Melissa, Madeleine and all: thank you for the edifying seminars and for fostering my growth as a scholar and teacher.

Thank you to the Center for Eighteenth-Century Studies, for a dissertation fellowship which allowed me to make great strides in my research and writing, fabulous workshops, and the chance to showcase my work in the first annual pecha kucha extravaganza. For stoking my passion for scholarship and feeding my need for intellectual exchange.

Cheers to my classmates, colleagues, neighbors and friends: Kelly Farmer, Marie-Line Brunet, Kate Bastin, Audrey Dobrenn, Marilyn, Gabrielle, Fréde, Tim, Annie, Devan, Jason, Michael, Kelly, Kemmy, Alisha, Jamie, Sarah Kay, Noëlle, Orla, Aaron, and all my students. Peter, Leah, Laura, Robert, Liesl, Virginia, Amanda, Robert, Melanie, Eric, Jason, Nicolas, Christiane, Brijesh, Christine, Deanne, Dave, Carol, Jan, Heidi; Kevin, Melissa, Melinda, Joel, Shauna, Eli, Estrella, Max, Juan, Jazzy, Karen, Spider, the children in number 12, and all our church family at Mount Calvary.

Merci beaucoup, François and Cécile Dumont; Thierry and Élise Nelson, Jules, Adèle and Martin, my French family *adoptive et spirituelle*.

Thank you to my parents and my brother, Timothy, Joan Marie, and Grayson, for your unfailing support and exchange of ideas; your inspiration is visible throughout this dissertation. Thank you, Joe and Linda, for the encouragement. Hockemeyer, Graul, Messmann, Caruso, Myers, Cowan, Feucht, Feucht-Papacostas, all: thank you!

And of course, for your steadfast love, patience, wisdom, care and provision, thank you, Nick and Edith, my two troopers.

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THE EVOLVING DEFINITION OF MAN: LAMARCK'S NATURAL PHILOSOPHY AND LITERARY LEGACY

Ordering the collections of worms and insects at the Muséum National d'Histoire Naturelle led Jean-Baptiste Lamarck to believe that the great diversity of plants and animals was due to gradual changes over a long period of time, accumulated in living bodies of increasing complexity. This theory is recognizable as an early account of evolution. But there is more that is unfamiliar: animals harnessed an atmospheric element which, by its direct action upon animal tissues, produced a nervous system and ultimately an organ of intelligence. The latter part of this process hinges on the existence of an origin-destination of sensation, Lamarck's *sentiment intérieur*. My dissertation examines the possibilities and constraints of the natural history genre which Lamarck inherited from Georges-Louis-Leclerc, comte de Buffon (Chapter 1). Through close readings, I identify rhetorical strategies that are constitutive of their natural philosophies. I compare their statements about style and imagination to show how they approached the diversity of nature, the need for conceptual and aesthetic handles, and truth claims in their negotiations with the reader. Next, I survey uses of *sentiment intérieur* in works of various genres, especially from 1700-1850, when its popularity rivaled that of *conscience* (consciousness, conscience) (Chapter 2). This "power" is key to Lamarck's 1817 dictionary definition of humankind. I expose trends in thinking about individuality and the source(s) of action in nature among Lamarck's predecessors and contemporaries, especially the *Idéologues*. His solution to the "insurmountable hiatus" between the physical and moral facts of human experience is situated – historically, textually, culturally – in a moment of transition between worlds and genres. Finally, I analyze three novels to determine Lamarck's immediate influence in French literature (Chapter 3). Henri Beyle (Stendhal), Honoré de Balzac, and Charles-Augustin Sainte-Beuve grappled with the analysis of ideas (*idéologie*), and their semi-autobiographical protagonists likewise search for the seat of consciousness. Their encounters with nature-as-narrator in "Lamarckian moments" describe the perils and potentials of the life of the mind. I propose that these moments constitute a Lamarckian sublime.

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Introduction: How to Read Lamarck and Why

“Le lamarckisme défiguré et proclamé à plusieurs reprises désuet renaît toujours de ses cendres avec éclat, révélant à chaque fois des aspects nouveaux, jadis non perçus.”¹

Léon Szyfman

Traditional disciplinary boundaries make reading Lamarck as a literature scholar daunting. Good counsel suggests that a place to begin is with Lamarck’s own definition, “Homme.” Historical and textual fidelity requires a survey of the immediate influences upon Lamarck. His philosophical “genetics,” so to speak, as well as his associates, institutions and actions during the early years of the French Revolution, identify him with the *Idéologues*, or at least with a ‘second wave’ of *Idéologues*. He shared some of the fate of this group. But whereas their projects have faded with time, Lamarck’s search for a comprehensive philosophy of nature has, over the centuries, been extended and augmented with many new ideas and observations. Lamarck, Léon Szyfman explains, “clearly saw that at the turn of the 19th century, the wealth of facts accumulated by researchers and the traditional method of reasoning were in conflict owing to the inability of the latter to explain natural phenomena” (“voit bien qu’à partir du XIXe siècle, il existe un conflit entre la richesse des faits accumulés par les chercheurs et la méthode de raisonnement traditionnelle, qui n’était pas en mesure d’expliquer les phénomènes naturels.” Szyfman 253).

The life of Jean-Baptiste-Pierre-Antoine de Monet, chevalier de Lamarck (1744-1829) spans two eras, with the French Revolution in the middle. Historians of science have in the last century intermittently pursued answers to the question of why his work and renown have remained relatively obscure, when he was one of the first to posit a natural mechanism for species change (or transformism, or evolution). Lamarck is a lightning rod of sorts for scholars in diverse fields, involved in intermural debates of their own, who have penned vociferous refutations and defenses on behalf of his ideas in such far-ranging disciplines as biology, neuroscience, botany, ecology, history, philosophy, history and

¹ “Lamarckism, disfigured and pronounced obsolete many times over always emerges, shining, from its ashes, revealing each time new aspects never before seen.” Szyfman 103. All translations mine unless otherwise noted.

philosophy of science, literary studies, feminist studies and more. Despite this attention, philosophers and historians in Lamarck studies assert that more remains to be discovered about this fascinating and controversial figure.²

Lamarck benefited from his association with Georges-Louis Leclerc, comte de Buffon, whose writing style was highly acclaimed in his time and whose name is virtually synonymous with French natural history. Lamarck initially gained Buffon's admiration and protection through shared opposition to Linnaeus's method of classification when he published his own plant identification key in his *Flore française*. After Buffon's death in 1788, the field of natural history lay fertile for new approaches. Political upheaval during the early years of the Revolution opened new opportunities. In 1790, Lamarck advocated saving the position of guardian of the Jardin des Plantes, in order to save both an institution he believed in and his own livelihood. He and some longtime friends formed the Société d'Histoire Naturelle and published several issues of the *Journal d'Histoire Naturelle* between 1792 and 1794. In 1795 (an III), the rosters show that he began teaching at the Muséum National d'Histoire Naturelle. He attempted to bridge the gap between the physical sciences and natural history in 1797 with his *Mémoires de physique et d'histoire naturelle*, but his ideas were met with a poor reception.

At the turn of the century, Lamarck struggled with poor health and declining influence in the new scientific institutions in Paris while he drew together his notes and observations in an effort to define the science of biology. After the death of Buffon's collaborator on the *Histoire naturelle*, Louis-Jean-Marie Daubenton, in 1800, Lamarck and his colleague Bernard-Germain de Lacépède could more freely expose their views on the mutability of species. His *Recherches sur l'organisation des corps vivans* (1802) presented his general theory, various aspects of which had been developing gradually over the previous decade. He was, however, still occupied with meteorology in 1805, when Augustin-Pyramus de

² Jonathan Hodge (2005) indicates many opportunities for fresh inquiry, particularly for graduate students in history and philosophy of science. Steve Fuller (2013) finds Lamarck's example useful in his analysis of the deviant interdisciplinarian in the history of the modern university. Snaith B. Gissis (2009) continues to examine Lamarck's biological tenets and their impact on and outside of science.

Candolle, a Genevan botanist, sought him out in Paris and helped him to publish an expanded edition of his *Flore française*. For this reason, he was shamefully dismissed by Napoleon (who mistook Lamarck's greatest work for another almanac) when he proudly presented the emperor with a copy of his latest work, the *Philosophie zoologique* (1809). Students attended his lectures on invertebrates as they pursued careers in medicine, peaking at 61 enrolled in 1817. Some of them also orbited the widow Helvétius at the Société d'Auteuil. Napoleon himself made a symbolic trip to pay homage to her, and was vetted by the notable *Idéologues* Sieyès, Cabanis and Volney, who later refused the positions he offered them as a form of resistance against his dictatorship. During the Restauration, Lamarck elaborated his philosophy in a seven-volume work entitled *Histoire naturelle des animaux sans vertèbres, présentant les caractères généraux et particuliers de ces animaux, leur distribution, leurs classes, leurs familles, leurs genres, et la citation des principales espèces qui s'y rapportent* (1817-1822), and in a series of dictionary articles. When blindness overtook him, his daughter Cornélie helped him to draw up the manuscript for the *Système analytique des connaissances positives de l'homme, restreintes à celles qui proviennent directement ou indirectement de l'observation*, published in 1820. When he died in 1829, his herbarium had already been sold, but his books, including several hundred unbound copies of his *Philosophie zoologique* and his *Système analytique* were auctioned off in 1830. His friend Étienne Geoffroy Saint-Hilaire began to challenge Georges Cuvier's conclusions about the primacy of function over form, undermining Cuvier's power and creating an opening for Lamarck's legacy.

The recovery and study of this legacy has been somewhat slow. Full-length biographies of Lamarck appeared in the twentieth century: Alpheus Packard's (1901), M. Marcel Landrieu's (1909), and Friedrich Kühner's (1913). Generally, however, the twentieth century was unfavorable to Lamarck, especially because of the Kammerer and Lysenko affairs³, which highlighted the appeal of Lamarck's

³ Austrian biologist Paul Kammerer apparently forged scientific evidence in support of the inheritance of acquired characters in the first decade of the twentieth century. The nuptial pads of Kammerer's "midwife" toad were found in 1926 to be injections of India ink. During the 1930s-1960s, Trofim Denisovich Lysenko led an attack on

theories for social programmers and politicized (and polarized) (once again) the differences between Lamarck's theories and Darwin's. In the midst of this period, Charles Coulston Gillispie (1918-2015) judged Lamarck's work to be too romantic, as did other mid-twentieth-century historians of science.⁴ Specifically, he does not condone Lamarck's coining of the term biology in 1802, which he says had the effect of lending "cosmic unity" to natural history (Gillispie 1960, 260). He opines that Lamarck's theory of evolution was "an application to taxonomy of Diderot's organismic and metamorphic philosophy of nature" (Gillispie 1960, 261). The adoption of the organism as the object of inquiry (mechanistic or vitalistic), as well as the metaphor for order (Gillispie 1960, 156), entails the problematic ordering of nature according to laws different from those of physics (Gillispie 1960, 262). Two camps were formed in biology, derived from the Stoic tradition on the one hand, and the Aristotelian on the other; between the Stoic cosmic organism and the Aristotelian naturalistic, self-sufficient organism (Gillispie 1960, 263). Gillispie spies the pyrotic theory at the origin of the three aspects of the *Philosophie zoologique*, psychology, physiology, and the evolutionary view of species (Gillispie 1960, 275-276). Lamarck's aversion to molecular permanence and to particulate views widely supported in his time led him to propose an alternative science of chemistry which Gillispie terms "one of the most explicit examples of the counter-offensive of romantic biology against the doom of physics" (Gillispie 1960, 276). "Lamarck's," he predicts, "...is bound to remain an unenviable position in the history of science" (Gillispie 1960, 277).

Although certainly having left an enduring legacy in the history and philosophy of science, Gillispie can also be read in the context of post-WWII movements in government, academics and culture, movements involving polarized ideologies, and some hero-worship or at least villain-vilification.

"Mendelism-Morganism," that is, biology based on chance. His rejection of "Western" science involved the repression of scientific thought which did not serve the interests of Soviet agriculture.

⁴ Arraigning Lamarck as a romantic natural philosopher (akin to Goethe), he writes that romantic natural philosophy "is the science of those who would make botany of blossoms and meteorology of sunsets" (Gillispie 1960, 200).

Richard Burkhardt wrote, “Gillispie’s service in indicating that Lamarck might best be understood in some other role than precursor to Charles Darwin has been invaluable. But the particular perspective in which Gillispie put Lamarck’s work has been less fortunate. Presenting Lamarck as an object lesson in the difference between good and bad science is little better than treating him as a thinker too far ahead of his time” (Burkhardt 1977, 6-7). Jonathan Hodge agrees and cautions that approaching the history of biological thought while still presuming the existence of “pre-Darwinian” evolutionists obscures much truth and occludes many promising avenues of research (Hodge 2005).

Burkhardt also cites Gillispie’s notion that Lamarck’s evolutionary theory “belongs to the contracting and self-defeating history of subjective science.”⁵ Gillispie determined that “In natural philosophy, there is an infallible touchstone of romantic tendencies. Its metaphysics treats becoming rather than being. Its ontology lies in metamorphosis rather than atomism. And always it wants more out of nature than science finds there” (Gillispie 1960, 199). He attributed “subjective science” to artists when he pronounced the following:

And perhaps the humanist attempt to understand nature through self-knowledge, though never again to be the way of science, will always be the way of art. Not only of art, but of history, or rather historicism, for Herder’s seminal philosophy of history presupposes the same idea of nature as Diderot and Goethe held. Its reality is process and unfolding. Its laws are universal extensions of those which govern the birth, growth, and life course of a single organism. It saves the correspondence of microcosm and macrocosm by transposing it from space to time (Gillispie 1960, 200).

There is not enough space here to discuss the nuances of Gillispie’s tome, but these few selections give the gist of his arguments as well as the persuasive style of his writing. There are many fruitful ideas in the pages of this book, places where his intimate knowledge of history and resonant prose illuminate past realities. Art and self-knowledge will be key players in the clash of ideas of the following pages and chapters.

⁵ Burkhardt 1977, 6, n. 10. The quote is from Charles Gillispie, “Lamarck and Darwin in the history of science,” ed. Bentley Glass, Oswei Temkin and William L. Strauss, Jr. (Baltimore, 1959), pp. 265-291, p. 286.

With the social and political unrest of the late 1960s, a new era of Lamarck scholarship opened up with the publication of Michel Foucault's 1966 *Les mots et les choses*, and eleven years later, Richard Wellington Burkhardt, Jr.'s *The Spirit of System: Lamarck and Evolutionary Biology*. As Burkhardt notes in his introduction, interest in Lamarck began to grow in the 1960s and 1970s (see for example his annotated bibliography of this time period, Burkhardt 1977, 223, n. 11). Historians compared Lamarck with Buffon, Georges Cuvier, Erasmus and Charles Darwin, Samuel Butler, Herbert Spencer, Henri-Marie Ducrotay de Blainville, Pierre-André Latreille, Étienne Geoffroy Saint-Hilaire and others, sometimes in excruciating detail, in pursuit of *Lamarck l'incontournable* – the indisputable or essential Lamarck. The following survey of scholarship from the 1970s is arranged in chronological order, which preserves the sense of confusion – a babel sometimes due to differences in research programs related to linguistic, geographical, or disciplinary diversity of the critics – as well as the creative ferment and new tone of the studies. They are more attentive to shifts in Lamarck's own thinking, and they begin to stray from the usual genealogical interpretations and attributions (Platonist, Aristotelian, Newtonian, Cartesian, etc.), although the attraction of these studies is still strong today (Loison 2011 and Fuller 2013 delve into the deeper history of ideas).

Frans Stafleu wrote in 1971, "in various respects Lamarck's world of thought remained part of the past; in several fundamental issues, however, his thoughts were spearheads toward the future. Even though elements of truly evolutionary thinking can be found in the writings of some of his predecessors and contemporaries (e.g. Buffon and Erasmus Darwin) Lamarck was the first to formulate a full-fledged transformist theory" (Stafleu 398). The same year, M. J. S. Hodge lamented the frequent interpretation of Lamarck's works "as prophetic of doctrines developed more fully by subsequent generations" (Hodge 1971, 323). He reads Lamarck's "biologie" as "a natural philosophy project thoroughly characteristic of the late Enlightenment" (Hodge 1971, 324).

In 1972, Max Vachon, Georges Rousseau, Yves Laissus, Georges Canguilhem (Preface) and Pierre P. Grassé (Postface) published some of Lamarck's manuscripts which had been buried in the archives of the Bibliothèque centrale du Muséum National d'Histoire Naturelle in Paris. Vachon writes that the papers highlight "la faculté remarquable qu'avait Lamarck de varier l'expression de sa pensée" ("the remarkable ability Lamarck had to vary the expression of his thought." Vachon et al. 1972). The same year, Ernst Mayr deemed that the time had come "to undertake an unbiased evaluation of Lamarck. For this we are now ready, after it has been demonstrated conclusively that the various causal explanations of evolution, usually designated as Lamarckism, are not valid. [...] We can now study him without bias and emotion and give him the attention which this major figure in the history of biology clearly deserves" (Mayr 55). He notes with chagrin the "one-sided approaches" and historical studies which "stressed too strongly the negative aspects of Lamarck's work" (Gillispie's included) (Mayr 55). Mayr agrees that the *Philosophie zoologique* is "confusing" and "repetitive," but comments that of all his biological publications, it was the only one to have been translated into English, over a hundred years later (Mayr 56).⁶ Mayr, like other historians, tasked himself with sorting out the 'real Lamarck' from what he calls "pseudo-Lamarckism," or what sometimes appears as "neo-Lamarckism." Franck Bourdier antedates Lamarck's transformist thought to 1785 in his 1972 comparison of Lamarck's and Saint-Hilaire's ideas, whereas Richard Burkhardt (1972) postdates it by at least a decade. J. Brémond and J. Lessertisseur wrested the title "founder of entomology" from Lamarck's disciple, Latreille, and rendered it to his mentor in 1973. The same year, a lost publication of Lamarck's was uncovered in a library at the University of Oklahoma in Norman, which represents an early exposition of Lamarck's ideas, expanded and published two years later in his *Système analytique des connaissances positives de l'homme* (Hodge and Hodge, 1973).

⁶ The Limoges-Leroy debate highlights the reception of Lamarck's ideas in the anglophone world through Lyell (Leroy and Grmek).

Sometime after 1973, the comparatively greater interest in Lamarck relative to Cuvier (as illustrated by references to each in books) peaked, and the difference was more pronounced in French language studies than in English (British or American) ones.⁷ Goulven Laurent defined two Lamarcks in 1975: Lamarck the philosopher and Lamarck the taxonomist. He then situated the meeting of the two – the occasion of Lamarck’s great biological and philosophical synthesis – sometime in the early years of the 19th century (Laurent 328). Frank N. Egerton III (1976) produced unique proof from Charles Darwin’s handwritten notes that he (Darwin) had indeed read Lamarck (the 1801 *Système des animaux sans vertèbres*) before embarking on the *Beagle*. Lessertisseur and F. K. Jouffroy (1979) focused on Blainville’s concept of the animal series in order to determine how it differs from Lamarck’s. Richard W. Burkhardt, Jr. authored a compelling argument about Lamarck’s biological thought by associating it with Lamarck’s convictions about what it meant to be a *philosophe-naturaliste*, in his 1977 *The Spirit of System: Lamarck and Evolutionary Biology*, which I have already cited abundantly. And in 1979, the Université de Picardie marked the 150-year anniversary of Lamarck’s death with a colloquium organized by Madeleine Barthélémy-Madaule which reunited, to name a few, Pierre-Paul Grasse, Stephen Gould, Ludmilla Jordanova, and Richard W. Burkhardt Jr. Barthélémy-Madaule published her book, *Lamarck, ou le Mythe du précurseur* that same year, in which she contended that Lamarck’s philosophy – including his concept of nature (similar to Diderot’s and Rousseau’s) – was consistent with eighteenth-century trends, and that although his use-and-disuse hypothesis evokes the notion of adaptation, nowhere does he use this term.

In 1930, according to *The British Medical Journal*, the Société Linnéenne du Nord de la France raised funds for a memorial on the site of Lamarck’s home in Bazentin, which lay in ruins after the first

⁷ Google Books Ngram Viewer, comparing “Cuvier,Lamarck” in all three corpuses from 1800-2008/2010. This tool allows for a comparison of frequencies of occurrence of specific search terms in relation to each other in Google Book’s digitized collections of published works.

World War.⁸ This notice highlights both the irony of Lamarck being remembered by an organization devoted to Linnaeus, and the fact that in one sector of the natural sciences, Lamarck's legacy has been mostly positive, and stands a good chance of growing in the future, namely, in botany. I will highlight, in a few paragraphs, ways in which recent research in the natural sciences is hearkening back to Lamarck's theories, in spite of protests against precursors and prophets. I want to show the broader significance in Lamarck's work which makes his literary legacy possible, even probable, and emphasize the need for a study of Lamarck's natural history, in the French context, at the pivotal moment when the genre of natural history collapsed, amid philosophical and political changes that produced the human sciences. Michel Foucault's assessment that Lamarck "closed the age of natural history and opened that of biology," rather in spite of himself and his conservative attitude toward the Muséum's collections of invertebrate specimens, maybe oversimplifies the story of Lamarck's participation in defining life itself (Foucault 243, 139). This story is still unfolding. Jean-Pierre Faure put a positive spin on the strange persistence of "the precursor myth": "...[I]l ne s'agit que d'une prescience vague et philosophique," but at the same time, "[j]e me demande si Lamarck n'est pas plus clair aujourd'hui qu'en 1809, parce qu'on sait ce qu'il présentait. Il faut lui faire crédit et réfléchir à ce qu'il a voulu dire. On peut promettre à ceux qui feront cet effort les joies intellectuelles de la rencontre avec une intelligence souveraine et une science étendue" ("It was only a vague and philosophical prescience," but at the same time, "I wonder if Lamarck isn't clearer today than in 1809, because we know what he sensed. We must suspend our disbelief and think about what he wished to say. Those who undertake this effort are sure to receive in return the intellectual joys of an encounter with a noble intelligence and a vast knowledge." Faure 87, 13-14).

Plant epigenetics is a promising field. Researchers working with the toadflax plant (*Linaria vulgaris*) at the John Innes Centre in Norwich, U.K., found that an epimutation (suppressed expression of

⁸ "A Memorial to Lamarck," *The British Medical Journal* 1.3612 (March 29, 1930), p. 607.

the gene *Lcyc* due to methylation) resulting in flowers with radial rather than bilateral symmetry was heritable by subsequent generations of toadflax plants.⁹ The plasticity that plants enjoy offsets the disadvantage of being stationary. According to Eugene Selker, a molecular geneticist at the University of Oregon, Eugene, “although it would be stretching it to regard epigenetic traits as adaptations comparable to Lamarck’s view of how the giraffe acquired its long neck, we do know that environmental factors, such as temperature, can influence epigenetic marks such as methylation” (Balter 38). The part of Lamarck’s theory that ‘sticks in the throat’ of most biologists is the mechanism he posited for species change: inner need or felt needs.

In May 2009, Darwin’s birthday special edition of the journal *Science News* drew responses from readers in defense of Lamarck. According to O. Frank Turner, Pueblo West, Colo.: “It is now becoming clear that a type of formative causation may be real, in spite of the fact that most biologists still gag on the word. Just because one can show that natural selection works does not prove that it is the correct mechanism” (Turner 30). The insufficiency of the Modern (Genetic) Synthesis of the 1930s and 1940s has been noted, but as Massimo Pigliucci writes in his review of Robert Reid’s *Biological Emergences: Evolution by Natural Experimentation* (2007), its makeover, “the Extended Evolutionary Synthesis (EES)” has yet to take shape, with additional insights gleaned from developmental biology and ecology. “We have no organic theory of how community and ecosystems ecology are connected to evolutionary biology” (Pigliucci 136).

A number of other contemporary approaches to the life sciences are reintegrating Lamarckian notions by analyzing his claim about the drive to perfection in new ways. Simona Ginsburg and Eva Jablonka have been developing a bridge between sensory processing and real feeling, “to account for the qualitative difference,” which is articulated through motivation, “a process that is both intuitively and philosophically connected to experiencing” (Ginsburg 317 cites Ginsburg and Jablonka, 2010). In her

⁹ Enrico Coen, et al. Published in *Nature*, 9 September 1999. Cited by Balter, p. 38.

words, “we believe that neural trajectories formed ontogenetically by mechanisms of associative learning enable even very simple animals with a central nervous system to develop pathways that guide them to goals achieved in the past. These trajectories act as motivators, which are similar to Lamarck’s ill-interpreted ‘need’ (*besoin*) and ‘will’ (Ginsburg 371). Despite the resentment among some biologists who condemn “physics envy” and resist approaches which reduce living systems to mathematical algorithms, some research demonstrates how biophysics can confirm Lamarck’s conclusions about animal life. Francis Dov Por explains, adapting Chaisson’s theory of thermodynamic cosmic evolution (2001), that bees are able to control the internal temperature of the hive, creating conditions favorable to the development of “intelligent” behaviors characteristic of more complex animals with higher metabolisms (Dov Por 2011). Lamarck’s reflection that insects may be endowed with a *sentiment intérieur* is thus given new expression, and the consistency of his hypothesis is supported. Furthermore, Lamarck’s notion of how “subtle fluids” (heat, caloric, light) from the environment were in some sense “captured” by simple animals also finds expression in Dov Por’s account.

Laurent Loison, on the other hand, examines the “French Roots of French Neo-Lamarckisms, 1879-1985.” He identifies two successive strains of Lamarckian biological thought, separated by a period of confusion in the early 20th century. Although he advances that neo-Lamarckism was the dominant trend in France during this time, he also shows in his careful study how both grew out of a specifically French philosophical tradition and diverge along the lines of an “ancient and strong dichotomy of French thought,” that is, between the material, physicalist Cartesian tradition and the spiritual and vitalist (Bergsonian) tradition (Loison 713). He insists that the French biologists he examines did not need Lamarck (or his ideas about biology) to develop their philosophies, but rather that their work brought his contributions to the field to light. Each group projected a different version of Lamarck, which for Loison, “strengthens the idea that the figure of Lamarck was mostly a reconstruction for both the first and the second neo-Lamarckians” (Loison 740). These theories clung to

his name, however, and have distorted Lamarck's own theories. Perhaps this is proof of the unfortunate residue of self-interest in every homage, or more broadly, of the self-interest of science conceived as an international competition.

Historians and philosophers of science are beginning to dismantle popular notions of Lamarck-the-foil-for-Darwin and are finding new ways to interpret his contributions to the life sciences. In 2006, Stéphane Tirard and Jean Gayon, together with Pietro Corsi, published an edited volume in which they examined various aspects of Lamarck's self-styling as a naturalist-philosopher, *Lamarck, philosophe de la nature*. After publishing online¹⁰ Lamarck's manuscripts, monographs, and other documents, such as rosters of students who attended his lectures at the Muséum National d'Histoire Naturelle, Corsi and his colleagues have been working to understand who Lamarck's students were, whence they came, and how they may have formed a network capable of spreading scientific and political information and ideas throughout the newly formed French Republic (Corsi 1997, Bange 2000).

Snait Gissis has identified distinct but parallel trends during the period of the late 18th and early 19th centuries which may have contributed to Lamarck's changing views of living nature. In her discussion of "transfers" and resonances from social to biological thinking, she points to 1) the "mingling of discourses" evidenced by the existence and activities of the *Idéologues* and the project to establish a "Science of Man," even as 2) the sciences became professionalized (Gissis 2009, 242).¹¹ The relative freedom of expression during the first decade of the Revolution (excepting the Terror) created the opportunity for available knowledge to be assembled and disseminated or debated in non-disciplinary and multi-disciplinary frameworks (public lectures, journals and learned societies) (Gissis 2009, 243-244). Lamarck's residence in Paris during the height of revolutionary fervor, his perspective as a colleague in the rather unique collectivity of researcher-teachers at the Muséum d'Histoire Naturelle,

¹⁰ Lamarck's works online: www.lamarck.cnrs.fr.

¹¹ I frequently cite Gissis's 2010 essay, "Lamarck on Feelings: From Worms to Humans," in chapter 2.

his participation in the Société d'Histoire Naturelle and his association with the Cercle Social, which also published works by Enlightenment philosophers, all contributed to making available to him the various models and rhetoric of social thinking at the time. Gissis posits that when Lamarck integrated gradual, irreversible change through time and the primary reality of the individual rather than the species into his thinking about living beings, he was finally able to articulate the theory of transformism for which he is known today.

If Lamarck used social philosophy to revolutionize his biological thought, Gissis also describes the opposite current today, a “tendency among both theoreticians and philosophers of evolutionary biology to think that one can make a simple, or at least a rather straightforward, transfer from biological models to explanations of culture and society, and that it should work” (Gissis and Jablonka 403). This does not seem to bear out. The problem seems to inhere in the difference in the study units used by evolutionary biology and sociology. Furthermore, as Alfred Tauber points out, even with contemporary biology acknowledging more complex modes of causation in living systems, “our understanding of the underlying character of biological causation has not fundamentally changed” (Tauber 387). Instead, reductive analyses continue to provide the most reliable explanations.

Lamarck synthesized vastly, and as Richard Burkhardt says, he “hated to be told that a major problem was out of reach of contemporary science, or that it could only be confronted after less fundamental issues were cleared up” (Burkhardt 1977, 41). He carried over from Buffon a predilection for “les grandes vues,” a philosophical orientation which was, after Buffon, difficult to defend in an era predisposed to Condillacian analysis. Authentic Lamarckism, according to Léon Szyfman, is “autant un système explicatif et cohérent et intérieurement logique des sciences naturelles qu’une philosophie évolutionniste réaliste” (“as much a coherent, explanatory and logically consistent system of natural science as a realist evolutionary philosophy.” Szyfman 103). Ludmilla Jordanova explains the creativity of his thought: “Lamarck can usefully be seen as the main thinker in the first decade of the nineteenth

century who attempted to generate a language through which a new science of living things, sensitive to historical change, could be developed” (Jordanova 1989, 91). Similarly, Frans Stafleu shows how Lamarck’s “discovery of the intrinsic value of the dynamics of diversity” defined a new view of nature which demonstrates its power: “This is the final outcome of the principle of plenitude, the definitive shift from an immutable, self-sufficient uniformitarian universe to a world characterized by creativeness, by Kant’s temporal ego, by Schiller’s *Stofftrieb*, by the realization that an individual is part of a stream of ever-changing forms of life. Lamarck, in short, pits scientific Romanticism to scientific classicism. The first elements of nineteenth century positivism are contained in this significant definition of nature” (Stafleu 422).

Lamarck’s material understanding of life, and of human ideas, posits a kind of intimacy of the living organism with inorganic nature, bordering on immediacy (Szyfman 110). The ambiguity which results from this configuration has led to differences in opinion regarding the role and relative importance of these two partners in effecting the mutability observed in living forms. My research into Lamarck’s style and his concept of the *sentiment intérieur* lays a foundation for understanding his impact on literature in the early nineteenth century, while positioning Lamarck at a pivotal moment in the history of natural philosophy. His prose hails a new era of scientific literature, romantic, in Stafleu’s sense, indicating “the intimate link between science, art and society” (Stafleu 398), even while it anchors him in the Enlightenment tradition of literary science.

Lamarck never published a work of fiction, nor did he, unlike Cuvier, ever advise the composition of a poetic work devoted to the exposition of and imaginary expansion upon the history of animal existences and extinctions (Cohen 185). His remarks about literature are few and have been noticed by scholars such as Joël Castonguay-Bélanger, who treats Lamarck’s comments on the imagination in his foray into the “vagaries” or “margins” of this human faculty in late-Enlightenment/early-Romantic novels (Castonguay-Bélanger 2011). As for the representation of

Lamarck or of his ideas in fictional works, the examples are somewhat sparse, but growing, especially as noted in scholarship on British and American literature.

Lynn Wardley's forthcoming book, *Lamarck's Daughters: American Literature and the Power of Life: 1790-1925*, "examines the feminist politics of evolutionary models of the self" (Wardley 2016). In her 2016 article, she explains that "versions of Lamarckian biology were put to political uses," and that activists in Great Britain and the United States promoted non-essentialist biology in the service of feminism. Her thesis is that Henry James's *What Maisie Knew* is typical of the late 1890s in the way that self-understanding is wrought through the prism of evolution, and more specifically, childhood studies of that era. However, in opposition to determinism and degeneration, two powerful intellectual movements of that time, James's novel "recruits Lamarck's biology to forge a 'new kind of subjectivity in which the tie to embodiment works not to subsume the individual but to produce her (or his) specificity...'"¹² Consistent with Laurent Loison's assessment of American Lamarckisms, it is through the lens of recapitulation theory¹³ that American scientists and historians of the late 19th century understood middle childhood, and its importance for the evolutionary history of the human species and human culture. Wardley mentions John Fiske's *The Meaning of Human Infancy* in support of her reading of James and points out that Fiske and James were acquainted. In her analysis of feminist activist Mona Caird's writing, she shows how Lamarckian principles offered hope for women seeking to redirect heredity, education and habit (Wardley 2016, 249).¹⁴ Wardley adapts the title of Gillian Beer's *Darwin's Plots* (1983), finding in James's novel an example of what she calls "Lamarck's Plots."

Caroline Warman has pointed out that mid- and late-nineteenth-century obsessions with balance and control may stem from a "materialist-vitalist" model of the human being originally sourced

¹² Wardley cites Jennifer L. Fleissner's book, *Women, Compulsion, Modernity: The Moment of American Naturalism* (Chicago: University of Chicago Press, 2004), p. 273.

¹³ The idea that an organism passes through developmental stages which rehearse earlier evolutionary stages of the species.

¹⁴ Wardley cites Mona Caird, *The Morality of Marriage, and Other Essays on the Status and Destiny of Woman*. (London: George Redway, 1897), p. 51.

from Lamarck's definition of life. She points to the *Philosophie zoologique*, and to the idea of the *cause excitatrice* ("stimulating cause") in her discussion of sensitivity and pathology, or the "template of order and disorder, irritability and contractibility" apparently adopted by the medical sciences and worked out in various ways in literature of the period (Warman 18).¹⁵

In scholarship on French literature, several studies of Balzac's natural history inspiration exist, and more are being added. Philippe Dufour and Nicole Mozet edited a collection of essays called *Balzac géographe : Territoires*, in which authors evoke Buffon, Lamarck, Cuvier and Geoffroy Saint-Hilaire in their studies of Balzac's social species and concept of *milieu*. Lamarck is, I conclude, an important figure in the history of literature. This, all the more, because of the dominant narrative of antagonism between scientific and literary discourses in our current making of history. In many ways, the concerns of Lamarck and his contemporaries are ours again today, regardless of geographic location and chosen field of study. Lamarck's ideas are, inevitably, part of the "history of the self," and therefore relevant to the lives of selves, human and otherwise, which exist now.

As many scholars attest, it would seem that reading Lamarck is to read the scission between two worlds of knowledge. The first involves the self becoming aware of itself and of its tenuous grasp of the other. The second involves the effacement of the self, or its eclipse, as it is subsumed into a history of the material world. How this schism is given expression in writing is the subject of this study. To read Lamarck in this way is, in one sense, to revisit a long history of scholarship which traces his preoccupations and biases, the meaning of his ideas as they developed over the course of his career and were shaped by the forces and influences acting upon him, and which has, at times, made Lamarck appear larger than life.

¹⁵ I would posit instead that the *cause excitatrice* derives from Lamarck's observations (his own, and those which others reported) of animal nervous behavior and represents a theoretical place-holder which he needed until more could be established about the force which separates living and non-living bodies. In this way, it is *descriptive* and not *prescriptive*. The *Grand dictionnaire's* lumping together of Lamarck and Bichat may in fact constitute a misreading of Lamarck by the generation which followed his.

In my first chapter, I compare Buffon's style and philosophy to those of Lamarck, his protégé at the Académie des Sciences, through close reading and rhetorical, lexical, historical, and thematic study. I focus especially on Lamarck's 1817 *Déterminer* dictionary entry, "HOMME," in order to explore ways in which his work situates him in a pivotal place between the philosophy and aesthetics of the Enlightenment as represented by Buffon, and the growing trend and new institutions of positivist science after the Revolution. Specifically, I examine possible ways of understanding language as Lamarck uses it, while from another angle, I explore Lamarck's self-identification as a "natural philosopher" to understand how he conceived of his own work. His use of antithesis in his classification (as Lyndia Roveda has shown) and in his definition of man, points to a trend in his thought motivated by classical rhetorical figures.

Bonhomme's *Pragmatique des figures* (2005) provided the theoretical thrust and tools needed to apply the notion of figurality to discourse analysis in the changing "landscape of figures" laid out by Catherine Fromilhague in the second edition of her *Figures de style*. Among those tools is the notion of salience (*saillance*) which, she explains, "advantageously eliminated the old understanding of the figure as an *écart*" (Fromilhague 8). She concludes with Tzvetan Todorov: "Affirmer que les figures sont des écarts n'est pas positivement faux ; mais c'est une idée dont l'utilité paraît problématique" ("To say that figures are departures is not entirely wrong; but the usefulness of this idea appears problematic." Fromilhague 17).¹⁶

Jeanne Fahnestock analyzes the same assumption about figures as departures from normal usage: This must mean that there is a non-figurative way to say the same thing, a "degree zero" choice of word or expression. "Value-added" theories of figures reinforce a two-domain theory of language, where literary texts occupy one domain (associated with emotion), and functional discourse, the other. In the former, a message is conveyed as, "Alas! Gone are the daisies of summer." The same message

¹⁶ Fromilhague cites O. Ducrot O. and T. Todorov, *Encyclopédie des sciences du langage* (Paris: Seuil, collection "Points," 1979), p. 27.

expressed “scientifically” could be “It is September 22.” Of course, this ignores the context, the “from whom, to whom, what and where” that generally frames the phrase or sentence. If the sentence “The execution is set for September 23rd” precedes it, it carries a lot of emotion. But if “The mail was late but the rain stopped” follows it, it expresses something else which is nonetheless an emotion, one of “flatness or calmness, seriousness, steady-eyed contemplation, or straight conviction.” In other words, “An even heartbeat is still a heartbeat” (Fahnestock 20-21). In conclusion, she finds it most helpful to think of figures on a continuum of more to less *iconic*, and presses for “a view of the figures [that] shifts the emphasis from what the figures are to what it is they do particularly well,” their ability to epitomize a line of reasoning (Fahnestock 22-23).

Through this perspective it is possible to analyze the figures of style in the language of Buffon and Lamarck without immediately or always assuming that they interpenetrated two domains of language, that they exceeded scientific or dispassionate discourse and ate the leaven of emotion and persuasion, so to speak. It helps us to dispel the dust of assumptions about rhetoric which has collected over time.¹⁷ Verbal and conceptual devices are “continuous across centuries, texts, and disciplines in a far richer way than the well-advertised metaphoric nature of some scientific cases” (Fahnestock 44). Studying variation in the choice of figures between Buffon and Lamarck helps to establish their philosophical similarity as well as practical differences between the ways in which they reasoned and communicated their ideas. Moreover, this perspective shrinks the distance between our time and the critical moment when the genre of natural history became obsolete in nineteenth-century France.

In my second chapter, I develop a reading of Lamarck’s concept of the *sentiment intérieur* as a paradox. I survey the ARTFL-FRANTEXT database of French-language texts to locate sources of Lamarck’s concept of the *sentiment intérieur*, as well as commonalities among the *Idéologues*, of whom Lamarck

¹⁷ Assumptions that give as synonyms for “rhetorical”: “oratorical,” “bombastic,” “affected,” and “metaphorical.” Wilda Anderson gives a common definition of rhetoric in contrast to the one she promotes: “Style is not decoration, it is not idiosyncratic whim. Nor is it ‘mere rhetoric,’ i.e., an attempt to fool the reader into believing something in spite of logical argument” (Anderson 699).

belongs to a second wave. I set Lamarck's theory against a background of long-running philosophical debates (Epicurean physics), then-popular problems (analysis of ideas, sensory perception, unity and identity of the self, configurations of the faculties, habit and memory, justification of knowledge, etc.) and new challenges (Kant's *Critique of Pure Reason*). I examine how his ideas stand up against those of Cabanis and Biran, not so much to determine directions and modes of influence as to highlight two ideological traditions which diverge around Lamarck's position. The paradoxical concept referred to by Lamarck's binary term represents a kind of neologism in the context of his understanding of animal diversity. At the same time, the human specificity of it is registered in a history of uses in philosophy, religion, history, fiction and medicine. I ask what the term and the concept it represents do for his theory, especially in connection with memory and habit, and for the broader debates about life, individuality, sensation, knowledge, and action.

Finally, in my third chapter, I examine novels of the early nineteenth century in order to establish Lamarck's immediate literary heritage. Henri Beyle (Stendhal), Honoré de Balzac and Charles-Augustin Sainte-Beuve were influenced by the *idéologie* of Antoine Destutt de Tracy and Pierre-Jean-Georges Cabanis, most notably. Their novelistic practices and fictions engage with *idéologie* and natural history, on several points. Stendhal's *Armance* analyzes the problem of the mind-body connection by substituting a fictional, moral diagnosis for a physical one. Honoré de Balzac's *La Peau de chagrin* hyperbolically praises Georges Cuvier, Lamarck's great rival, and its protagonist seeks a physical cure to a strange moral problem. In Charles-Augustin Sainte-Beuve's novel *Volupté*, Lamarck appears in cameo, and as a thematic doubling of one of the characters, representing the philosophical position eventually rejected by the protagonist. The analysis of *volupté* in Sainte-Beuve's fiction draws upon a physiological model of mind resembling Lamarck's. The novels ask where the seat of life is, what it means to age or to die and how human life hangs in the balance between knowledge, power, and will. How, I ask, did Lamarck's interpretation of nature, and especially of human nature, resonate with romantic sensibilities

and help to characterize an older generation of romantic heroes? How do these novels reflect the changing definition of man from the *Encyclopédie* to the *Déterville* dictionary to the one found in the first edition of the *Littre*? My analysis of Lamarck sheds light on the scientific and literary struggle to understand the most elusive species of all, that is, our own.

Chapter 1: Natural History and Humankind: Style, Rhetoric, Truth, and Antithesis

Introduction

Despite the renewed interest in Lamarck, including in some English-language literature scholarship, no one has yet shown in a systematic way that Lamarck's theoretical work may contain important implications for French literature. This is what I shall attempt to do in the following pages. In this chapter, I compare Buffon's style and philosophy to those of Lamarck, his protégé at the Jardin du Roi, using topical and historical study and close reading. I focus on passages from Buffon's *Histoire naturelle* and his *Époques de la nature* and Lamarck's 1817 Déterville dictionary entry, "HOMME," in order to explore ways in which Lamarck's work situates him in a pivotal place between the philosophy and aesthetics of the Enlightenment as represented by Buffon, and the growing trend and new institutions of positivist science after the Revolution. I engage with some recent scholarship on the intersection of style, figurative language, rhetoric, and science in order to show how tensions within the genre of natural history and philosophical and scientific debates surrounding it are inscribed in the language each author uses when addressing the same topic.

I took as a premise the fact that the human species presents a particularly difficult subject for the natural historian. I expected to find that each one had, in order to meet the challenge of defining his own species, engaged every resource at his disposal, and I hoped that each had, under pressure, revealed his philosophical biases. I thought that these biases might be most salient in the wording of the ideas. I also wished to explore the poetics of their prose by delving into the relationship between figurative language and knowledge in their works of natural history.

I also wanted to know why French natural history as a genre did not survive the Revolution intact. What were the constraints of the genre, and how did each naturalist navigate them in his work? For whom were they writing, and why? In some ways, the genre of natural history was already being uprooted from its place as one of the physical-natural sciences (chemistry, botany, and anatomy, as

opposed to the mathematical sciences, geometry, mechanics, astronomy) by 1785, when a new section on experimental physics was added to the mathematical and not the physical branch of the Académie des Sciences (Loveland 4, citing Hahn 98-100). The institutional changes reflect the shifting disciplinary boundaries which were starting to be policed by those within and without, on the level of style of discourse as well as those of ideas, methods, and principles. The literary aspect of natural history provided ample opportunities for polemics to be deployed which sought to define (even exclude) some writers and readers of natural history.

I examined both what Buffon and Lamarck wrote and what they thought about writing (as much as could be gleaned from their discussions of natural history, imagination, style, and ingenuity), and reviewed some critical responses to their work. I searched their works for commentaries on the role of the imagination and the mechanics of composition. There are at least two points upon which they agree, which constitute a certain philosophical position with respect to language and natural history. Both acknowledged that the problems internal to the writing of natural history were, first of all, the desires and needs of the natural historian: at a basic level, the need for certain arbitrary conventions foreign to nature itself in order to aid the memory (the notion of “species,” for example) (Lamarck 1779, lxxxviii-lxxxix; Anderson 1999); next, the need for reflection during which ideas are sorted and arranged – altering the visible order of nature in order to create understanding; and finally, the desire for intellectual pleasure. The process is often represented as complete by the time the reader opens a volume of natural history. But the desire for intellectual pleasure is transferred from the writer to the reader in the wording of the text. A dull style quickly fatigues the attention of even the most well-disposed reader.

The second point on which they agree is that fidelity to the genre of natural history is to be preserved, and the purpose of the genre is, as Horace intended for poetry, to enlighten and instruct

others (including lay people) in the ways and productions of Nature.¹⁸ Fidelity to the genre, although shared between them, takes a different form for each: Buffon's fidelity leans toward prosperity, or knowledge of nature's laws sufficient for the preservation and promotion of human life, whereas Lamarck's fidelity leans toward acquisition of knowledge of nature's laws sufficient for living in harmony within it.¹⁹ The addition of this concern in Lamarck's work may explain why his tone is frequently more urgent than enthusiastic. In the effort to enlighten and instruct others, especially regarding human nature, Buffon's and Lamarck's works are inscribed in the long tradition of rhetoric, which, by the time of Lamarck's death in 1829, had been all but abandoned. Reading them now requires some toil and patience to recover lost attitudes (or habits) about how figures of thought and speech epitomize the ideas they convey. Far from hiding truths behind superficial ornamentation, they may often sharpen thought and create deeper understanding.

In the heyday of Lamarck scholarship of the 1970s (see introduction), while many of Lamarck's biological contributions were studied, scholars rarely if ever took up the question of the *style* of Lamarck's writing as related to the genre of natural history, or the question of his understanding of truth and error as it was brought to bear on the pursuit of knowledge of the natural world. In the 1980s, scholarly studies of scientific rhetoric began to appear, following "the collapse of positivistic views of methodology and epistemology, the development of academic programmes in technical writing, the growth of more culturally oriented histories of science, and the new interest in language emanating from French post-structuralist philosophy" (Loveland 19). Interest in scientific rhetoric has been kindled in various fields, including history, philosophy, literature, language and communication. From the diversity of approaches, one may guess correctly that scholars do not always agree on what "rhetoric" is,

¹⁸ Horace's ideal poet is one who mixes pleasure and utility (*qui miscuit utile dulci*), thereby delighting (*delectando*) and instructing (*monendo*).

¹⁹ On pleasure, Buffon is most clear in his *Discours sur le style*, revisited below. On Lamarck and living in harmony with nature, see Burkhardt 1977, p. 215. Lamarck describes the state of living at odds with the natural world in his dictionary entry, "HOMME." More below.

let alone how it functions in relation to science. Complicating matters are popular myths about science and literature and their supporters which have forced the humanities and the physical sciences farther apart in recent decades. The title of C. P. Snow's 1969 *The Two Cultures and the Scientific Revolution* has given rise to the touchstone phrase "two cultures" which symbolizes and preconditions the hostile standoff which occasionally breaks out in public dialogue (including stony silences) between humanists and scientists. Keeping this dynamic in mind can serve as an inoculation against views which undercut the original contributions to culture that science alone can provide, while not ceding to the dominant understanding of rhetoric as threatening or excluding reason. Some approaches to understanding the coincidence (not to mention cooperation) of style and science in Buffon's and Lamarck's writings, as explored below, do well in maintaining the real differences between the two.

The meaning of several related terms I use throughout this chapter – style, rhetoric, rhetorical figures, figurative language, poetic language, etc. – will be addressed gradually in the discussion which follows, but a general sketch here will be helpful. By "style" I mean the sum of aesthetic, lexical, and grammatical choices made by the author which contribute to the tone, forcefulness, and meaning of the text. Style involves a writer, a reader or readers, a genre, a subject, a language or languages and a way of bringing these all together to communicate ideas and values. Rhetoric is formally much larger than style, since classical rhetoric may be analyzed into five components, of which style, or *elocutio*, is one. While commonly assigned synonyms for "rhetorical" in English today include "oratorical," "bombastic," and "metaphorical," I plead the case here for a broader and deeper consideration of rhetoric which takes into account the present impoverishment of this realm of human knowledge. Rhetorical figures, figures of thought and figures of speech are, as ever, difficult to contain. Many style manuals over the centuries have outlined their features in various ways. The important points are that they are plentiful, many more than the star player, metaphor, and that their helpfulness in forming and expressing ideas should not be hastily dismissed. Figurative language is generally defined against literal language, but I

agree with scholars who challenge the notion that figurative language is always optional, that it represents merely one choice of expression among many. Poetic language is sometimes lyrical, often metaphorical, usually condensed, and it typically exploits imagery of various kinds. It does so, more than other kinds of language, to create an effect, but its meaning is not reducible to effect. It entertains a relationship with a more-or-less codified set of rules otherwise known as a form. Some forms are metered, others are not. Poetic language (to stop shy of attempting to define “Poetry”) constitutes one mode of expression that has taken many different forms in cultures past and present. The common use of the adjective “poetic” is a token of the fact that poetic language exceeds the genre of poetry, and more broadly describes a way of being in the world and relating to it.

The practice of natural history in France from 1750-1830 (roughly the time period I examine) combined material practices of travel, transportation of natural specimens, consultation of experts and collections, observation, appropriation, documentation, organization, publication, reading, writing, lecturing, listening, mentoring, and more. It was carried out both textually and orally, so that practices associated with these two modes of communication could mutually influence each other. I have traded some subtlety of interpretation for the certainty of working mostly with published texts, but I also consulted critiques by colleagues and students where available to try to understand how the ideas were *heard* as well as read. Acknowledging the importance of reader rapport²⁰ – including choices and sacrifices made in the text to establish and sustain it – provides a helpful perspective in understanding why Buffon and Lamarck wrote as they did.

²⁰ Without, however, constructing an ideal reader. This consideration opens a window onto the close readings. Marc Bonhomme’s pragmatics of figures and Jean Fahnestock’s rhetoric in science (below, in the section New Approaches to Figural Language) do this as well by describing in different ways the *horizons d’attente* created in and by textual elements.

Natural History Before 1800

Before there was biology, meteorology, mineralogy, hydrology, ecology, zoology, astronomy, cosmology, neuroscience, and the like, there was natural history. The heterogeneity of topics and approaches which may come under the heading of natural history is astounding. Daniel Roche notes that as the author of the *Encyclopédie* article (probably Diderot) wrote:

Natural history in its widest extent would embrace the entire universe, because the stars, the air and meteors are included within nature [...]. But the more we have acquired knowledge, the more we have been led, and even forced, to divide it into different kinds of sciences. This division is not always exact, because the sciences are not so distinct that they do not have relations with one another; that they do not merge into one another and connect at several points, in both their generalities and their particulars (Roche 129).

Buffon suggested that all the sciences could be subsumed into two categories containing “everything which is needful for man to know”: civil history and natural history, the proper study of politicians and philosophers, respectively (Buffon 1749, 9). Roche remarks on the *Encyclopédie* article that “Natural history reveals the concerns which pulled the academic world [in revolutionary-era France] in different directions: both curiosity and science based upon precise observations and experiments; both the taste for the extraordinary and the concern to establish true facts; both the application of Kant’s ‘adventure of reason’ (that is, speculation about the origins of living beings) to the real world and the desire to serve the public” (Roche 130). Natural history in France, which was the province in the eighteenth century of such diverse authors as Benoît de Maillet, Charles Bonnet, Buffon, Pierre-Louis de Maupertuis, Bernardin de Saint-Pierre, and Nicolas-Edme Rétif de la Bretonne, not to mention Lamarck, was a tradition encompassing vast domains of knowledge and inquiry. It could refer to entities and processes on or near the surface of the earth (climates, weather patterns, bedrock layers, erosion, sedimentation and volcanic activity), to the interactions between those processes and entities and the organic things which are subject to their activity (landscapes, soils, vegetation, natural groups of animals or other organisms, etc.), and to plant, animal, and mineral species, including their members, behaviors,

organs, and tissues or crystals, considered in the structure, anatomy, life cycles, behaviors and habitats or environments of individual specimens and extrapolated to the whole. It reflected stylistic tendencies related to its subject matter, to the authoritative works of past natural historians and to neighboring genres with more formal codes (Loveland 28).

The tradition of natural history dates back to antiquity. Pliny, Aristotle, Theophrastus, Dioscorides and Pliny the Elder are some of the writers who codified it as a form of writing; as a discipline, it was the invention of such early modern writers as Aldrovandi, Ippolito Salviani and Michele Mercati, among others (Findlen 57). It comfortably overlaps with philosophy, history, religion and fiction. Many of the French authors listed in the paragraph above drew conclusions about human morality from their studies of the natural world. This particular use of natural history recalls the medieval bestiary tradition and the fables of Aesop and La Fontaine. While some scholars nowadays continue to sort out the contributions of certain of the French authors (*Homme de science ou homme de lettres ?* they ask), other scholars are exploring the genres in which they wrote: *traité, mémoire, conte philosophique, roman, étude*, and more. Taking the latter approach leads to questions about how generic constraints (and transgressions) may help and/or hinder the process of discovery and dissemination of knowledge about the natural world.

In his study of novelistic practices and representations of science from 1775-1810, Joël Castonguay-Bélanger identifies the tension between two previously united pursuits – science and literature – as resulting from *les écarts de l'imagination*, or the vagaries of the imagination. Where once the popularity of and fervor for scientific discoveries resulted from the circulation of *hommes de science* among literary circles, *l'homme de science* and *l'homme de lettres* (who were sometimes one and the same human being) were driven apart by strong forces in the early nineteenth century. They were compartmentalized, so to speak, in different institutions, and their separation was reinforced by the

need to unify scientific knowledge and purge it of inconsistencies and unsupported hypotheses which were misleading the public.

Admirable prose began to be associated with uncritical scientific thought. Bernardin de Saint-Pierre, who was close to Jean-Jacques Rousseau, like him also assumed the role of the “solitaire incompris” (“misunderstood solitary individual”) in defending his unorthodox views on the shape of the earth and the cause of the tides (Castonguay-Bélanger 117).²¹ He complained of a conspiracy to exclude him from serious academic consideration (Castonguay-Bélanger 120). One critic writing in the *Mercur de France* charged that Bernardin’s lack of scientific success was due to his sensitivity to the beauty of nature, revealed in his excellent writing; the critic claims that “plus un homme est fait pour être fortement ému par le spectacle de la nature, moins il est dans une disposition favorable pour en bien démêler les ressorts. Plus il est affecté, et plus sa réflexion est incertaine” (“the more a man is prone to be greatly moved by the spectacle of nature, the less he is in a disposition favorable for aptly distinguishing its workings. The more he is moved, the more uncertain are his thoughts.” Castonguay-Bélanger 119, n. 117).

This complex claim (two claims, really) about the existence of affective barriers to knowledge and the assumed opposition between beauty and substance in writing has been repeated so many times and in so many contexts as to be considered a commonplace. Ironically, the criticism is delivered here in a particularly stylish way, as an antithesis, and modified repetition makes the accusation ring with the

²¹ “Solitaire” is a term Cuvier applied to Lamarck in his “Éloge de M. de Lamarck”: “...[S]ur toutes ces matières il avait un ensemble d'idées arrêtées, originales par rapport à lui, qui les avait conçues par la force de sa tête, mais qu'il croyait également nouvelles pour le monde, et surtout aussi certaines que propres à renouveler toutes les sciences humaines. **Il ressemblait à cet égard à tant d'autres solitaires**, à qui le doute n'est jamais venu, parce qu'ils n'ont jamais eu l'occasion d'être contredits.” (“[O]n these matters he entertained a set of stubborn ideas, original in his estimation, for he had conceived them by the strength of his intellect, but he thought they were similarly novel for everyone else, and most of all just as certain as they were suitable for renewing all human knowledge. **In this way he was like so many other isolated individuals**, who have never been visited by doubt because they never happened to be contradicted.” Cuvier xiii). Lamarck’s own concern for consensus in the scientific community (see below) and reports that he took lunch alone before his views were exposed and debated at the Institute support the notion that he was physically received by the institution, but rhetorically exiled.

authority of a proverb. Whether or not the critic himself endorses the theatrical and chronometric or mechanistic tropes of nature (indexed by “le spectacle” and “les ressorts”), they form the argument and its easy appeal. One can see why, among the other tyrannies challenged during the Revolution, the tyranny of rhetorical excess was also targeted (Teyssie 1988). This was all the more true for genres other than the novel.

Misunderstanding and isolation do seem to apply equally well to vulnerable soft-bodied mollusks with beautiful shells and to certain naturalists, natural philosophers, and natural historians (lumping them together for the time being) who, through the successful use of polemic, were excluded both rhetorically and physically from the newly-formed scientific community. As Rosemary Lloyd has pointed out, the rhetoric of natural science and the physical space of the Muséum National d’Histoire Naturelle shared the same striking crustacean shape, in that they grew to protect and isolate the scientific theories and practitioners which they housed: “It was not just a working space: those appointed to it and working for its garden and laboratories lived there, intermarried, and, not unlike hermit crabs, built up a physical space around them that corresponded to their personalities and to their power within the institution” (Lloyd 184). She affirms that “...it is certainly the case that the history of natural history cannot be separated from the rhetorical use of language” (Lloyd 186).

Scientific fortunes were determined in part by the successful or unsuccessful use of rhetoric. Buffon had been particularly adept at attracting and pleasing a wide variety of readers through his skillful mixing of *grandes vues* (overarching philosophical considerations), well-articulated principles (whether or not he followed them), numerical calculations (even these had their place, despite his strict separation of mathematics from natural history), lively reporting of the physical characteristics and life cycles of animals, beautiful illustrations, titillating prose and high style. His concept of natural history was particularly broad (Loveland 5). The legacy he left behind when he died bore the mark of the controversy around his use of rhetoric while he lived and wrote.

Context of Buffon's and Lamarck's Writings on Humankind

The first appearance of humankind in Buffon's works is in the *Premier discours* of Buffon's grand *Histoire naturelle*, published in 1749. It contains some of Buffon's reflections on the meaning of species and the continuity of nature. The *Histoire naturelle* features a long study of man, from reproduction, fetal formation, birth and puberty to decline and death, with descriptions of the body and physiognomy as well as the five senses and variation of appearance. The last passages from Buffon's work about humankind which I shall examine occur in *Des Époques de la nature* (1778) in the seventh and final *époque*. They articulate a political vision in accordance with his findings in natural history. Lamarck began his career similarly – with an inquiry into the meaning of species – but this was related to his observations of plants in the *Flore française* (1779); only much later, after having forayed into physics, chemistry, geology, meteorology and having studied the lowliest of the animal species, did Lamarck examine the human species. His studies conclude with a synthesis of his philosophy in the *Système analytique des connaissances positives de l'homme* (1820). For this study, however, I will analyze his 1817 dictionary definition of man, which brings together his thoughts pertinent to the human species. The passages from the two naturalists have been chosen to represent 1) writing on the same topic (physical, moral, and political man); 2) writing in the same genre (natural history) and somewhat in the same sub-genre (dictionary or encyclopedia); 3) writing from the later years of each naturalist (with some early work for perspective).

The 36-volume *Histoire naturelle générale et particulière* was published between 1749 and 1788, with the last tome appearing just before Buffon's death. The man who was “probably the most renowned *savant* of his time, certainly the most widely read” (www.buffon.cnrs.fr) had many friends, including Bernard-Germain-Étienne de La Ville-sur-Ilлон, comte de Lacépède, who published the last volume of the *Suppléments* to the *Histoire naturelle* the following year. Buffon also had several enemies, particularly dating to the time when he was given the coveted position of *intendant* at the

Jardin du Roi.²² They accused him of overconfidence, pomposity, ambition, and affected grandiloquence (Loveland 10). Nonetheless, the *Histoire naturelle* sold well and was translated into five languages during his lifetime. Buffon cultivated enthusiasm for his style (Loveland 25). His natural history project outlived him, and was expanded upon, translated, and commented on for many years thereafter, by men such as Lacépède, Louis-Jean-Marie Daubenton (Buffon's collaborator), Georges Cuvier, Geoffroy Saint-Hilaire, Charles-Nicolas-Sigisbert Sonnini de Manoncourt, André-Marie-Constant Duméril, Jean-Louis-Marie Poiret, René-Primevère Lesson, Louis-Augustin-Guillaume Bosc, Anselme-Gaëtan Desmarest, and François-Marie Daudin. The enormous place that he still occupied in their natural histories years after his death is best illustrated in Lesson's title: *Compléments de Buffon* (1838). This title furthermore proves the extent to which his name had become a metonym for his work. His name could be invoked to support new research and to sell volumes. The Déterville *Nouveau Dictionnaire d'Histoire naturelle* (1816-1819) duly pays homage to him and to Linnaeus in its history of the discipline of natural history. The author of the *Discours préliminaire* compares Buffon's brilliance to that of a meteor and proposes, rather hyperbolically, "On dirait que son génie lutte avec la grandeur de la Nature" ("One might say that his brilliance rivals the grandeur of Nature." *Nouveau Dictionnaire* I, lxvii).

Lesson's *Histoire naturelle de l'homme* constitutes the first part of the first volume of the *Compléments*. Anthropological observations from his travels inform his writing. Buffon had written about the human species in both the *Histoire naturelle* and the *Époques de la Nature*, and the need existed to fine-tune and test his speculations. Lesson's *Compléments* represents one direction in which the natural history of humanity proceeded; others included anatomical approaches such as Vicq d'Azyr's studies of the human brain (Vicq d'Azyr succeeded Buffon directly in the first seat at the Académie française, with Condorcet's support). Julien-Joseph Virey, a pharmacist and medical doctor who took an interest in anthropology, published his *Histoire naturelle du genre humain* in 1801, and also participated

²² Including Réaumur... Jeff Loveland notes that Buffon published the *Histoire naturelle* outside the Académie des sciences in part to circumvent some potentially bitter criticisms of his work (Loveland 10).

in the reissue of Buffon's works. Pietro Corsi identifies him as Lamarck's first critic. Virey contributed two entries ("Animal" and "Nature") to the Détéville dictionary as well, however.

The extension of Buffon's works by these authors highlights the mission of the Détéville dictionary as a source of information for the wider public: it was a project of vulgarization²³ and application of theoretical and experimental knowledge of the natural world. Charles-Sigisbert Sonnini, who had collaborated on Buffon's natural history (quadrupeds and birds), arranged the first edition and contributed to it in 1817. The dictionary was published in thirty-six volumes between 1816 and 1819. The full title is *Nouveau Dictionnaire d'Histoire naturelle, appliquée aux Arts, à l'Agriculture, à l'Économie rurale et domestique, à la Médecine, etc. par une société de naturalistes et d'agriculteurs*. The notes on the title page include: "Nouvelle Édition presque entièrement refondue et considérablement augmentée ; avec des figures tirées des trois règnes de la nature" ("New Edition almost entirely recast and greatly expanded; with figures depicting the three kingdoms of nature"). The purpose of the second augmented edition, according to the editor, is to please a readership who welcomed the first edition with "[une] estime générale," and to respond to the encouragement of friends. The tone of the *Avis de l'éditeur* is decidedly defensive, though optimistic. The editor justifies the need for a new edition, in which, he claims, nothing uncertain or irrelevant to human purposes is included.

The form of the book is key to its utility: The three kingdoms are broken down into classes, orders, families and genera by a series of general articles. The facts ("faits authentiques") are arranged

²³ The use of this term is somewhat inappropriate in earlier contexts and may even be misleading when applied here. Jeff Loveland warns against binaries like "vulgar" or popular science and "professional" science, since it is impossible to identify a distinct "scientific community" during the Ancien Régime, and in any case, he shows that Buffon's books were aimed at and read by a diverse public which included dabblers, bibliophiles, women, priests, and members of the scientific elite, all of whom could find something to appreciate in his work, even if they also may have disagreed with it (Loveland 12-15). However, the inclusion of the "less educated class" in the dedication of the Détéville dictionary is a new development. In contrast, Jacques-Christophe Valmont de Bomare "was typical of many naturalists in recommending his extremely popular *Dictionnaire raisonné universel d'histoire naturelle* to specialists, *l'homme du monde*, and well-born youths of either sex" (Loveland 2). This series was published in five volumes in 1764.

according to a method which, the editor states, is “la plus naturelle, la plus parfaite et la plus instructive” (“the most natural, the most perfect, and the most instructive”). The public to whom the many tomes are dedicated includes both the specialist (“le savant”) and lay persons (“la classe moins instruite”). The specialist is a person who, one may guess based on the subtle phrasing, is likely not a vetted member of the scientific community. This *savant* may not have the command of Latin necessary to decode taxonomic nomenclature and may be engaged in a project of personal edification or of public oration, as suggested by the emphasis on *répertoire, mémoire, recherches, lumières*.

Le savant verra dans ce Dictionnaire un répertoire indispensable, propre à soulager sa mémoire, à l'aider souvent dans ses recherches, à lui ménager un temps précieux ; et si les observations des auteurs ajoutent à ses lumières, ce sera toujours avec cette précision, cette réserve sage que commande un tel ouvrage, qui n'est ni un *systema naturae*, ni une *collection académique*. La classe moins instruite et la plus nombreuse de la société se familiarisera avec les premiers élémens de la science de la nature ; secouant peu à peu le joug des erreurs populaires, elle profitera des fruits de l'expérience, ne négligera point les applications utiles et d'une pratique journalière, qui lui sont présentées dans ce livre.

The scholar will find in this dictionary an eminently useful repertory, fit to ease his memory, to help him in his research, and to help save him precious time; and if the contributors' observations add to his understanding, it will always be with the precision and wise reserve which a work such as this requires, being neither a *systema naturae* nor an academic collection. The least educated and most numerous social class will become acquainted with the basic elements of the science of nature; gradually shaking off the yoke of popular misinformation, this class will benefit from the fruits of experience, and will not disregard the useful applications which may be employed on a day-to-day basis, which are presented in this book (*Nouveau Dictionnaire* I, 1-2).

Hence the utility and public good, the *docere* of the project. But the dictionary also aims at the other two classical goals of rhetoric: *placere* and *movere*. The *Discours préliminaire* conveys the majesty and touching intimacy of nature, touting its illustration of human virtues while also describing the fitness of animals for the various climates in which they live, the pollinating work of insects, and the fertility of the oceans and the Amazon river basin. With a taste for the sublime, the author laments that words cannot reproduce the experience of the wilderness for the city-dweller:

Qui pourroit apprendre **aux habitans des cités** tous les charmes de cette Nature sauvage, toutes les contemplations des solitudes, des montagnes, des précipices, **toutes les pensées des temps**

et des mondes qui viennent s'écouler dans l'imagination ? Qui leur peindra le vaste Océan, les feux de la Torride, la robe émaillée du printemps, vêtement annuel de la terre, et les glaces énormes des pôles ? **Pourroit-on égaler les paroles aux sentiments qu'inspirent ces beautés immortelles ? La Nature parle au coeur ;** elle reporte notre âme vers cet état de bonheur et d'innocence qu'elle a perdu dans le vain fracas du monde. **Heureux qui médite,** loin de ses traverses, les grandeurs de la Nature, et qui, oubliant les tristes soucis de la vie, coule des jours tranquilles au sein du repos !

Who could instruct the city-dweller in all the charms of wild Nature, all the contemplations of solitary places, mountains, precipices, **all the thoughts of the epochs and worlds which flow past the mind's eye?** Who will paint for him the vast Ocean, the fires of the equatorial regions, the adorned robe of springtime, the earth's annual donning of greenery, and the enormous ice-caps of the poles? **Are there words sufficient to describe the feelings inspired by these immortal wonders? Nature speaks to the heart;** it carries the soul back to the state of contentment and innocence that we lost in the clamor of mundane existence. **Happy is the one who meditates,** far removed from the crossroads and marketplaces, on the grandeurs of Nature and who, letting go of the troubles of life, sails for many a tranquil day on the calm waters of repose (Déterville lii, my emphasis)!

Reading this passage carefully, one may glimpse how 1) natural history readership had changed, and was likely no longer composed of hobbyists and travelers, but of citizens of lesser means confined to urban areas (and universities?); 2) there existed (at least in the minds of some) an urgent need to reach, educate, and move the minds of readers at risk of suffering *moral* deprivation for lack of contact with nature; 3) the search was ongoing for language equal to the task of describing and relating natural phenomena, a process which necessarily involves the imagination, and the imagination of deep time; 4) (related to point 2) the desire to mold the minds and hearts of men, present in this text, inscribes exhortation and benediction in the form of aphorism; and 5) (related to point 3) this text bears the mark of early Romanticism, but also the tropes of Romanticism to come, particularly in its articulation of and appeal to the sublime. As Jeff Loveland remarks, beginning around the time of Buffon's *Histoire naturelle*, the sublime was less firmly associated with the three traditional styles, and "[a]s a subjective, emotionally defined quality, the sublime would ultimately menace the whole notion of formally defined style, shifting attention away from technique and decorum toward inner experience and personal perspective" (Loveland 26-27).

In the passage above, three senses are active in the perception of nature: sight, hearing, and the inner sense which is active in contemplation and in meditation. The visions of nature constitute a language intelligible to the heart; however, this metaphor itself complicates (even precludes) the simple existence of the human mind in nature. Words, speech, hearing all seem to encumber the perception of nature. “Mundane existence” is, according to the author, *loud*. Silence and meditation (perhaps predominantly visual) are proposed to be the natural state of the soul. Tension also exists in instruction, which must needs involve language. The problem of natural history (and simultaneously, its *raison d'être*) is that language is the shortcut by which most minds gain access to the treasures of nature.

There is much more to note about the publication in which Lamarck's definition of humankind is found, but the purpose in describing it here is to compare it, at least cursorily, in form and purpose, to Buffon's voluminous *Histoire naturelle*, and to begin to observe differences in reception. Then to examine Lamarck's contributions to this project is to begin to show how his biological thought harmonizes with, and even supports, the literature of man in nature, or the nature of humankind.

Buffon on Man

The first relevant passage from the *Histoire naturelle* occurs in the *Premier discours: De la manière d'étudier et de traiter l'Histoire Naturelle*. This is one of the places where we can be sure Buffon worked the surface of the text very hard to appeal to his readers (Loveland 21). The author has presented the project of natural history as a science which, because it embraces the entire universe, demands much of its practitioner: it involves much viewing and reviewing the objects of nature, a commitment to keep an open mind, and consultation of prior studies in order to compare ideas. After these conditions have been met, some conclusions may be formed:

La première vérité qui sort de cet examen sérieux de la nature, est une vérité peut-être humiliante pour l'homme, c'est qu'**il doit se ranger lui-même dans la classe des animaux**, auxquels **il ressemble** par tout ce qu'il a de matériel, et même leur instinct lui paraîtra peut-être plus sûr que sa raison, et leur industrie plus admirable que ses arts. Parcourant ensuite

successivement et par ordre les différents objets qui composent l'univers, et se mettant à la tête de tous les êtres créés, **il verra** avec étonnement qu'on peut descendre par des degrés presque insensibles de la créature la plus parfaite jusqu'à la matière la plus informe, de l'animal le mieux organisé jusqu'au minéral le plus brut; **il reconnaîtra** que ces nuances imperceptibles sont le grand oeuvre de la nature; **il les trouvera** ces nuances, non-seulement dans les grandeurs et dans les formes, mais dans les mouvements, dans les générations, dans les successions de toute espèce. En approfondissant cette idée, **on voit** clairement qu'il est impossible de donner un système général, une méthode parfaite, non-seulement pour l'histoire naturelle entière, mais même pour une seule de ses branches; car pour faire un système, un arrangement, en un mot une méthode générale, **il faut que tout y soit compris; il faut diviser ce tout** en différentes classes, partager ces classes en genres, sous-diviser ces genres en espèces, et tout cela suivant un ordre dans lequel il entre nécessairement de l'arbitraire. Mais **la nature marche** par des gradations inconnues, et par conséquent **elle ne peut pas se prêter totalement à ces divisions**, puisqu'**elle passe** d'une espèce à une autre espèce, et souvent d'un genre à un autre genre, par des nuances imperceptibles; de sorte qu'il se trouve un grand nombre d'espèces moyennes et d'objets mi-partis qu'**on ne sait où placer**, et qui dérangent nécessairement le projet du système général: cette vérité est trop importante pour que je ne l'appuie pas de tout ce qui peut la rendre claire et évidente.

The first truth which emerges from this serious examination of nature is one which is perhaps humiliating for man, which is that **he must include himself in the same class with the animals**, which **he resembles** by all his material attributes, and even their instinct may appear to him to be more certain than his reason, and their industry more admirable than his arts. Then, scanning the different objects which make up the universe in orderly succession, and placing himself chief among all created beings, **he will be astonished to see** that one can descend by nearly indiscernable degrees from the most perfect creature to the most shapeless mass, from the best animal organization to the least refined mineral ore; **he will acknowledge** that these imperceptible nuances represent the great work of nature; he will find these nuances, not only in the sizes and shapes, but also in movements, in generations, in successions of every kind. Pursuing this idea further, **we see** clearly that it is impossible to assign a general system, a perfect method, not only to all of natural history, but even to a single branch of it; since in order to make a system, an arrangement, in a word a general method, everything must be included; **it is necessary to divide this whole** into different classes, split the classes into genera, subdivide these genera into species, and all of this according to an order which is by necessity somewhat arbitrary. But **nature advances** by unseen gradations, and consequently **it cannot completely conform to these divisions**, since **it moves** from one species to the next, and often from one genus to another, by imperceptible nuances; so that there are a great number of intermediary species²⁴ and ambiguous things that **one hardly knows how to classify**, and which thereby disrupt the formation of a general system: this truth is too important not to be stressed with every proof which can render it clear and evident (Buffon 1868 I, 4-5, my emphasis).

²⁴ Or "kinds."

Truth above all: a serious study of nature reveals first a fact which the human mind cannot ignore, and to which it can hardly be indifferent – that by virtue of their anatomy, human beings, as a species, are to be regarded categorically as animals. Buffon suggests that this revelation may be humbling, or humiliating, especially considering how animals often appear to be better equipped for life; animals do not reason, but their instinct and industry apparently more than suffice in their efforts to survive and thrive. There is a strange consolation in the fact that the notion of species is tinged with arbitrariness. The truth, repeated twice in the first sentence, of man’s belonging among the animals, is softened by the end of the paragraph with the truth of the continuity of nature, that is, imperceptible nuances (to reprise Buffon’s exact words) not only separate but *join* each animal species with the next, so that between the identifiable genera and species there are some “objets mi-partis.” Buffon does not go so far as to call them individuals, animals, or organisms. But we ought to remember that two of these terms were not available to him: *individu* was always a derogatory term unless employed in its proper domain, first religious, then didactic, then scientific, reaching its peak use toward the end of the nineteenth century. As for *organisme*, it was virtually unused before 1780.²⁵

Between the opening statement about human nature being rather animal nature and the closing bit about the intermediary forms, there is a vertiginous descent into doubt about the ability of the human mind to form a right method of classification of all the “different objects which make up the universe.” The primary reason for which the mind must eschew systems is the underlying uniformity of nature; not uniformity in the sense of *lack* of difference, but rather in the sense of a *diminution* of difference; a homogeneity of difference, continuous difference, essential non-conformity. The correlated reason, to rephrase and expand upon the summary above, is the inseparability of humankind from the rest of the animals, and with them, from the rest of the natural world. Like a keystone, when placed at the top, the “most perfect creature,” the one which boasts the best arrangement of parts and

²⁵ See for example Google’s nGram viewer for “organisme” in the French corpus, 1600-2000. There is no entry for “organisme” in the *Dictionnaires d’autrefois* (ARTFL – University of Chicago online resource).

faculties, is the cipher to a continuum of entities which extends down to the most shapeless mass of matter. When Buffon insists with special emphasis (“clairement...il est impossible...non-seulement...mais même pour une seule...il faut...il faut...”) that in the general system of classification *il faut que tout y soit compris* (“it must include everything”), the hypothetical placement of humans at the head of the animal classes appears not contingent but necessary. Knowledge of natural history rests on the foundation of negation, that is, what animals lack with respect to humans. This is further supported in the introduction to the *History of the Brute Creation*: “But as the nature of man is superior to that of animals, so of that superiority we shall study to demonstrate the cause, in order that we may distinguish what is peculiar to man, from what belongs to him in common with other animals” (Buffon et al. 1792, V, 3).

On the level of grammar, the shift in subject from the beginning of the paragraph to the end parallels the idea of humankind’s abdication of exception: *l’homme (il)* “man” yields to the more general *on* “one,” which cedes to the impersonal formula *il faut* “it is necessary,” and the last sentence features *la nature (elle)* “nature (she)” as the subject. The author then sides with the truth of the indivisibility of nature against a general system of classification by attributing importance this truth, then offering to further support it with facts to make it clear and obvious. Nature itself forms the obstacle to the human attempt to organize it, and this opposition is marked off in the paragraph by the sentence beginning, “Mais la nature...”.

The natural history of the earth occupies the entire first volume of the 1749 *Histoire naturelle*. The second volume contains eleven chapters which compare animals and plants, then examine animal reproduction, after which 128 pages are devoted to humankind. After this *Histoire naturelle de l’homme* proper, the third volume examines human remains in the Cabinet du Roy: bones, whole skeletons, teeth, organs (dried, preserved, and reproduced in wax or wood), mummies, gallstones, etc., then treats

vision and hearing and the senses in general. These topics are promised by the title page and duly delivered. The natural history of man (Volume 2) opens with a conundrum:

Quelqu'intérêt que nous ayions à nous connoître nous-mêmes, je ne sçais si nous ne connoissons pas mieux tout ce qui n'est pas nous. Pourvûs par la Nature, d'organes uniquement destinez à notre conservation, nous ne les employons qu'à recevoir **les impressions étrangères**, nous ne cherchons qu'à nous répandre **au dehors**, et à exister **hors de nous** ; trop occupez à **multiplier** les fonctions de nos sens, et à **augmenter l'étendue extérieure** de notre être, rarement faisons-nous usage de ce **sens intérieur** qui nous réduit à nos vraies dimensions et qui sépare de nous tout ce qui n'en est pas ; c'est cependant de ce sens dont il faut nous servir, si nous voulons nous connoître, c'est le seul par lequel nous puissions nous juger ; mais comment donner à ce sens son activité et toute son étendue ? Comment dégager notre ame dans laquelle il réside, de toutes les illusions de notre esprit ? Nous avons perdu l'habitude de l'employer, elle est demeurée sans exercice au milieu du tumulte de nos sensations corporelles, elle s'est desséchée par le feu de nos passions ; le cœur, l'esprit, les sens, tout a travaillé contr'elle (Buffon 1749, II,429-430).

Though so much interested in acquiring a thorough knowledge of ourselves, yet I do not know if man is not less acquainted with the human, than with any other existence. Provided by nature with organs, calculated solely for our preservation, we only employ them to receive **foreign impressions**. Intent on **multiplying** the functions of our senses, and on **enlarging the external bounds** of our being, we rarely make use of that **internal sense** which reduces us to our true dimensions and abstracts us from every other part of the creation. It is, however, by a cultivation of this sense alone that we can form a proper judgment of ourselves. But how shall we give it its full activity and extent? How shall the soul, in which it resides, be disengaged from all the illusions of the mind? We have lost the habit of employing this sense; it has remained inactive amidst the tumult of our corporeal sensations and dried up by the heat of our passions; the heart, the mind, the senses, have all co-operated against it (Buffon et al. 1792, III, 317-318, my emphasis).

The attraction of human senses to external objects – the very activity which sets natural history in motion – threatens it by leading man into ignorance of his own being. Buffon's antithetical formulation of this conundrum is a longer, negative variation on the Socratic mission *connais-toi toi-même* "know thyself." It is imprinted with doubt from the beginning: doubt as to whether we really do take an interest in knowing our own species (with the subjunctive *ayions*) and doubt regarding the relative familiarity we entertain with everything else besides us (with the stylistic *je ne sçais si...*). The remedy offered for this ignorance of our own selves is *not* to read on and discover new facts in the pages of the *Histoire Naturelle* and in its illustrations. No; in fact, (the condemnation of) the overreach of the mind

via the senses is a common refrain in the *Natural History*, and it coalesces around the trope of a primitive man awakening to sensation and discovering his singular existence. This is one of several points relating to the senses over which Étienne Bonnot de Condillac sparred with Buffon in his *Traité des animaux* (1755).

After surveying the animals, Buffon returns to the question of human attributes and origins in *Les époques de la nature*, published in 1778.²⁶

Des motifs majeurs et des raisons très-solides se joignent ici pour prouver qu'elle [la population des terres méridionales par les hommes] s'est faite postérieurement à toutes nos époques, et que l'homme est en effet le grand et dernier œuvre de la création. On ne manquera pas de nous dire que l'analogie semble démontrer que l'espèce humaine a suivi la même marche et qu'elle date du même temps que les autres espèces ; qu'elle s'est même plus universellement répandue, et que si l'époque de sa création est postérieure à celle des animaux, rien ne prouve que l'homme n'ait pas au moins subi les mêmes lois de la nature, les mêmes altérations, les mêmes changements. Nous conviendrons que l'espèce humaine ne diffère pas essentiellement des autres espèces par ses facultés corporelles, et qu'à cet égard son sort eût été le même à peu près que celui des autres espèces; mais pouvons-nous douter que nous ne différions prodigieusement des animaux par le rayon divin qu'il a plu au souverain Être de nous départir ; ne voyons-nous pas que dans l'homme la matière est conduite par l'esprit : il a donc pu modifier les effets de la nature ; il a trouvé le moyen de résister **aux intempéries des climats** ; il a créé de la chaleur lorsque **le froid** l'a détruite : la découverte et les usages de l'élément du feu, dus à sa seule intelligence, l'ont rendu plus fort et plus robuste qu'aucun des animaux, et l'ont mis en état de braver les tristes effets **du refroidissement**. D'autres arts, c'est-à-dire d'autres traits de son intelligence, lui ont fourni des vêtements, des armes, et bientôt il s'est trouvé le maître **du domaine de la terre** : ces mêmes arts lui ont donné les moyens d'en parcourir toute **la surface** et de s'habituer partout ; parce qu'avec plus ou moins de précautions tous **les climats** lui sont devenus pour ainsi dire égaux.

Major motives and solid reasons combine to prove that it [the population of the southern lands by humans] was accomplished after all the epochs previously seen, and that man is in fact the great and last work of creation. Critics will certainly point out that the analogy seems to demonstrate that the human species followed the same progression and that it dates from the

²⁶ (Marie-Jean-Pierre) Flourens, the editor, notes that *Les Époques de la nature* was written thirty years after the *Théorie de la terre* and represents a great amount of research conducted in that intervening time. Flourens considers it the capstone of Buffon's Condillac 1749, „ *expériences, hypothèses, and calculs*: “Enfin le résumé profond (dans un cadre admirablement conçu : les époques de la nature) de tout ce qu'une vie entière de méditations et d'études lui avait révélé de plus digne d'être transmis aux hommes touchant la grande histoire du globe” (“Finally, the profound summary [in an admirably conceived framework: the epochs of nature] of all that an entire life of meditation and study revealed to him as most worthy of being transmitted to people regarding the great history of the globe.” Buffon 1853-1857, IX, 464). The first complete English translation appeared in April 2018.

same period as the other species; that it is even more universally widespread, and that if the epoch of its creation is after that of the animals, nothing proves that humans were not at least subject to the same laws of nature, the same alterations, the same changes. Admittedly, the human species is not essentially different from the others in terms of bodily faculties, and in that regard, its fate might have been just about the same as that of the other species; but can we doubt that we differ prodigiously from the animals by the divine light that it pleased the sovereign Being to bestow on us; do we not see that in man, matter is guided by the mind: he was therefore able to modify the effects of nature; he found the means to withstand the **harshness of the climates**; he created warmth when **cold** destroyed it: the discovery and deployment of the element of fire, due to his intelligence alone, made him stronger and more robust than any of the animals, and enabled him to face the dire effects of the **drop in temperatures**. Other arts, that is, strokes of his intelligence, furnished him with clothing, weapons, and soon he became the master of the **earthly domain**: these same arts gave him the means to span the **surface** of the earth and make himself at home everywhere; for with precaution, all **climates** became for him, so to speak, equal (Buffon 1853-1857, IX, 559-560, my emphasis).

A dialectical approach is used to debate the question of the age of the human species. Three arguments are given from an anonymous critic, “on,” (“On ne manquera pas de nous dire que...”), against the assertion that the human species is the last and crowning achievement of creation. The author responds that humans are, corporally speaking, no different from other species of animals, but that humans possess a mind by whose operations matter is rearranged and the effects of nature are modified so that the human species can inhabit, and dominate, any land no matter the climate.

This passage details human mastery of fire and provision of clothing and weapons and constitutes a reversal, substantially and grammatically, of the first passage examined. The doubts as to the vigor and dignity of the human species compared to the animals are overthrown; the evidence provided is the much wider range of the human species compared to all the others. As for the subject of the sentences, the critic “on” is answered by an authorial “nous” (“Nous conviendrons...”) which blends nearly seamlessly with the universal “nous” (that is, human beings) (“...pouvons-nous douter...ne voyons-nous pas...”) and after the colon, the subject becomes *l’homme (il)* in a list of active and passive constructions (“il a donc pu modifier...il a trouvé...il a créé...la découverte et les usages de l’élément du feu...l’ont rendu...l’ont mis en état...il s’est trouvé le maître...”). Nature is no longer the subject in this

passage and is hardly named explicitly except in “les effets de la nature.” Individual elements are substituted here and represent the challenges to human intelligence and survival: *les intempéries des climats, le froid, le refroidissement, le domaine de la terre, la surface, les climats* (“climatic harshness, cold, cooling, the earthly domain, the surface [of the earth], climates”).

The invocation of the *rayon divin* as the ultimate answer to the anonymous critic is less surprising when other elements from the passage are brought into consideration: the *rayon divin* is paralleled by *esprit* (“dans l’homme la matière est conduite par l’esprit”) and *feu* (“la découverte et les usages de l’élément du feu”). The logic of opposition to animal nature, matter, and the “element of cold” helps to bond *rayon divin, esprit* and *feu* into a single Promethean image. Fire and heat are the elements which redeem frail humankind and lift it above nature. The motif is ambiguous enough to accommodate various interpretations and appease critics on many sides.

The subtle influence of the grammar and the triumphal image of humans spanning the globe brings us to the use of the verb *parcourir*, which some scholars of Buffon have discussed in connection with description (Joanna Stalnaker) and natural language (Richard Sörman). In fact, it is pertinent to ask whether *parcourir* refers not only to the movement of the human species extending its range to the far corners of the earth, but also to the activity of the author. When the prefix *par-* is added to the root word *courir*, the resulting verb has a more abstract meaning. *Parcourir* can refer to something done with a text, and means *feuilleter* (leaf through) or *survoler* (scan). Its more concrete synonyms include *arpenter, explorer, sillonner, couvrir* or *franchir* (coordinated with an object, *un trajet déterminé*). The association of *parcourir* with texts, histories, ideas, and solutions to problems²⁷ easily could have influenced Buffon’s choice of this word. It fits the context of problem-solving because in its progress in space, the human species encountered and answered the challenge of northern winters.

²⁷ A brief examination of concordances in FRAN-TEXT illustrates these common usages.

Yet it also fits the context of the knowledge-making required to reach the conclusions which Buffon does: his research likely consisted of, in part, vast amounts of reading, including accounts from travelers to distant places.²⁸ The eyes move across a text to rapidly find and sort information. Once assembled, the information is presented once again in the form of text, to be scanned again by the reader. Buffon's commentators used a variety of terms to refer to his work, including some visual metaphors: *édifice, monument, tableau, ouvrage, système, poème* (Buffon 1853-1857, IX, 454). Cuvier attested to the labor that was invested in the *Époques de la nature*, noting that Buffon wrote at least eleven drafts of the manuscript. However, the heavy-lifting still occurs on the level of the theories and ideas presented in the text, as suggested by the architectural metaphors... or on the level of style. According to Flourens, Cuvier described the *Époques* as "vraiment sublime," and added that Buffon possessed "une force de talent faite pour subjuguier" (Buffon 1853-1858, IX, 454). One might speculate from Cuvier's comments on the number of drafts and the style and the power of the author's prose that he wished to avoid addressing the content of the *Époques*. However that may be, Cuvier lends his pen to the popular opinion of Buffon's work, even though *subjuguier* is rather strong. What is the *joug* (literally, yoke, figuratively, subjection) that Buffon threatens to impose on his readers by his eloquence? We will return to this when we examine some of their responses.

In the next two passages, Buffon's persuasive style is particularly noticeable. He uses the conditional mood, antitheses, hypotheticals, rhetorical questions, lists, and the subjunctive mood, which colors the end of the second passage with strong emotion. He mentioned the arts at the end of the passage we just saw, in connection with the mastery of fire, which are all due to man's intelligence. This power is unidirectional, and belies Buffon's assertion that humans can bring the temperature to a level suitable for human habitation, since they cannot cool the earth like they can warm it:

²⁸ Ernest Faivre attests to the method and thoroughness of Buffon's work in his *Introduction sur les progrès des sciences naturelles depuis le commencement du XIXe siècle* (Buffon 1859, I, xxii).

Je donnerais aisément plusieurs autres exemples, qui tous concourent à démontrer que l'homme peut modifier les influences du climat qu'il habite, et en fixer, pour ainsi dire, la température au point qu'il lui convient. Et ce qu'il y a de singulier, c'est qu'il lui serait plus difficile de refroidir la terre que de la réchauffer : maître de l'élément du feu, qu'il peut augmenter et propager à son gré, il ne l'est pas de l'élément du froid, qu'il ne peut saisir ni communiquer.

I could easily supply many other examples, which all serve to show that man can modify the effects of the climate he inhabits, and set, so to speak, that climate to the temperature of his liking. And what is strange is that it would be more difficult for him to cool the earth than to warm it: he can master the element of fire, which he can increase and spread at will, but not the element of cold, which he can neither grasp nor communicate (Buffon 1853-1857, IX, 589).

If the second sentence about human mastery of fire is tempered by the text before the colon, the inversion of the text *after* the colon places the emphasis on the word *maître*. This corresponds with the frequently amiable tone of the text. It does not exclude the possibility that mastery of the element of cold might one day be within reach, it only establishes the difficulty of this achievement. The parallel structure emphasizes the imbalance of this “singular” problem. With a nod to Gaston Bachelard (*La formation de l'esprit scientifique*), we note in passing that *augmenter* reverberates with a particular value: that of gold, the metal which is envied, sought with alacrity, counted, and praised in all kinds of writings, not just alchemical. In this tradition, gold and light are so closely associated as to be interchangeable. The first two letters *au-* are familiar to anyone versed in Latin as the first two letters of the word for gold.

The topos of cultivation of plants in the verb *propager* returns in the recycling of the phrase from page 593: “[A]u moyen de la greffe, l'homme a pour ainsi dire créé des espèces secondaires qu'il peut *propager et multiplier à son gré*” (“By means of grafting, mankind has, so to speak, created secondary species which he can *propagate and multiply at will*.” My emphasis). Together with the verbs *augmenter* and *multiplier*, *propager* maintains its natural meaning while also projecting power and prosperity. It reflects the emphasis back onto the subject, the human propagator of plants and fire, in its resemblance to the word *propre* (*adj.* own, proper). The verbs *saisir* (to seize, to apprehend, to understand) and *communiquer* (to communicate) from the next clause, are also “properly” human

activities insofar as they are related to opposable thumbs (and the knowledge derived from the use of these all-important fingers) and speech. The text reveals the stakes: human gain and human dignity through the manipulation (including possession, cognitive representation and communication) of the natural world.

Another element that escapes human control is the will. The last passage (cited below) hinges on the hypothetical (and modal) statement, “Et que ne pourrait-il pas sur lui-même, je veux dire sur sa propre espèce, si la volonté était toujours dirigée par l'intelligence ?” (“And what could he not regarding himself, that is, his own species, if the will were always driven by the intellect?”). Compared to Buffon’s use of the conditional in the bold gesture, “je donnerois aisément plusieurs autres exemples,” this “que ne pourrait-il pas sur lui-même” is less confident, but equally rhetorically muscular, and the two hyphens have the odd effect of highlighting the words signifying “he himself could,” as if to answer the question. The precision which conflates *lui-même* with *sa propre espèce* is condensed in the phrase *sa nature* in the next sentence: “Qui sait jusqu'à quel point l'homme *pourrait* perfectionner *sa nature*, soit au moral, soit au physique ?” (“Who knows to what degree man *could* perfect *his nature*, be it morally or physically?” My emphasis). The form of *pouvoir* (*n.* power, *v.* to be able to) in the present conditional form *pourrait* is no longer framed in the negative here, as in *que ne pourrait-il pas*, but rather is posed hyperbolically to suggest immanent *and* infinite potential. The full passage reads as follows:

Et que ne pourrait-il pas sur lui-même, je veux dire sur sa propre espèce, si la volonté était toujours dirigée par l'intelligence ? Qui sait jusqu'à quel point l'homme pourrait perfectionner sa nature, soit au moral, soit au physique ? Y a-t-il une seule nation qui puisse se vanter d'être arrivée au meilleur gouvernement possible, qui serait de rendre tous les hommes, **non pas également heureux, mais moins inégalement malheureux**, en veillant à leur conservation, à l'épargne de leurs sueurs et de leur sang par la paix, par l'abondance des subsistances, par les aisances de la vie et les facilités pour leur propagation ? Voilà le but moral de toute société qui chercherait à s'améliorer. Et pour le physique, la médecine et les autres arts dont l'objet est de nous conserver, sont-ils aussi avancés, aussi connus que les arts destructeurs enfantés par la guerre ? Il semble que de tout temps l'homme ait fait **moins de réflexions sur le bien que de recherches pour le mal** : toute société est mêlée de l'un et de l'autre; et comme de tous les sentiments qui affectent la multitude, la crainte est le plus puissant, les grands talents dans l'art de faire du mal ont été les premiers qui aient frappé l'esprit de l'homme, ensuite ceux qui l'ont

amusé ont occupé son cœur, et ce n'est qu'après un trop long usage de ces deux moyens de faux honneur et de plaisir stérile, qu'enfin il a reconnu que **sa vraie gloire est la science, et la paix son vrai bonheur**.

And what could he not achieve regarding himself, that is, his own species, if the will were always driven by the intellect? Who knows to what degree man could perfect his nature, be it morally or physically? Is there any nation that could boast of having established the best possible government, which would exist to make all men **not equally happy, but less unequally unhappy**, by concerning itself with their preservation, sparing them their sweat and blood by maintaining peace, by an abundance of food, by a certain affluence, and by means of its propagation? This is the moral duty of any society which would seek to improve itself. As for the physical, are anatomy, medicine, and the other arts the aim of which is to preserve us, as advanced, as well understood as the destructive arts birthed by war? It seems that mankind has always made **fewer efforts to contemplate good than to seek evil**: every society is a blend of both; and since of all the emotions that affect the multitude, fear is the most powerful, the great talents in the art of doing evil were the first to impress themselves on the mind of man, followed by those which amused him and occupied his heart, and it was only after employing for far too long these two means of false honor and sterile pleasure that, finally, he recognized that **his true glory is knowledge, and peace his true felicity** (Buffon 1853-1857, IX, 594, my emphasis).

I would like to highlight the rhetorical structure of Buffon's political thought in this passage. On the use of the chiasmus in rhetoric, Catherine Fromilhague comments in *Les Figures de style*, "Globalement, il est l'une des figures les plus efficaces de la rhétorique, qu'elle soit argumentative ou littéraire. L'esthétique classique a souvent recours à lui" ("On the whole, it is one of the most effective rhetorical figures, in both debate and literature. Classical aesthetics often employ it." Fromilhague 41). In *Rhetorical Figures in Science*, Jeanne Fahnestock explains that the chiasmus has been identified by scholars of ancient texts as far back as the third millennium BCE, and that identification and explication of this figure (in constellation with the antimetabole and antithesis) is productive in biblical exegesis and in the study of Greek rhetoric (Fahnestock 126). Buffon combines lexical and grammatical chiasmi in his assertion (or hope) that, finally, man has recognized that "sa vraie gloire est la science, et la paix son vrai bonheur" ("his true glory is knowledge, and peace his true felicity.") Furthermore, the chiasmus is balanced in length: two "halves," or cola, of equal number of syllables are arranged on either side of the comma (they would be *hémistiches*, if this were poetry, and if they consisted of six syllables, not seven).

Fromilhague notes that the chiasmus invites many possible interpretations related to its symmetry and closure.

Here is mine: The two “inner” terms – *la science* and *la paix* – are brought together as though to establish their mutual interdependence or even competition, to reconcile them, or to imply a causal relationship between them. These are the stronger of the four terms; they are unqualified (unlike *gloire* and *bonheur*, of which false copies are implied to exist by the apposition of the adjective *vrai[e]*) and self-sufficient, existing independently of any other entities. Their coordination as, alternatively, predicate and subject, also underscores their strength. The two “outer” terms – *sa vraie gloire* and *son vrai bonheur* – take their places logically, since glory proceeds from and *precedes* its possessor, and happiness is considered to be an ultimate good, if not *the* ultimate good. Ultimate, that is, in both senses of elevated and final. Moreover, *bonheur* puts the polish on the figure because it has two syllables and a masculine rhyme (it ends in -r), versus the unstable, monosyllabic, feminine *gloire* (it ends in -e). The inwardness of this figure serves to bring the passage to a satisfying end, as many final lines of poetry do: the purposes (expository and aesthetic) of the period (to borrow the classical term) are fulfilled in a harmonious synthesis of ideas.²⁹ The pivotal term *et* decides the interpretation in favor of plenitude, not opposition. Opposition (knowledge vs. peace) is implied 1) lexically, by the fact that the four terms of the chiasmus are all different; 2) contextually, since violence constitutes mankind’s favorite study, as described in the passage; 3) obliquely, since knowledge and peace are sometimes understood as antagonistic; 4) rhetorically, since the chiasmus is often used to invert causal relationships or trap the reader in his or her anticipated conclusions: indeed, many chiasmi are formed around the logical pivot *not X, but rather Y*. This is the case in the final figure we shall examine closely in this passage.

²⁹ Rather than, as is sometimes the case in poetry, a *chute*, or surprising end discreetly prepared by the preceding lines.

The formulation of the “modern” vision of *less inequality* is rendered in a classical French style which is common to oratory and to poetry. In the first of the two parts which constitute the paragraph cited above, and which both begin with *Et...* (“*Et que ne pourrait-il pas...*” and “*Et pour le physique...*”), momentum is gained in the long sentence right before the statement, “This is the moral duty of any society which would seek to improve itself.” The moral duty is that members of this nation shall be “non pas également heureux, mais moins inégalement malheureux” (“not equally happy, but less unequally unhappy”). This statement of Buffon’s political vision is formulated using a combination of epanados (from the Greek, meaning “a repeating of words,” referring to repetition from beginning to middle or middle to end of a sentence) and polyptoton (or *dérivation*) (from the Greek, meaning “many” (*poly*) + “a falling, fall” (*ptosis*), referring to a case or grammatical inflexion of any kind, and more broadly, to the repetition of a word in a different form). According to Fromilhague, the epanados is often used in explanations or verbal proofs, but also marks an oratory style (Fromilhague 31). In her description of the polyptoton, she cites Pierre Fontanier, who “associates this figure with a formulaic and sententious style, which is the case of the Alexandrine verses which he cites” (Fromilhague 32). In Buffon we find eight (seven, by eliding the silent *e* in the adverb *également*) syllables separated from ten (nine) by the comma, but the two sets of terms introducing the repetition (“non pas”/ “mais moins,” that is, “not”/ “but (rather)”) are equal in length, helping to balance the contrast unrealistic/realistic.

In this phrase we glimpse a pre-Benthamite formulation of the public good, which in the context of our inquiry into Buffon’s definition of mankind, refers to the desirable condition of humans in society. Buffon is promoting a vision of social harmony based on raising the quality of existence for the most unfortunate. It is perhaps a common Enlightenment mantra of respect for basic human dignity. The reader is left to wonder about the state of equal felicity: why abandon the idea? Are we to accept some variation in human experience as a fact of nature, analogous to the way that some plants germinate in conditions favorable to their survival and some do not?

Buffon is elaborating a vision of heat economy which connects his concept of the cooling earth with human ingenuity to withstand the cold. Turning once again to the context in which the rhetorical figure occurs, we read:

Y a-t-il une seule nation qui puisse se vanter d'être arrivée au meilleur gouvernement possible, qui serait de rendre tous les hommes, **non pas également heureux, mais moins inégalement malheureux**, en veillant à leur conservation, à l'épargne de leurs sueurs et de leur sang par la paix, par l'abondance des subsistances, par les aisances de la vie et les facilités pour leur propagation ? Voilà le but moral de toute société qui chercherait à s'améliorer.

Is there any nation that could boast of having established the best possible government, which would exist to make all men **not equally happy, but less unequally unhappy**, by concerning itself with their preservation, sparing them their sweat and blood by maintaining peace, by an abundance of food, by a certain affluence, and by means of its propagation? This is the moral duty of any society which would seek to improve itself.

Buffon's peace consists (to draw upon the discussion of the element of fire already undertaken) in the conservation of energy, whether in the form of sweat and blood, for example by renouncing war and thus sparing the lives of soldiers. The triad "l'abondance des subsistances...les aisances de la vie...les facilités pour leur propagation" ("an abundance of food... a certain affluence...means of its propagation") represents a kind of derivation, from victuals to the quality of life which they sustain, to the technologies which assure the abundance of luxury. Buffon seems to be recording the transmutation of material energy into intellectual vigor and mastery of nature. We have already seen how the idea of "propagation" indexes both bounty of vegetable food and human mastery of the environment. Best government practices feature the logic of *preparation* in favor of *progeny*, that is, creating circumstances favorable to the future offspring. And it is postulated in the subjunctive and marked by doubt: "Is there any nation that could boast of having established the best possible government...?" The best days of humankind, for Buffon, will be assured by a better-informed future society, in which men's reflections turn to good and to the conservation of human life by medical means and by knowledge of the natural world.

Lamarck on Man

Lamarck's definition of man resembles, in its hyperbole, Buffon's definition of the elephant.

And yet, where Buffon's inclination is to heap superlatives of positive value upon the pachyderm,

Lamarck's evaluation of man is increasingly ambivalent:

HOMME. Être intelligent, qui communique à ses semblables sa pensée par la parole, et qui est le plus étonnant et le plus admirable de ceux qui appartiennent à notre planète. Dominateur à la surface du globe qu'il habite, dominateur même des individus de son espèce, leur ami sous certains rapports, et leur ennemi sous d'autres ; il offre, dans ses qualités et l'étendue de ses facultés, les contrastes les plus opposés, les extrêmes les plus remarquables. Effectivement, cet être, en quelque sorte incompréhensible, présente en lui, soit le *maximum* des meilleures qualités, soit celui des plus mauvaises ; car il donne des exemples de bonté, de bienfaisance, de générosité, etc., tels qu'aucun autre être n'en sauroit fournir de pareils ; et il en donne aussi de dureté, de méchanceté, de cruauté et de barbarie même, tels encore que les animaux les plus féroces ne sauroient les égaler.

MAN. An intelligent being, who communicates his thoughts to his fellow creatures in spoken language, and who is the most astonishing and most admirable of all those belonging to our planet. Dominating the surface of the globe which he inhabits, even dominating other individuals of his kind, in some cases their friend and their enemy in others; he displays in his qualities and the range of his faculties, the most striking contrasts, and the greatest extremes. Indeed, this rather incomprehensible being embodies either the *maximum* of the best qualities, or that of the worst; for he provides examples of goodness, benevolence and generosity, etc., such as no other being could give; and at the same time demonstrates such harshness, viciousness, cruelty and even ruthlessness, that the most ferocious animals pale by comparison (Lamarck 1817a, 270).

To the ear, this paragraph is marked by frequent punctuation which at times seems breathless because of its syncopation. The first sentence is rife with consonant sounds *t*, *p*, and *k*, and the two qualifiers *intelligent* and *étonnant* rhyme. Words containing the consonant sound *p* include *pensée*, *parole*, *plus*, *appartiennent*, and *planète*. Significantly, the first two words refer to the faculties which distinguish man from other beings (cognition and speech) and the repetition of the superlative *plus* is used to reinforce *étonnant* and *admirable*.

The designation of man in the first sentence as an intelligent being accomplishes two things: Man is removed (promoted?) to the status of *être* from his common (former and future) place among the animals (as an *Animal intelligent* in dictionary and encyclopedia entries before and after the

Déterville entry); secondly, the qualification *intelligent* announces the theme of the definition.³⁰

Whereas locomotion supplied the theme in Lamarck's definitions of animals, faculties (intelligence, language) and actions (obliquely replaced by their qualities: generosity, cruelty, etc.) inform the definition of man at the beginning of the article.

The second sentence contains more repetition of the consonant *m*, which is repeated in *dominateur, même, ami, ennemi, meilleures, mauvaises*. The tone of this sentence is established by the first word, *dominateur*. The consonant sound, the hyperbole, and the superlative nature of the definition to this point are reprised in the word *maximum* (with a maximum of *ms*), which is further (and bizarrely?) underscored by virtue of the fact that it is in italics. This term, as described in the various editions of the *Dictionnaire de l'Académie française*, was originally a borrowing from Latin used in mathematics. Suggestively, *maximum* was indicated to be pronounced similarly to the conflation *maxime – homme*. By 1798, it had made its way into a few other locutions. By the time Lamarck employed it, it probably still evoked mathematics for his reader, but would also have a ring of moral judgment about it, as it was used to qualify virtue and ridicule.³¹ In any case, there is no obvious reason why he should set it off with italics, so it is an interesting choice. I will later show how it highlights Lamarck's use of antithesis, as indicated by Lyndia Roveda (see below).

The back-and-forth oscillation between extremes is reminiscent of Pascal's thoughts about man and emphasizes the distance between the observer and the object of the observation. The third-person description, no doubt for consistency of tone and objectivity, is betrayed at times by the dismay of the observer: *cet être...incompréhensible* is hardly softened by the intervening *en quelque sorte*. We will

³⁰ Contemporary dictionaries provide a surprising spectrum of entries for "HOMME" or "HUMAN," some appearing retrograde with respect to their 19th-century counterparts. A survey of the nouns heading up or otherwise grounding these entries includes: *adulte*, being, *espèce*, *être*, hominid, humankind, *individu*, mammal, *mammifère*, man, people, person, *personne*, *primate*... The most circular of all is the first definition in the Merriam-Webster dictionary.

³¹ "Maximum," *Dictionnaire de l'Académie française*, 5^e éd. (1798) et 6^e éd. (1835). *Dictionnaires d'autrefois*. The ARTFL Project, University of Chicago. artfl-project.uchicago.edu.

note as well that Pascal uses the same adjective in his description of man as a *monstre incompréhensible* (Pascal fr. 121, 111). What began as a dispassionate description can no longer pretend to be so. Indeed, the incomprehensible nature of man seems to proceed not from the impossibility of understanding him as a natural (that is, material) being, but as an intelligent one and a moral one (later in the article, the adjective used is *inconcevable* [Lamarck 1817a, 271]).

A survey of the terms reveals those which contribute to the superlative nature of the definition: *maximum, le plus* (no fewer than eighteen iterations), *dominateur, aucun autre, sublimité, supériorités, le moins*. This last term, found in the phrase “celui [de tous les êtres] qu’il connaît le moins” (Lamarck 1817a, 271), changes the pitch of the definition in contrast with the far outnumbering *plus*. The transition highlights humankind’s greatest failure, and leads naturally into the next section, in which Lamarck addresses the ways in which humans are subject to nature. This, somewhat surprisingly, is a source of hope and comfort to the author:

Ce que j'aperçois ici de plus positif, c'est que, sous le rapport de son être physique, l'*homme* est entièrement assujetti aux lois de la nature ; qu'il agit toujours conformément à ces lois et par elles, en sorte que, dans des circonstances parfaitement semblables, ses actions se ressemblent constamment ; qu'il fait partie des corps vivans, et que, conséquemment, il se trouve soumis aux lois qui les régissent, qu'il tient aux animaux par l'organisation, et qu'à cet égard il offre, dans l'ensemble des parties de la sienne, le terme des perfectionnemens que la nature est parvenue à donner à l'organisation animale ; qu'en effet, la sienne est la plus compliquée de toutes les organisations existantes, celle même dont les organes particuliers les plus importans sont aussi les plus composés, celle, en un mot, qui permet la plus grande extension aux facultés les plus éminentes.

What I perceive to be the most positive in all of this is that, with respect to his physical nature, *man* is entirely subject to the laws of nature, by which he acts and to which his actions conform, so that, given identical circumstances, his actions are predictably the same; that he is one among many living bodies, and therefore, he is subject to the same laws that govern them, that his organization makes him akin to the animals, and in that regard he represents, in every part of his organization, the pinnacle of perfection which nature has succeeded in giving to animal organization; that in fact, his is the most complex of all existing organizations, in which the most

important organs are also the most highly composite, the one which permits the highest degree of flexibility to the most eminent faculties (“Homme” 271).³²

We should now add to the list of superlatives the terms *entièrement, toujours, parfaitement, constamment, le terme, perfectionnements, toutes, éminentes*. Lamarck has effectively climbed back up the ladder (*échelle*) which he established two paragraphs earlier³³ to find man at the top owing to his faculties and most complex organs. In this way, then, man is a model for man, and the anthropocentric ideology is preserved. It must be noted, however, that while the *échelle* usually refers to the increasing complexity of animal species, organized in a kind of chain, Lamarck establishes it as a hierarchy within a people of any country. Among them, one finds those whose simplicity, ignorance and coarseness greatly contrast with the knowledge, ideas, judgment and sophistication of those at the pinnacle of human achievement. The repetition of adverbs ending in *-ment* seem to force a generalized rule from the observations: *entièrement, conformément, parfaitement, constamment, conséquemment*. They stifle contradictory evidence.

³² My translation adopts masculine third-person-singular pronouns in keeping with historical conventions in the English language. The reader may substitute “we, us, our, ours,” etc., for an equally valid and powerful gloss of the text.

³³ “Enfin, quant à l'étendue de ses facultés d'intelligence, il présente, dans chaque pays civilisé, parmi les individus de son espèce, une disparité considérable entre le plus brut ou le plus grossier, le plus pauvre en idées et en connoissances, le plus borné dans son esprit et son jugement, et qui se trouve presque au-dessous de l'animal, et le plus spirituel, le plus riche en idées et en connoissances diverses, en un mot, celui dont le jugement est le plus solide, ou dont le génie, élevé et profond, atteint jusqu'à la sublimité ! Comme ceux qui n'appartiennent ni à l'un ni à l'autre de ces deux points extrêmes, remplissent nécessairement les degrés intermédiaires, c'est donc une chose réelle et incontestable, ainsi que je l'ai dit dans mes ouvrages, que l'existence d'une échelle graduée, entre les individus qui composent l'espèce humaine, échelle d'une étendue énorme, et qui offre successivement des supériorités très-marquées dans le nombre des idées acquises, la variété des connoissances, et la rectitude de jugement de ces individus. V. l'article INTELLIGENCE, où je dirai encore un mot sur cet objet” (“Finally, with respect to the extent of his intellectual faculties, there is, in every civilized country, among the individuals of his species, a great disparity between the one who is most brutish or boorish, who is most lacking in ideas and knowledge, who is the most limited in his mind and judgment, and who is thus practically inferior to certain animals, and the one who is most brilliant, who has a wealth of ideas and various kinds of knowledge, in a word, he whose judgment is solid or whose intellect, in its ascendancy and depth, touches upon the sublime! Since those who belong at neither pole of these two extremes necessarily occupy the intermediate degrees, the existence of a graduated *scale* among the individuals which compose the human species is therefore, as I have said in my works, a real and incontestable thing, a scale which covers an enormous range and presents a succession of pronounced superiorities in the number of acquired ideas, the variety of knowledge, and the rectitude of judgment of those individuals. See the entry INTELLIGENCE, where I will have more to say on this subject.” Lamarck 1817a, 270-271).

A long footnote (see Appendix A) on the selfishness of human nature, which begins on the first page of the definition and continues onto the second, serves as a margin of doubt, a place for Lamarck to forecast the future of humankind, and a tribunal for condemning human treatment of other species, plant and animal, as well as our own. The sound of a gavel or death knell is subtly imitated in the staccato « *nues, stériles, inhabitable, désertes*, which describes regions of the globe which human activity has utterly depleted. This broad and long view contrasts greatly with the last few paragraphs of the definition, in which migration to cities is presented as the undoing of humankind. The desolation of the globe is likely to be mirrored within the individual human organism over time: Exposure to the rigors of the urban environment over several generations of city-dwellers will produce feebleness, disease, and degeneration. Here, Lamarck's concerns echo the dictionary's general introduction.

The qualities listed above reference humankind: the first adjective (*nu*) evokes an intimate human experience as well as a state of the vegetation in the landscape perceived in the mind's eye, and the last term adopts a human perspective because it announces absence. The adjective *nu* is rife with human implications: the 1798 *Dictionnaire de l'Académie française* even reiterates that "il ne se dit proprement que de l'homme" ("it only properly describes man."). It is synonymous with innocence and guilt all at once, through the filter of religious connotation. Perhaps the biblical fall and pictorial representations of it inform and overshadow Lamarck's use of this term (and the others, as well): before, Adam and Eve were naked in the garden, innocent and unknowing, and they were covered by the lush foliage of the artist's imagination; afterwards, a single leaf poorly replaced their former raiment. The sterility of the land after the fall follows closely on the heels of nudity in both myth and in Lamarck's phrasing. *Inhabitable* is not a word that appears in the Bible, while *désert* certainly does. In fact, through the many editions of the dictionary of the Academy, the same two locutions are given in the very short entry for *inhabitable*: *Maison inhabitable. Pays inhabitable*. In terms of syllables, the four

words of the epitrochasm³⁴ count 1-2-4-2, and the rhythm is further enforced by the alternating consonant sounds of the words: *n-str-n-srt*. Within the term *inhabitable* there is internal echo: *i-ab-i-ab*. Palpable tension (complicity?) exists throughout and between terms which typically make reference to the human, and their application here to indicate the state of the vegetation and even perhaps animal life. The last term represents the ultimate desolation, both semantically and by its careful placement in this poetic figure.

This potential desert future contrasts starkly with the lush visions of nature in both the introduction to the Déterville dictionary and Lamarck's own *Système analytique des connaissances positives de l'homme*, published later. I suggested above that the relegation of the bleak forecast to a footnote to the text afforded it some freedom to exceed the bounds of the present time and the narrow topic of the human definition. On the other hand, it may simply be that Lamarck otherwise would have exceeded a word limit. Whatever it was that prompted the setting up of textual boundaries hardly matters; they do not work. Visually, the footnote intrudes upon the text. In this way, the definition is doubled, not by cross references leading to other entries, but by internal dissonance. This doubling creates a cut where there had been a scale: the spectrum of qualities represented by members of the human species is, in a sense, internalized, and it becomes incumbent upon each human being to direct a course of action between the selfish drive and the reins of reason. The scale (or ladder) extends up and down on either side of an embodied dilemma. What is not clear is whether one's position on the ladder is fixed.

³⁴ "L'épitrochisme. Suite de termes brefs, dans une structure à éléments de même rang (juxtaposés ou coordonnés). [...] Cette figure d'amplification imprime un rythme à l'énoncé, ce qui explique sa présence plus importante en poésie. Elle est l'une des marques de ce langage des passions inhérent aux figures..." ("Epitrochasm. Sequence of brief words, coordinated or juxtaposed with one another in a structure containing elements of the same kind. [...] This amplifying figure imparts a rhythm to the phrase, which explains its greater presence in poetry. It is one of the characteristic marks of this language of the passions [poetry] which is inherent in the figures..." Fromilhague 26-27).

The possibility of mobility on the ladder should logically be addressed in the next part of the article, where the analysis of human faculties and their sources is undertaken. But the mental model that Lamarck constructs is a somewhat incoherent mixture of terms, some of which are well defined and some of which are not. Lamarck refers to *intelligence, raison, facultés, fonctions, instinct, puissance, effet, actes, actions, penchans, sentimens, émotions, essence, and organisation* (intelligence, reason/rationality, faculties, functions, instinct, power, effect, acts, actions, penchants, feelings, emotions, essence, and organization). He authored three other articles in the Détéville dictionary which may support his analysis: FACULTÉ, INSTINCT, and INTELLIGENCE. The meanings of these terms must be understood in context, in relation to his other works or those of his peers or predecessors, or in connection with commonly accepted usages.

Lamarck frames this discussion as an outline of the “bases” and types of “considerations” essential for constructing a natural history of man (Lamarck 1817a, 272). In approaching it this way, he can discuss the state of knowledge about human nature – its givens and unknowns – without explicit reference to any theory except his own – in a way that leaves the field both predetermined *and* wide open for contributions. Frustratingly, Lamarck states, “On pourroit même ajouter qu'il [l'homme] est de tous les êtres qu'il a pu observer, celui qu'il connoît le moins ; et qu'il ne parviendra jamais à se connoître véritablement que lorsque la nature elle-même lui sera mieux connue” (“One could even add that he [man] is, out of all the beings that he may have observed, the one that he knows the least well ; and that he will never succeed in truly knowing himself until nature itself will be better known to him.” Lamarck 1817a, 271). The polyptoton formed around the verb *connaître* (*connoît, se connoître, connue*) highlights an active voice “knower” and two passive construction “knowns,” man himself, and nature. This has the effect of doubly distancing man from nature: first by distancing him from himself as known, and second by distancing him from himself as knower.

Comparing Buffon's and Lamarck's Styles

Chiasmus, Antithesis, and Other Arguments Using Figures

In the close readings above, I highlighted some stylistic features of the prose of each author: grammar, word choice, narration/voice, rhythm and meter, use of citation, themes, figures of speech and figures of thought, including tropes. In France, the study of rhetoric evolved over time to exclude everything *but* tropes (simile, metaphor, metonymy, synecdoche, etc.) (Fahnestock 31-32). This was made possible by the division in eighteenth- and nineteenth-century curricula between the grammar class (Latin, Greek, tropes, reading Homer and Virgil) and the rhetoric class (reading Cicero and writing *suasoriae*, or persuasive speeches). In 1870, when education became a nationwide project, the study of *belles lettres* (literature) was retained, but rhetoric was dropped, and with it, figures other than tropes. In 1985, Danielle Bouverot critiqued the “restrictive vision [of rhetoric] in our time” which also ignores the way in which style is not just a function of the talent of the rhetor, but a function of its ability to move the reader or audience according to stable rules which vary only according to genre and subject (Bouverot 64). Only in recent decades has rhetoric been reconstituted.

The division between figures and topics in classical rhetoric is even older. In ancient treatises, elocution (the expression of arguments in appropriate and effective language) often appears as an afterthought to invention (the discovery or recovery of potential premises) and disposition (the optimal arrangement of the premises given the arguer's immediate situation), whereas in reality, the three parts are not only *not* independent, but also not necessarily sequential. As Fahnestock shows, “it is even possible to discover arguments stylistically [...] by using the figures generatively, allowing the form to find the content” (Fahnestock 31). Ways of reasoning and persuasion which are traditionally rhetorical have influenced scientific practice, with the result that identifiable figures of thought or speech exist in scientific writing: antithesis, incrementum, gradatio, antimetabole, ploche, polyptoton. Each chapter in her book illuminates scientific debates structured around one of the figures.

Antithetical constructions are common to many genres and may be identified as figures of thought and speech such as antérisagoge, paradox, oxymoron, enthymeme, contrapositum, contentio, and contrarium. At its most basic, an antithesis combines one or two pairs of terms which are semantic opposites, in a parallel structure, to sharpen contrasting ideas. Furthermore, as Fahnestock explains: “a well-structured antithesis places at least one pair of its contrasted terms (or its only pair in the case of single antitheses) at the end of its parallel parts in positions of emphasis” (Fahnestock 50).

Buffon’s use of antithesis in his *Discours sur le style* neatly illustrates how to battle using antitheses. As Bouverot points out, several antitheses guide the development of his notion of style in this passage:

[D]es esprits cultivés, mais stériles [...] ont des mots en abondance, point d’idées ; ils travaillent donc sur les mots, et s’imaginent avoir combiné des idées, parce qu’ils ont arrangé des phrases, et avoir épuré le langage quand ils l’ont corrompu en détournant les acceptions. Ces écrivains n’ont point de style, ou, si l’on veut, ils n’en ont que l’ombre. Le style doit graver des pensées : ils ne savent que tracer des paroles.

Sterile minds, however cultivated [...] have words in abundance, and ideas none; they work therefore on words, and imagine that they have combined ideas, because they have arranged phrases, that they have purified language when in fact they have corrupted it by distorting meanings. These writers have no style, or, if you will, they only have its shadow. Style must etch thoughts: they only know how to scribble words (Bouverot 64).

Bouverot notes the opposites *idées/mots* (ideas/words) and *pensées/paroles* (thoughts/words) and passes over others: *cultivés/stériles* (cultivated/sterile), *abondance/point* (in abundance/none), *épuré/corrompu* (purified/corrupted), *graver/tracer* (etch/trace or write). Identifying these opposites helps to reconstruct the double antithesis in the last sentence: *graver des pensées/tracer des paroles*. The full figure allows a much richer (and more ambiguous) reading of Buffon’s idea of style, which manifests itself in its material effects. The verb *graver* may be used figuratively to describe the process of memory-making in the mind (*graver un souvenir dans la mémoire*), but its natural sense is engraving or etching of the kind which is used to render language or image as immutable as the stone it is carved into, or to diffuse it widely through the means of the printing press. Thoughts and spoken words are

intangible, but they are not equally so here: thoughts may be recorded and disseminated by material means (engraving, printing), but one who traces speech is only waving a finger in the air. The image of style endorsed by Buffon is more akin to a pointed tool (*un burin*, a burin or metal chisel) than a quill, a feather, a bit of lace, or anything remotely associated with ornamentation.³⁵ This strong meaning of style-as-printing-plate also distances it from penmanship or spelling which are, to a greater degree, idiosyncratic. In summary, style defined by its effects appears to be not only the result of thought, but its producer and guarantor. Buffon aligns his notion of style with the expanding field of book-printing and its effects on the advancement of science.

In contrast to the “take-home point” salience of Buffon’s oratorical antitheses, subtler uses of rhetorical figures underpin scientific reasoning in some notable ways. Fahnestock identifies argumentative uses of gradatio and antimetabole in Lamarck’s *Philosophie zoologique*. Antimetabole uses parallel structure and corrects a widely held belief with an inversion. Lamarck’s antimetabole, conceptualized as *organization influences actions/actions influence organization*, constrains the possible explanations of cause and effect to two and tips the balance toward the latter (Fahnestock 152-154). The mechanism by which animal bodies change is reinforced several times in this way (Fahnestock counts five instances of antimetabole).

Lamarck also used what he called “l’art des distinctions” in his thinking about the distribution of species, and whether or not there could be gaps between them. Lyndia Roveda explores this “art” in her study of Lamarck’s use of antithesis. In the context of Lamarck’s classification of animals, antithesis helps to “consolidate the hypothesis of transformism” by “establishing extremes in the graduated series of living beings,” on the one hand, and serves as a “trusted method for artificially distinguishing various classifications” on the other, which is the only way to comprehend the immensity of nature (Roveda

³⁵ Fahnestock summarizes some studies in the history of rhetoric which uncover a lost meaning of *ornamentum* as furniture, apparatus, and equipment, so that “ornament” “may be more closely related to the notion of essential gear or “armament” than it is to “adornment” (Fahnestock 18).

145). Animal species are distributed first of all according to their greater or lesser complexity of organization; essentially, they are ranked according to their resemblance to the maximum or minimum degree of observable animal organization. A continuous *animal* series³⁶ is formed in this way which corresponds to Lamarck's notion that the productions of nature are elaborated over the course of time. Then, drawing upon his experience developing a dichotomous key for plant identification, Lamarck proceeds in the same way with animals, distinguishing species, genera, families and so forth using pairs of contradictory opposites. These pairs of opposites "...offrent l'avantage de déterminer des critères absolus de vérité et de fausseté. Le choix d'une alternative exhaustive est donc lié chez lui à la nécessité d'établir des coupes soit infalsifiables (dans la classification) soit absolues (dans la distinction des règnes de la nature)" ("...have the advantage of fixing absolute criteria of truth and falsehood. The choice of an exhaustive alternative is therefore related for him to the necessity of establishing genuine and reliable breaks (in classification) and absolute breaks (in distinguishing between the different kingdoms of nature)." Roveda 149). Both of these procedures are realizable in the flexible form of the antithesis: "La possibilité où l'impossibilité d'une médiation entre les opposés offre une distinction cruciale pour toute argumentation utilisant des antithèses connues ou formant de nouvelles antithèses" ("The possibility or impossibility of the existence of intermediates between the opposing terms offers a crucial distinction for any argument which uses commonly accepted antitheses or which forms novel ones." Roveda 149).

Lamarck's use of antithesis in both plant and animal classification as observed by Roveda should be considered a key characteristic of his natural philosophy. In his definition of mankind, Lamarck proceeded by the same method – without, however, establishing specific examples of the greatest and least among humans – to describe the maximum and minimum of human potential:

... [L'homme] offre, dans ses qualités et l'étendue de ses facultés, les contrastes les plus opposés, les extrêmes les plus remarquables. Effectivement, cet être, en quelque sorte

³⁶ As opposed to a grand unified *scala naturae* featuring all natural objects. Lamarck's placement of mammals as the *maximum* and coral polyps as the *minimum* in the animal series was not yet commonly recognized by his peers (Roveda 153).

incompréhensible, présente en lui, soit le *maximum* des meilleures qualités, soit celui des plus mauvaises ; car il donne des exemples de bonté, de bienfaisance, de générosité, etc., tels qu'aucun autre être n'en sauroit fournir de pareils ; et il en donne aussi de dureté, de méchanceté, de cruauté et de barbarie même, tels encore que les animaux les plus féroces ne sauroient les égaler.

... [Man] displays in his qualities and the range of his faculties, the most striking contrasts, and the greatest extremes. Indeed, this rather incomprehensible being embodies either the *maximum* of the best qualities, or that of the worst; for he provides examples of goodness, benevolence and generosity, etc., such as no other being could give; and at the same time demonstrates such harshness, viciousness, cruelty and even ruthlessness, that the most ferocious animals pale by comparison (Lamarck 1817a, 270).

The word *étendue* (“range”) is used four times in the definition as Lamarck emphasizes the extent of variation among members of the human species with respect to the development of their faculties. In this example, it is clear that intermediates between the extremes do in fact exist, to which Lamarck attests (Lamarck 1817a, 271). However, as I pointed out at the end of my close reading of Lamarck’s definition of man, after the observation of variation among members of the human species, the ensuing illustration of human faculties is quite unclear.

The passage from the beginning of Buffon’s *Natural History of Man* (Volume 2) which closely resembles Lamarck’s striking skepticism regarding the ability of man to know and be known reads (as cited above): “Quelqu’intérêt que nous ayions à nous connoître nous-mêmes, je ne sçais si nous ne connoissons pas mieux tout ce qui n’est pas nous” (“Though so much interested in acquiring a thorough knowledge of ourselves, yet I do not know if man is not less acquainted with the human, than with any other existence”). With the same reference points, Lamarck’s passage is inflected in a manner very different from Buffon’s. They agree that the human species is the least well known of all the objects of human understanding. They disagree, apparently at least, in the perspective needed to redress this ignorance. For Buffon, the answer lies in freeing the soul from the illusions of the mind by summoning the *sens intérieur* (see citation above). For Lamarck, any potential *future* understanding of human nature is conditional upon a better (anterior future) understanding of nature.

The implicit human/nature antithesis reaches the pitch of paradox in the grammar of Lamarck's statement, "On pourroit même ajouter qu'il [l'homme] est de tous les êtres qu'il a pu observer, celui qu'il connoît le moins ; et qu'il ne parviendra jamais à se connoître véritablement que lorsque la nature elle-même lui sera mieux connue" ("One could even add that he [man] is, out of all the beings that he may have observed, the one that he knows the least well ; and that he will never succeed in truly knowing himself until nature itself will be better known to him."). At the same time, hypothetical space is opened in the affinity (rather than antithesis) between the verbs *observe* and *know*. Furthermore, although there appears to be an impasse between knowing nature and knowing oneself, the starting point of knowledge is not complete ignorance, but impoverished or partial truth (suggested by the adverb *véritablement* ["truly"]). Finally, although the attainment of pure knowledge is postponed by the future projection, its possibility is not altogether denied. The paradox of ignorance is resolved with the help of time.

If Lamarck was given to thinking and arguing using antitheses, his use of figures is often more understated than Buffon's. In Buffon's writing, figures associated with elevated verbal art forms (oratory, poetry), such as epanados, chiasmus, and rhetorical questions, lend confidence and luster to the optimistic humanism that constitutes his natural history. In Lamarck's writing, there appears to be a genuine attempt at clarity and plainness, but clauses follow one after the other in moments when the exposition of ideas becomes difficult or passion for the subject mounts, so that when Lamarck concludes a paragraph-long sentence (generally a list) with, "en un mot...," the reader would do well to keep breathing. Many sentences are choked at the very beginning by a comma after a modifier. Sometimes, though rarely, a pronoun appears to have more than one possible antecedent. In short, his writing does not retain the marks of *un style recherché*. Direct references to his own work in the dictionary article point to a figure already disappearing from the text, whereas Buffon looms in most lines of his. In this critical moment for the genre – the passing of the torch from Buffon to Lamarck – it would seem that,

along with the disappearance of *a way of relating to a reader of natural history*, something or someone else is gradually being excluded, perhaps the reader.

Style: Composition, Reception, Criticism

In addition to what I observed in the analysis above (what I saw in the text), I will examine Buffon's and Lamarck's perspectives on composition (what they thought is in the text), and how their work was received by their readers (what their readers perceived to be in the text). I delve more into Buffon's *Discours sur le style* and consider the implications of Lamarck's writing about the role of imagination in literature and science. This affords a fuller picture of the style of each author, since style contributes to the communication of values alongside the communication of ideas: values which may be understood, ignored, misunderstood, shared or rejected.

Buffon on Style

When the Académie française accepted Buffon into the company of other *belles-lettristes* he modestly acted surprised that he, a natural historian, should receive this honor. But his education at the Collège Jésuite des Godrans beginning in 1717 almost assuredly included courses in Latin grammar and rhetoric, and his law studies in Dijon beginning in 1723 would have expanded his knowledge of the topics and contributed to his argumentative prowess. He proved to be a good student of classical rhetoric. His induction speech, later published as the *Discours sur le style*, reprises themes and employs forms common in Greek, Latin, and early modern French style manuals. It also reveals the tension between the work of the natural historian and that of the rhetorician. In it, Buffon proposes what Sörman terms "ambitious preparation" (Sörman 147), which includes a rational plan and much time spent considering one's subject in different lights and in all of its intricacies. The well-conceived plan allows the thought to bloom (*éclore*) quite naturally, with minimal further effort on the part of the writer, who may now take pleasure in the fruits of his labor:

[Lorsqu'il] se sera fait un plan, lorsqu'une fois il aura rassemblé et mis en ordre toutes les pensées essentielles à son sujet, il s'apercevra aisément de l'instant auquel il doit prendre la plume, il sentira le point de maturité de la production de l'esprit, il sera pressé de la faire éclore, il n'aura même que du plaisir à écrire : les idées se succéderont aisément, et le style sera naturel et facile [...] (Buffon 1872,).

[W]hen he has made a plan, when once he has gathered and arranged all the essential thoughts on his subject, he will perceive at once and with ease at what point he should take up his pen; he will feel his ideas ripening in his mind; he will hurry to bring them to light, he will find pleasure in writing, his ideas will follow one another readily, his style will be natural and easy [...] (trans. Durant, 524).

The botanical metaphor is tightly wound through the passage, so that the orator is heard to be strewing blossoms on his audience even as he imparts the secrets of style. The choice could be motivated by the phrase *la culture de l'esprit* ("the culture of the mind." Buffon 1872, 14) which occurs in the opening, referring to one of two elements of eloquence, as well as Buffon's insistence that his work is unadorned, save for the ornaments of nature itself (Buffon 1872, 13). Speaking to philologists and literati, he matches metaphor to his epideictic register; it is his moment to shine. The better known (and frequently quoted and analyzed) aphorism of Buffon's – "Le style est l'homme même" – comes from this same speech (Buffon 1872, 24). A few more quotes from the speech will help to elucidate its meaning and its place in Buffon's professed method of composition.

The author's breadth of knowledge, the singularity of the facts and the novelty of the discoveries presented in a work are, Buffon avers, *hors de l'homme* ("external to man"). They may be picked up by more dexterous hands and rendered in a more elevated, noble and sublime style. Only the "infinite number of truths" in this same work garner a long-lasting readership and admiration for its author. These truths include "intellectual beauties" which Buffon says are just as useful and perhaps more precious to the human mind than those which comprise the subject matter: "Or un beau style n'est tel en effet que par le nombre infini des vérités qu'il présente. Toutes les beautés intellectuelles qui s'y trouvent, tous les rapports dont il est composé, sont autant de vérités aussi utiles, et peut-être plus précieuses pour l'esprit humain, que celles qui peuvent faire le fond du sujet" ("A beautiful style

owes its designation as such to the infinite number of truths it presents. All of the intellectual beauties found in it, all of the relations which compose it, are truths which are as useful, and perhaps more precious for the human mind than those which may form the subject matter." Buffon 1872, 23-24).

Now the truths deriving from the disposition of the ideas in elegant discourse demand nothing less than good faith and the coordinated exercise of all of one's intellectual faculties at once (Buffon 1872, 22).

One is supposed to write what one thinks (is genuinely persuaded of) and also perhaps *how* one thinks ("si l'on écrit comme l'on pense")! And *how* is one to think? Experience comes first, leading to knowledge, then meditation and contemplation, and the goal of this mental exercise is to "imitate nature in its progress and its labor":

L'esprit humain ne peut rien créer ; il ne produira qu'après avoir été fécondé par **l'expérience et la méditation ; ses connaissances** sont les germes de ses productions : mais **s'il imite la nature dans sa marche et dans son travail**, s'il s'élève par **la contemplation** aux vérités les plus sublimes, s'il les réunit, s'il les enchaîne, s'il en forme un tout, un système par **la réflexion**, il établira sur des fondements inébranlables des monuments immortels.

The human mind cannot create anything; it becomes productive only after having been fertilized by **experience and meditation; its knowledge** is the seed of its productions: but **if it imitates nature in its progress and its labor**, if it raises itself through **contemplation** to the most sublime truths, if it joins them, strings them together, forms a whole, a system out of them through **reflection**, it will establish immortal monuments on unshakeable foundations (Buffon 1872, 18-19).

To the imitation of nature is joined a natural tone, never forced, corresponding to the degree of generality or universality one achieves in one's thoughts (Buffon 1872, 23). The tone is sublime when genius illuminates each object, when attractive coloring combines with an energetic outline, when each idea finds its expression in a vivid and well-chosen image, and when the sequences of ideas form a harmonious and moving *tableau* (Buffon 1872, 23). The sublime only occurs when a very great subject is treated, such as man and nature (Buffon 1872, 24). Buffon does not clearly separate these two, but rather lumps them both together as the (singular) object of history, philosophy, and poetry. But each mode has a special relationship to the sublime: History depicts man, and the tone is sublime when the

portrait is drawn of the greatest among men; philosophy reaches the sublime when it enters into topics such as the laws of nature or the soul; poetry and oratory, in treating great subjects, should never fail to be sublime in tone (Buffon 1872, 24-25).

These statements of Buffon's support a stronger reading of his predication "le style est l'homme même."³⁷ The project of rhetoric, at least as far back as Aristotle's treatment of it, was a project to both understand the meaning of being human and additionally to apply this understanding in a variety of social situations. A passage from a style manual popular enough to see three editions, *La Rhétorique, ou les Règles de l'éloquence, par M. Gibert*, clarifies the aim of rhetoric: "Car la Rhétorique étant l'adresse de gouverner les Hommes par la parole dans les actions de la vie, les connoissances essentielles qui procurent ce talent, sont étroitement liées avec la connoissance du cœur humain." ("Rhetoric being the art of governing men by speech in all their life's conduct, the knowledge essential for procuring this talent is closely related to the knowledge of the human heart." Gibert 14). Buffon's famous and frequently scrutinized predicate can be suggestively mirrored by its mathematical equivalent ($A=B$, therefore $B=A$): "L'homme est le style même." This inversion attunes Buffon's reader to his treatment of the human species throughout his oeuvre.³⁸ Buffon's political vision is expressed in rhetorical figures which simultaneously epitomize that vision, as seen above. They are more than suggestions for the progress of civilization toward a more prosperous future; they constitute a *model* for human life, that is, life in the intimate forum of one's own heart. This is perhaps the threat to which Cuvier alluded when he wrote that Buffon possessed "une éloquence faite pour subjuguier" (Buffon 1853-1858, IX, 454).

³⁷ They do not, as Bouverot demonstrates, warrant a reading of Buffon as a precursor to the Romantics.

³⁸ Bouverot supports this reading as well: "Tout est organisé autour de la notion d'humain, et rejoint cette interrogation fondamentale pour le moraliste : qu'est-ce que l'homme ? d'où vient sa grandeur ? Buffon pense particulièrement aux académiciens, mais sans doute aussi à l'homme en général, tel qu'il a l'habitude de le situer au plus haut dans l'échelle des êtres vivants. [...] Ce que Buffon définit, c'est l'homme par le style" ("Everything is organized around the notion of the human, and is part of the moralist's fundamental question: What is man? Whence comes his dignity? Buffon is thinking of academicians in particular, but probably also mankind in general, whom he habitually places at the top of the hierarchy of living beings. [...] What Buffon defines is mankind through style." Bouverot 63).

Reader Responses to Buffon

Étienne Bonnot de Condillac found fault with Buffon's ideas *and* the style in which they were expressed. His contempt is informed and sometimes more precise than that of other critics, who generally resented the way that Buffon's style actively appealed to readers' imagination and emotions (Loveland 47). Condillac obliquely accuses Buffon of spreading falsehoods like a disease in the conclusion to his *Traité des animaux*: "Il est peu d'esprits assez sains pour se garantir des imaginations contagieuses" ("There are few minds sane enough to preserve themselves from contagious imaginations." Condillac 2009, 49). Condillac lists thirty-one questions prompted by inconsistencies in Buffon's treatment of human and animal sensation. He points out the temptation to use ill-defined terms in "philosophical language": "Il n'est que trop ordinaire aux philosophes de croire satisfaire aux difficultés, lorsqu' ils peuvent répondre par des mots qu'on est dans l'usage de donner et de prendre pour des raisons: tels sont *INSTINCT*, *APPÉTIT*. Si nous recherchons comment ils ont pu s'introduire, nous connoîtrons le peu de solidité des systèmes auxquels ils servent de principe" ("It is rather too common among philosophers to think they have satisfactorily dealt with difficulties when they are able to respond with words that one usually employs and mistakes for reasons: such is the case with *INSTINCT* and *APPÉTITE*. If we search for how they could have slipped in, we will discover the frailty of the systems that are based upon them." Condillac 2009, 20). Two paragraphs form a parody of a "philosopher who ambitions immense success" and poke fun at textual posturing, such as exaggerating the difficulty of the subject, making a show of thoroughly examining the questions and revealing secrets, repeating old principles under the guise of new discoveries, accepting dubious evidence, and stopping short of achieving one's goal but concluding with haste and attesting to the completeness of the work.

As for style, Condillac says that this would-be philosopher babbles when reasoning, then throws in some "périodes artistement faites, où l'on se livre à son imagination sans se mettre en peine du ton qu'on vient de quitter et de celui qu'on va reprendre, où l'on substitue au terme propre celui qui frappe

davantage, et où l'on se plaît à dire plus qu'on ne doit dire. Si quelques jolies phrases, qu'un écrivain pourroit ne pas se permettre, ne font pas lire un livre, elles le font feuilleter, et l'on en parle" ("artistic phrases, where flights of imagination disrupt the tone of the passage, where a more striking word is substituted for the proper term, where more is said than ought to be. If some pretty sentences, that a writer would do well to leave out, do not entice people to read the book, they at least get them to leaf through it and its popularity spreads by word of mouth." Condillac 2009, 50). Finally, Condillac accuses the philosopher of the ultimate stroke of vanity: he says to himself that his hypotheses form "le système le plus digne du Créateur" ("the system most worthy of the Creator"). Touché. D'Alembert remarked that Condillac killed the taste for systems.³⁹

Other critics joined him on this point. Buffon's style "became a metonymy for imagination," and criticism of the high style in which he expressed his philosophical *grandes vues* took aim at the *grandes vues* themselves, and at the amateur readership whose attention was captured by such passages (Loveland 50). Some critics censured Buffon's style because it humored literati, who might have seen redundancy, high style, hyperbole, and such as affirmations of the value of their literary or poetic preoccupations. In general, Buffon's calculated success among many different types of readers was what irked them. To the extent that Buffon invested his *Histoire naturelle* with genuine interest in his subject and sincerity of thought, he no doubt felt personally attacked when its style (and everything else with it) came under fire. However, as Loveland and Bouverot point out, "le style est l'homme même" notwithstanding, Buffon's identification with his style is problematic, indeed too simplistic. Attempts to conflate the two should be carefully scrutinized.

³⁹ Voltaire also derided this trend in his *Dissertation sur les changements arrivés dans notre globe* (1746), writing, "Il faudrait plus de temps que le déluge n'a duré pour lire tous les auteurs qui [...] ont fait de beaux systèmes ; chacun d'eux détruit et renouvelle la terre à sa mode, ainsi que Descartes l'a formée : car la plupart des philosophes se sont mis sans façon à la place de Dieu ; ils pensent créer un univers avec la parole" ("One would need more time than the flood lasted to read all the authors who [...] have made beautiful systems; each of them destroys and creates the earth in his own way, like Descartes: most philosophers have casually taken God's place; they believe they can create a universe with words." Voltaire 1877-1885, XXIII, 226).

Some of Buffon's readers adopted a good faith response to his work. Some of them excused his grandiloquence, saying that he probably got swept away by it himself (Loveland 47). In the 1980s, Buffon scholarship largely ignored the literary qualities of his work in favor of figuring out his ideas. Recent studies highlight some of the theoretical aspects of Buffon's work in relation to his style by paying close attention to the author-reader rapport in the genre of natural history. Studies like these approach natural history as both a science and a literary genre involving many layers of meaning.

Wilda Anderson explored Buffon's concept of error in her 1999 article on Buffon's philosophy in the *Époques de la nature*. She shows how Buffon's understanding of truth in natural history could be (and was) perceived as error in the natural sciences. From some of the same passages of the *Discours sur le style* and the *Époques* cited above, Anderson relates Buffon's style to his philosophy of facts and truth, concluding that "A relationship is a fact, a measurement is not," and that "Truth exists for a natural historian not in the objective external world, then, but in the mind of the reader. A level of precision that cannot be accepted by a reader is therefore accurate, but it is not truth" (Anderson 697). Truth entails, indeed it *is*, "an act of transformation of the world, not a passive reception of information" (Anderson 701).

Joanna Stalnaker brings the tension inherent in natural history into focus in her analysis of description as an arena of competing truth claims during the late Enlightenment. Epistemological and aesthetic concerns drove the sciences and the belles-lettres apart, and descriptive practices were divided between science and literature as we distinguish them today. Stalnaker proposes that description, as an essential practice in Buffon's natural history, can serve as a basis for "an account of his concept of literary style that is grounded in his natural philosophy" (Stalnaker 2010, 34).⁴⁰ Her argument shows how Buffon "reversed a traditional epistemological hierarchy according to which description was

⁴⁰ As opposed to Jeff Loveland's account of Buffon's rhetorical considerations. Stalnaker criticizes Loveland's "traditional conception of literary style as an ornamental manipulation of rhetorical figures that can be added or removed depending on the polemical context" (Stalnaker 2010, 33). Together with Stalnaker and Fahnestock, I advocate a broader and deeper understanding of rhetoric.

nothing but an imperfect definition” (Stalnaker 2010, 36). His and Daubenton’s position ran counter to that of Linnaeus and other “nomenclaturists” in its insistence that “nothing is well defined but that which is exactly described,” and that definitions were prone to be “abstract, intellectual, and arbitrary.”⁴¹

Linnaeus’s work has been a center of interest for scholarship of science and philosophy; Canguilhem, Foucault, Lorraine Daston and many others have examined the impact of his systematics and of Buffon’s and others’ critiques of his method. The language and methods of classification of natural entities (minerals, plants, animals, etc.) were a matter of great contention in eighteenth-century France. Lamarck’s first publication, the *Flore française*, appeared in 1779, rather in the thick of the debate over Linnaean systematics, which began some thirty years earlier in France when Linnaeus’s taxonomies were made available in Latin with French equivalents of the names. Lamarck’s method attracted Buffon’s attention, and thereby, the French-speaking world’s. As Richard Sörman points out in his article on Buffon’s reaction to Linnaeus, the heart of the matter resides in how valuable abstract language is as a tool for understanding and describing reality (Sörman 142). Sörman summarizes Buffon’s objection: “The use of a limited number of criteria [plant leaves and reproductive organs] to describe nature, or the principles of nature, thus implies for Buffon a disjunction between representation and reality. We must use language to represent nature, he says, and it actually seems to be a matter for Buffon of how to present nature to his readers, that is, in concrete terms, how to make it *present* to his readers” (Sörman 143).

Buffon condemned language which only the initiated and the specialists could use to communicate with one another. Stalnaker aptly summarizes Buffon’s aesthetic when she recalls his condemnation of descriptive writing as “a form of death for the writer, the reader, and representation itself” (Stalnaker 2003, 217). She shows how Buffon gives preference to painterly writing as a way to

⁴¹ Buffon, *Histoire naturelle* (Paris: Imprimerie Royale, 1749-1767), vol. I, pp. 25, 54. Cited in Stalnaker 2010, 36.

blend impressions received by the observer through more senses than just the eyes, in a kind of poetry which relies less on a succession of words and word-images than on a vibrant back-and-forth between the object and the observer, establishing both in a hypothetical mutual and synchronic presence to each other. Buffon implicitly references the esthetic of the visual arts in his *Discours sur le style* when he qualifies good writing: “Bien écrire, c’est tout à la fois bien penser, bien sentir, et bien rendre” (“To write well is to simultaneously think well, feel well, and render well.” Bouverot 64). This echoes Sörman’s conclusion and Anderson’s reading of Buffon’s natural history as “relativistic – both with respect to facts, and [...] to readers” (Anderson 700).

However, Stalnaker assures us of Buffon’s commitment to language rather than visual art by affirming his penchant for the temporal progression of language. The writer, not the painter, can produce scenes which flow from one to the next. In fact, like a modern film producer, the writer has the ability to control and guide the perspective of the reader/viewer. This analogy helps us to grasp Buffon’s full ambition:

A génie égal, l’écrivain a sur le peintre le grand avantage de disposer du temps et de faire succéder les scènes, tandis que le peintre ne peut présenter que l’action du moment ; il ne peut donc produire qu’un étonnement subit, une admiration instantanée, qui s’évanouit dès que l’objet disparaît.

Even if only equally talented, the writer has a great advantage over the painter in that he may use time to move from scene to scene, while the painter can only portray the action of a single moment; he can therefore produce no more than a sudden awe, instantaneous admiration, which vanishes as soon as the object disappears (Buffon et al. 1750, I, 40).

The nature of the written work is such that it produces, according to Buffon, and although this may be counterintuitive to us, a more memorable experience of the object.

The way memory works in Buffon’s method of composition is analogous to that of the orator or performer. The facts are gathered, sorted, ordered, then recalled and exposed. In the quote above from the *Discours sur le style*, Buffon lists some of the elements of oratory: invention, arrangement or disposition, style, memory, delivery. Among these “five canons of rhetoric,” the role of memory is

doubled and its most important work precedes all the others except invention: The selection of *un plan* (invention) is followed by the (re)collection and arrangement of facts (memory, disposition), and, following a spark of inspiration which consists in recognizing that the general idea is 'ripe' for harvest (or just about to blossom), memory assumes a passive role ("les idées se succèderont aisément"), and the recitation unfurls apparently effortlessly. The "natural and easy" style is achieved through preparatory work. From the preparatory work of the author to the echo in the mind of the reader, memory is a kind of super-medium.

The point of contact between writer and reader in the act of reading seems to recede into vague and distant memory or memories. Perhaps it is resolved into multiple elements of common experience. This helps to account for the feeling of being seen while reading, and for the simultaneous activity of understanding, resonating with, and critiquing the text. Nancy Easterlin associates several distinct and simultaneous cognitive functions with the "interpretive speculation" and "reflection" occasioned by rendering a judgment upon a work of art (Easterlin 1999). Brett Cooke notes that Easterlin "virtually equates reflection with consciousness itself, a consciousness which is further sensitized by art, especially literature" (Cooke 6, Easterlin 2001). Easterlin's understanding of aesthetics helps to put the literary critic and the cognitive scientist in dialogue in a way that retrospectively affirms Buffon's vision for natural history and highlights avenues of interaction between eighteenth-century natural history and nineteenth-century realist fiction (see chapters 2 and 3).

The experience for the writer in the act of writing may be one of summing up memory or memories and expressing them in forms (written/spoken/read/heard language) which do not materially resemble the forms that produced them in the first place. The imperfectly suggested sensation is shored up by the concurrence of the intelligence. As Cooke writes, again regarding Easterlin's essay, "Syncretic thought is one of the defining characteristics of art. Each word or note or other artistic element is affected by more factors than any quantifiable survey can include" (Cooke 5). I understand

this to mean that the selected word or phrase combines intellectual ratification with primeval suggestion. The words and phrases also possess a materiality and a history which do not coincide with individual experience, conscious or otherwise.

Scholarship at the intersection of language and scientific knowledge records the use of poetic modes of language in scientific texts from the Renaissance to the present. Robert R. Hoffman documents studies on the use of metaphor in science, studies which largely agree that “imagery, models, analogies, metaphors and scientific theories are all interrelated” (Hoffman 328), and that, furthermore, metaphors are necessary to science because “metaphor is needed in order to conceive and recognize similarities, and for that reason may be the only way we *can* talk about new conceptions...” (Hoffman 338). Judith Schlanger also locates metaphor in scientific innovation and its expression: “l’emprunt des termes en fonction de leur commodité allusive reste permanent et inévitable” (“the borrowing of terms based on their allusive convenience remains permanent and unavoidable.” Schlanger 12). The implication is that the liminality of knowledge which comes through the senses and to which words are applied (to transmit this knowledge) constitutes the vulnerability of such knowledge to error, even pleasant error, such as is produced, sometimes intentionally, in poetry.

The danger, as Gaston Bachelard pointed out in response to Buffon, is the tendency of the mind to associate primitive values with novel sensory experience.

On commettrait d’ailleurs une grave erreur si l’on pensait que la connaissance empirique peut demeurer dans le plan de la connaissance rigoureusement assertorique en se cantonnant dans la simple affirmation des faits. Jamais la description ne respecte les règles de la *saine platitude*. Buffon lui-même a désiré cette expression prudemment plate dans les livres scientifiques. Il s’est fait gloire d’écrire avec uniformité, sans éclat, en laissant aux objets leurs aspects *directs*. Mais cette volonté si constante de simplicité a des accidents. Soudain, un mot retentit en nous et trouve un écho trop prolongé dans des idées anciennes et chères ; une image s’illumine et nous convainc, avec brusquerie, d’un seul coup, en bloc. En réalité, le mot grave, le mot clef n’entraîne que la conviction commune, conviction qui relève du passé linguistique ou de la naïveté des images premières plus que de la vérité objective... (Bachelard 1934, 51-52).

We would moreover be committing a serious error if we thought that empirical knowledge could remain at the level of rigorously assertoric knowledge by restricting itself to the simple

affirmation of facts. Description never respects the rules of *healthy banality*. Buffon himself wished this deliberately banal, flat language to be used in scientific books. He prided himself on having a featureless and unadorned style of writing, which left objects to be seen *directly*. Yet this enduring wish for simplicity can come to grief. A word will suddenly reverberate in us and find too lingering an echo in cherished, old ideas; an image will light up and persuade us outright, abruptly, and all at once. In reality, a serious, *weighty* word, a key word, only carries everyday conviction, conviction that stems more from the linguistic past or from the naivety of primary images than from objective truth... (Bachelard 2002, 52-53).

Bachelard continues by explaining that certain “concepts préscientifiques à noyaux inconscients” exert a powerful influence over the observer, distorting the object, and creating logical connections where no such connections may demonstrably exist.

Words seem to pass through memory (aural, visual, and otherwise) on their way to the intellect, and may awaken emotions and associations related to any of the past instances of those words once perceived by the mind. In the case of expression, words come with a “linguistic halo” which guides the delegation of one word as a particular condensation of meaning to be communicated. As Schlanger notes regarding the “density of the word” (*vocable*):

Nous pensons à travers des mots, à l’aide des mots, et peut-être aussi contre eux ; un concept, vu par le petit bout, c’est aussi un vocable. Mais chaque vocable a sa densité propre ; il n’est pas seulement le pion net et sans bavure que constitue le symbole mathématique : bien délimité, transparent, exactement ajusté à son usage. Le vocable n’a pas cette perfection bien limée du symbole, il déborde la convention qui l’emploie et autant que possible le fixe. Il la déborde pour la raison simple qu’elle ne l’a pas engendré.

We think in words, with the assistance of words, and perhaps also despite them; a concept, when you get right down to it, is also a term. But each term has its own specific density; it is more than the neat and smoothly contoured token which is the mathematical symbol: clearly defined, transparent, perfectly fitted for its purpose. The word or term does not have the same shiny perfection of the symbol, it extends beyond the implicit convention which prescribes its usage and attempts to pin it down. It does so for the simple reason that convention did not beget it (Schlanger 11).

Language constitutes the plasticity or elasticity of knowledge and forges the connection between poetry and science. The choice of terms used to organize and represent the panoply of living things, their relationships and their parts, their behavior, and their habitats, involves negotiation between the familiar and the unfamiliar (in the mind of the natural historian, but also between his mind and that of

his reader), and occasions some accidental allusions. Most of the time the slippage is probably minor (the hue or shade of the intended object is altered in translation), but occasionally the representation is oblique enough that the fact, when later observed *in situ*, may be overlooked. The term, like a drawing of a flower in a book of plant taxonomy, must both contain and deny all the particular instances of the thing which it represents or exemplifies.

Passing the Torch: Natural History After Buffon

Some of Buffon's readers eagerly anticipated that Lamarck would, following Buffon's death in 1788, "revive Natural History as a vision of the unity of Nature, and of its organizing principles" (Corsi 2005, 17). Lamarck remained in Paris during the Terror and sought to mediate the controversy between the various newly-created institutions and their members, but naturalists in Paris and in the countryside gravitated toward methods and approaches exemplified by Cuvier and Lavoisier (Corsi 2005, 23). As Burkhardt notes, Lamarck at this time "sought to define for himself a special role – that of naturalist-philosopher – at a time when his contemporaries were inclined to be skeptical both of the utility of such a role and Lamarck's own ability to fulfill it" (Burkhardt 1977, 12). A year after Sonnini's brain child, the *Nouveau dictionnaire d'histoire naturelle* came out, Georges Cuvier's brother, Frédéric, published a rival dictionary, the *Dictionnaire des sciences naturelles* (1805). Two visions of the new field of *biologie* diverged.

Compared to the vocal publicity surrounding Buffon's works, the silence with which Lamarck's theories were met has sometimes suggested to his biographers and indeed, to Lamarck himself, that there was a tacit conspiracy against him (Burkhardt 1977, 14). It is more likely, however, that for the reasons mentioned above, that is, because of Lamarck's largely unsuccessful attempt to mediate between his colleagues, and his attempt to unify the physical sciences, and because his colleagues (both friends and enemies) actually *shared* some of the principles which led Lamarck to a belief in transformism (inheritance of acquired characteristics, for example), they simply weren't interested in his

philosophy (Burkhardt 1977, 1, 38; Gillispie 1960, 268). Cuvier wrote in 1832 that “nobody thought [the] systematic part [of his zoological works was] dangerous enough to warrant an attack” (Cuvier 1832, xx). He tended to synthesize at a certain distance from the facts informing his hypotheses. While for him, this was essential to the work of the natural philosopher, for his detractors, many of them favorable to Condillac’s philosophy, it smacked of system-building. Condillac looked forward to a time when men had acquired enough facts as to render the imagination obsolete (Burkhardt 1977, 39). But as Burkhardt points out, how was one to know when that time had come?

Lamarck on the Imagination

Describing any kind of science as a corpus of principles and their consequences properly deduced from observed facts, Lamarck adds that genius (*le génie*) is needed to establish these principles and derive their consequences. (Lamarck 1809, II, 417) Ingenuity consists of a powerful imagination – the same as forms the glory of literature and eloquence – which is “dirigée par un goût exquis, et par un jugement très rectifié, nourrie et éclairée par une vaste étendue de connoissances, enfin, limitée par un haut degré de raison” (“guided by exquisite good taste, and by excellent judgment, sustained and enlightened by great breadth of knowledge, and lastly, kept in check by a robust reason.” Lamarck 1809, II, 415). In fact, Lamarck refers to the imagination no fewer than 59 times in the *Philosophie zoologique*, and included a section devoted to the imagination. In this section, he specifically addresses the necessity of imagination for progress in the sciences, as well as the dangers of an imagination which is permitted to operate outside the set of objects found in nature. Lamarck decries the errors, abuses, and phantasms (*erreur, abus, idées fantastiques, merveilleux, fantasme, and produit monstrueux* are the terms he uses) of the unchecked imagination in eleven places. Contentious hypotheses are described as products of the imagination, but while nature confirms the truth of some of them (such as vital orgasm (Lamarck 1809, II, 36) and spontaneous generation (Lamarck 1809, II, 80), he rejects others as unfounded and unnecessary to explain the phenomena (e.g., global catastrophe (Lamarck 1809, I, 90):

Lamarck thinks that local catastrophes such as earthquakes and volcanic eruptions are more plausible and sufficient to have caused species discontinuity in the fossil record).

The imagination is, however, guaranteed in some ways by nature itself. It arises and is mobilized by the exercise of human intelligence. Simple ideas drawn from sensory experience are combined to form complex thoughts. Even in the most outlandish imaginings, Lamarck asserts, it is possible to discern their source in nature itself. Like Buffon, he denies the possibility of the creation of novel ideas in the human mind.⁴² They are, instead, combinations of simpler ideas or contrasts with those ideas. (Lamarck 1809, II, 413) The idea of infinity is one such “acquired” idea, being derived from human observations of finite things (Lamarck 1809, II, 412).⁴³ Finally, it is possible to weed out error by comparing imagined realities to what is observed in nature.

Although Lamarck appears to have redeemed the imagination for science, he still accuses the imagination of producing the most seductive errors and binds it to the other faculties to limit its

⁴² Buffon, at least, was aware of the semantic slippage occasioned by the verb *créer* (to create), commonly used outside of the biblical context of Creation: “Il faut se souvenir que [l’]inspiration divine a passé par les organes de l’homme ; que sa parole nous a été transmise dans une langue pauvre, dénuée d’expressions précises pour les idées abstraites, en sorte que l’interprète de cette parole divine a été obligé d’employer souvent des mots dont les acceptions ne sont déterminées que par les circonstances ; par exemple, le mot *créer* et le mot *former* ou *faire* sont employés indistinctement pour signifier la même chose ou des choses semblables, tandis que dans nos langues ces deux mots ont chacun un sens très-différent et très-déterminé : créer est tirer une substance du néant ; former ou faire, c’est la tirer de quelque-chose sous une forme nouvelle ; et il paraît que le mot créer appartient de préférence, et peut-être uniquement, au premier verset de la Genèse, dont la traduction précise en notre langue doit être : *Au commencement Dieu tira du néant la matière du ciel et de la terre...*” (“One must remember that divine inspiration came through human organs; that his words have been transmitted to us in a feeble language, lacking precise terms for abstract ideas, so that the interpreter of this divine speech was often obliged to use words the connotations of which are only determined by the circumstances; for example, the word *create* and the word *form* or *make* are employed interchangeably to signify the same or similar things, while in our languages these two words each have a very different, very precise meaning: “to create” is to beget something from nothing; “to form” or “to make” is to derive it from something in a new form; and it would seem that the word *create* belongs particularly and perhaps uniquely, to the first verse of the book of Genesis, of which the precise translation in our language must be: *In the beginning God begat from nothing the matter of the heavens and the earth...*” Buffon 1853-1857, 9, 475).

⁴³ The usefulness of this example extends beyond the demonstration of how the imagination instructs the human mind. Lamarck’s transformism beyond species boundaries requires the revision of the accepted age of the earth, which is something that he retained from Buffon’s natural history. Lamarck revived the old earth theory in 1801 in his *Système des animaux sans vertèbres*; Burkhardt judges that Lamarck probably gauged it to be thousands or millions of *centuries* old (Burkhardt 2013). Buffon had suggested that the earth was much older than five thousand years – perhaps as many as 75,000 years (Loveland 12, following Roger) or seven million, according to Anderson’s reading of his *Époques de la nature* – but the general opinion did not begin to change until the 1830s.

potential for epistemic deviation. He also circumscribes the fields in which imagination is active and necessary, comparing their purposes and the results of their failures:

Si la littérature émeut, anime, plaît, et fait le bonheur de tout homme en état d'en goûter le charme ; la science lui cède en cet égard, car elle instruit froidement et avec rigidité : mais elle l'emporte en ce que non-seulement elle sert essentiellement tous les arts, et qu'elle nous donne les meilleurs moyens de pourvoir à tous nos besoins physiques, mais, en outre, en ce qu'elle agrandit solidement toutes nos pensées, en nous montrant dans toute chose ce qui y est réellement, et non ce que nous aimerions mieux qui y fut. L'objet de la première est un art aimable ; celui de la deuxième est la collection de toutes les connaissances positives que nous pouvons acquérir. Les choses étant ainsi, autant l'imagination est utile, indispensable même en littérature, autant elle est à redouter dans les sciences ; car ses écarts, dans la première, ne sont qu'un manque de goût et de raison, tandis que ceux qu'elle fait dans les dernières, sont des erreurs ; en sorte que c'est presque toujours l'imagination qui les produit, lorsque l'instruction et la raison ne la guident pas et ne la limitent pas ; et si ces erreurs séduisent, elles font à la science un tort qui est souvent fort difficile à réparer.

If literature rouses, enlivens, pleases and renders men happy who are able to perceive its charm, science yields to it in that regard because it instructs dispassionately and with stiffness: but science triumphs because not only does it serve essentially all the arts, and gives us the best means to satisfy all our physical needs, but it also reliably expands our thinking by showing us what really exists in everything rather than what we would prefer that there be. The goal of the former is a pleasant art; that of the latter is the sum of all positive knowledge that we can acquire. This being the case, as useful and even indispensable as the imagination is in literature, it is in equal measure to be feared in the sciences; its exaggerations in the former are only a breach of good taste and reason, whereas in the latter they constitute errors; and so it is almost always the imagination that leads to error, when learning and reason fail to guide and limit it; and if the errors are alluring, they cause damage to science which is often difficult to repair (Lamarck 1809, II, 415-416).

The *littérateur* cannot rely on his "perfect diction and irreproachable style," but he must engage his imagination to fill his work with thoughts and images and move his readers (Lamarck 1809, II, 414).

The way the entire human being is engaged in the imaginative process recalls Buffon's maxim "le style est l'homme même." Lamarck even ventures to suggest in the definition of man that humankind alone appears to possess a greater or lesser degree of imagination. He exalts it by degrees in a rhetorical *incrementum*:

Comme dans les animaux intelligens, les idées [que l'homme] obtient de ses sensations remarquées s'impriment dans son organe, y sont conservées, et se trouvent à sa disposition pendant la veille ; mais ce qui lui semble être propre, c'est de pouvoir acquérir la faculté de

combiner ensemble plusieurs de ces idées premières, d'en obtenir des idées complexes de différens degrés, par conséquent de penser, raisonner, inventer même, et ainsi d'avoir plus ou moins d'*imagination*.

As with intelligent animals, the ideas [that man] obtains from the sensations he notices are imprinted in his organ, preserved there, and are available to him while he is awake; but what appears to be unique to him is the ability to acquire the faculty to combine several of these primary ideas, obtain from this combination ideas of differing degrees of complexity, and thereby think, reason, invent, and in this way have more or less *imagination* (Lamarck 1817a, 272, emphasis original).

By this means, Lamarck's definition of man gains over man as a "rational animal" the additional designation of "imaginative animal." From invention and imagination as essential to the related enterprises of literature and oration, and because Lamarck specifically mentions eloquence, it is fair to judge that he highly values the work of rhetoric. It is work as well as art, since it has "its rules and precepts," but it is art in that imagination and taste set apart the most beautiful works. Moreover, a high degree of imagination distinguishes the greatest human beings from the rest: "L'imagination est une des plus belles facultés de l'homme : elle ennoblit toutes ses pensées, les élève, l'empêche de se traîner dans la considération de petites choses, de menus détails ; et lorsqu'elle atteint un degré très-éminent, elle en fait un être supérieur à la grande généralité des autres" ("The imagination is one of man's finest faculties: it dignifies all his thoughts, raises them, prevents him from lingering among petty considerations and minutiae; and when it is highly developed, it constitutes the superiority of its possessor over the great majority of other beings." Lamarck 1809, II, 415).

In these passages, it may appear that Lamarck is revising Buffon's claims about *le génie*. Indeed, Lamarck adopts a conciliatory position between Buffon and Condillac in his treatment of animal sensation and higher faculties. He is careful to avoid using terms which Condillac criticized in Buffon's work, terms such as *instinct*, *appétit*, *sensation corporelle* and *sensation spirituelle*. Like Condillac, he adopts the middle view: animals are neither automatons nor do they possess a soul; they *feel*.⁴⁴ When

⁴⁴ "C'est extravaguer que de chercher l'évidence par-tout; c'est rêver que d'élever des systèmes sur des fondemens purement gratuits ; saisir le milieu entre ces deux extrêmes, c'est philosopher. Il y a donc autre chose

he discusses instinct in the *Philosophie zoologique*, it is in the context of an examination of the animal nervous system. The emergence of the bilateral brain in the animal series, he explains, results in the gradual appearance of intelligence, the proliferation of needs, and the ability to choose a course of action, that is, the ability to act voluntarily rather than involuntarily, as animals do when they follow their instinct (Lamarck 1809, II, 312-313).⁴⁵ In sum, he attempts to demonstrate that the term Lamarck 1817b, has a specific meaning which is grounded in anatomical and behavioral comparison.

I remarked earlier that Lamarck is concerned with fidelity to nature. This is translated in his stated method for constraining the imagination to the realm of the observable. Some of his synonyms for nature are *champ des réalités* (“field of realities”), *ordre (général et immuable) de choses créé* (“[general and immutable] created order of things”), and the physical domain (Lamarck 1818; 1809, I, 113). Remaining within these bounds theoretically allows naturalists to compare observations and come to agreement on both the verifiable facts and the conclusions that may be drawn from them: “...[E]n publiant ces observations, avec les résultats que j’en ai déduits, j’ai pour but d’inviter les hommes éclairés qui aiment l’étude de la nature, à les suivre et les vérifier, et à en tirer de leur côté les conséquences qu’ils jugeront **convenables**” (“...[I]n publishing these observations, along with the conclusions I drew from them, I aim to invite all knowledgeable men who embrace the study of nature to retrace them and verify them, and to arrive themselves at the conclusions they deem **appropriate**” (Lamarck 1809, I, xxiii, my emphasis). The frequent use of this word and its verbal and nominal forms

dans les bêtes que du mouvement. Ce ne sont pas de purs automates : elles sentent” (“He rambles who searches everywhere for evidence; he dreams who raises entire systems on purely gratuitous grounds; he who takes the middle ground between these two extremes philosophizes. There is, therefore, more to animals than movement. They are not mere automatons: they feel.” Condillac 2009, 8). Buffon himself backpedaled away from the animal-machine polemic he initially established (against Réaumur and Joseph-Adrien Lelarge de Lignac, two critics of his *Histoire naturelle*) by granting animals “‘material’ forms of memory, feeling, imagination, and so on” (Loveland 63).⁴⁵ I chose these terms specifically to convey the distinction that Lamarck makes between willed actions (*volonté*) and actions which arise from a more primitive organization, the *sentiment intérieur*. As the understanding of the nervous system in humans has progressed, the voluntary/involuntary dichotomy has become obsolete; functions formerly described as “involuntary” or “vegetative” are associated with the autonomic nervous system and are duly termed “autonomic.” This corresponds to the development in neuroanatomy of a more complex model of the central nervous system and the peripheral nervous system (everything but brain and spine).

(fifty-seven times in the *Philosophie zoologique* alone), in reference to agreement of the scientific community, points to a moral preoccupation as well as an epistemological one. For the sake of comparison, Lamarck uses *positif/positive* (adjectives describing facts, truths, etc.) fifty times, and *raisonnable* only twice (once in citing another work). It may be read as either a claim or a plea, but either way, it indicates that the consensus of his peers was important to him.

Reader Responses to Lamarck

In outlining some of the statements of Lamarck's supporters and critics, I intend to show how their perceptions of Lamarck's work vary on points treated by Lamarck himself (observation, induction, imagination, how to think about nature and natural history and how to be a natural philosopher). It is not so much to assess whether Lamarck succeeded in persuading his readers of his views as it is to gain some perspective on those ideas which they found most salient in his work and what they had to say about his style in relation to those ideas.

François-Vincent Raspail (1794-1878) witnessed favorably to Lamarck's character and accomplishments in his sympathetic, if biased, comparison of Lamarck to Nicolas-Louis Vauquelin (1763-1829), Fourcroy's protégé, professor of chemistry at the Muséum and member of the chemistry section at the Institut (Raspail 159-160; cited in Burkhardt 1970, 276-278).⁴⁶ Raspail credited Lamarck with hard work, success based on his brilliance alone, and disinterested pursuit of science, since he sought neither wealth nor power. Regarding Lamarck's innovation, and the future of his legacy, he wrote:

Vauquelin fit beaucoup de travaux, mais presque toujours sur le même modèle ; ... Lamarck, plus ingénieux qu'exact, plus profond que sévère, n'a pas laissé, jusque dans ses écarts, d'imprimer de nouvelles impulsions à la science. Peu façonné à l'intrigue et aux ménagements de l'ambition, il exprima ses grandes vues avec hardiesse, et sans les accommoder aux goûts des pouvoirs divers qui ont passé successivement devant lui, il lutta contre des adversaires qui, devenus plus puissants que lui, ont semblé l'éclipser de l'éclat que leur prêtaient le journalisme et les faveurs ministérielles ; mais ses opinions, d'abord ridiculisées, reprennent faveur, aujourd'hui qu'on les juge loin des ministères.

⁴⁶ Giard (10-11) and Picavet (599) include this source without identifying the author.

Vauquelin undertook many studies, but they were almost always confined to the same framework; ... Lamarck, more ingenious than precise, more profound than exacting, did not fail, even in his exaggerations, to guide science in new directions. Hardly cut out for intrigue and the apple-polishing of ambition, he expressed his vast insights with boldness, and without tailoring them to fit the taste of the various powers which succeeded one another before him, he wrestled with adversaries who, having become more powerful than him, seemed to overshadow him due to their popularity with the press and the ministerial favors bestowed on them; but his opinions, ridiculed at first, are gaining favor, now that they are being evaluated far from the ministries (Raspail 159, cited in Picavet 599).

Raspail's is an interesting critique for scholars investigating the interpersonal dynamics of the scientific community in Paris in 1830. It affirms the prevailing need to ratify scientific findings and hypotheses according to strict standards of observation, while suggesting that rigor may have less to do with the success of certain scientific hypotheses than the social importance of the name attached to them.

Étienne Geoffroy Saint-Hilaire gave Lamarck's funeral speech on the 20th of December 1829 in the Église Saint-Médard (Landrieu 101-102). His is less often cited than Cuvier's (read at the Académie des Sciences on 26 November 1832 by Baron Silvestre), but the two ought to be read in parallel to compare the different representations of the same facts of Lamarck's existence.⁴⁷ Whereas Cuvier tells a story of Lamarck's stubbornness in battle, Geoffroy Saint-Hilaire describes it as rare intrepidity. Cuvier stresses Lamarck's ambition for discoveries, his vigorous defense of his ideas, his poverty, his attraction to the then stylish field of botany (Cuvier vi-vii), his dependence upon the book-sellers who published his works, the precarity of his position as *garde des herbiers* at the Cabinet du roi (Cuvier xi); in fact, Lamarck only secures his unqualified admiration regarding his taxonomy of the mollusks and coral polyps. Geoffroy Saint-Hilaire, on the other hand, emphasizes Lamarck's tirelessness and social virtues; according to him, Lamarck was "infatigable, dévoué, occupé avec tant de bonheur des travaux les plus difficiles," and led a life "si riche d'enseignements, si pleines d'actions vertueuses, si remarquable par la plus généreuse abnégation de soi" ("indefatigable, devoted, happily pursuing the most difficult research," and led a life "of such learning, so many virtuous acts, and so remarkable for his utter

⁴⁷ As in fact Émile Corra did, in preparing his 1908 review of Lamarck's work for the *Société Positiviste Internationale*. See below.

selflessness.” Geoffroy Saint-Hilaire 209-210). In his errors, Lamarck was not alone (Geoffroy Saint-Hilaire 215), his research was conducted in the spirit of public service (Geoffroy Saint-Hilaire 216), and when he met with resistance, he considered it natural to befall anyone who undertakes reform (Geoffroy Saint-Hilaire 216).

Cuvier underscores Lamarck’s solitary delusions; Geoffroy Saint-Hilaire his patriotism and friendship. The latter praises him as an “*homme de génie*,” and the “*Linné français*,” while the former places him in second rank, among the lesser minds, who,

...[D]’un esprit non moins vif, non moins propre à saisir des aperçus nouveaux, ont eu moins de sévérité dans le discernement de l’évidence ; aux découvertes véritables dont ils ont enrichi le système de nos connaissances, ils n’ont pu s’empêcher de mêler des conceptions fantastiques ; croyant pouvoir devancer l’expérience et le calcul, ils ont construit laborieusement de vastes édifices sur des bases imaginaires, semblables à ces palais enchantés de nos vieux romans que l’on faisait évanouir en brisant le talisman dont dépendait leur existence (Cuvier 1832, ii).

...[W]ith minds not less ardent, nor less adapted to seize new relations, have been less severe in scrutinizing the evidence ; with real discoveries with which they have enriched science they have mingled many fanciful conceptions ; and, believing themselves able to outstrip both experience and calculation, they leave laboriously constructed vast edifices on imaginary foundations, resembling the enchanted palaces of our old romances, which vanished into air on the destruction of the talisman to which they owed their birth (Cuvier 1836, 1-2).

The purpose in citing this passage (cited so often by other scholars) is to bolster Cuvier’s impugment of Lamarck as indistinguishable from his philosophy, as he later asserts: “[O]n ne comprendrait pas l’homme lui-même, tant il s’était identifié avec ses systèmes” (“Even the character of the man himself could not otherwise be understood; for so intimately did he identify himself with his systems.” Cuvier 1832, xii; 1836, 10). Unlike Buffon’s “monument” that survived its creator, Lamarck’s “edifice like an enchanted palace,” according to Cuvier, would not. Cuvier’s analogy likens the man to a talisman, and his science to sorcery. There will be reason to return to this passage later.

In the 1830s and 1840s, French naturalists were discovering Lamarckian transformism, even as the field of “botanical ecological geography” was opening in the work of Alexander von Humboldt and Augustin-Pyramus de Candolle (who had once solicited Lamarck’s opinion on a botanical question).

Patrick Matagne shows that Lamarckian “phytogeographers” of this period may have contributed to the emergence of transformist experimental ecology (Matagne). Charles Lyell observed the scientific community in Paris at the time and responded to Lamarck’s assertions in the *Philosophie zoologique* with skepticism due to Lamarck’s inability to provide one example of the appearance of a new sense, faculty or organ combined with the disappearance of any faculty or organ previously relied upon.⁴⁸ He accuses Lamarck of avoiding difficulties by inventing names and invoking outmoded ideas:

...[W]hen Lamarck talks 'of the efforts of internal sentiment,' 'the influence of subtle fluids,' and the 'acts of organization,' as causes whereby animals and plants may acquire *new organs*, he gives us names for things, and with a disregard to the strict rules of induction, resorts to fictions, as ideal as the 'plastic virtue,' and other phantoms of the middle ages (Lyell II, 8; cited in Foster).

In this assessment of the transformist theory, Lyell strikes at the heart of Lamarck’s prose. Compound terms are frequently found in Lamarck’s hypotheses about animal physiology and psychology; “sentiment intérieur” and “fluides subtiles” are perhaps the two most ostensible examples. Auguste Comte would later point to the same as examples of Lamarck’s “naïve imagination” which accorded reality to an unfounded idea (Petit 543-544). Annie Petit and Jean-François Braunstein document Comte’s ambivalent critique of Lamarck in the *Cours de philosophie positive*, one of the important means of dissemination of Lamarck’s evolutionary ideology. Together with Lyell’s coverage of the *Philosophie zoologique*, these two critiques helped to shape the reception of Lamarck’s work more broadly.

Comte was introduced to Lamarck’s works through Henri-Marie Ducrotay de Blainville, who succeeded Lamarck in the chair of Natural History at the Muséum, then Cuvier in the chair of Comparative Anatomy. Blainville was Cuvier’s protégé, but the two later fell out and never overcame their differences. From the *Cours de philosophie positive* (1830-1842) to the *Système de politique positive* (1851-1854), Comte came to a greater appreciation of the significance of Lamarck’s work.

⁴⁸ The timing of Lamarck’s death, the Geoffroy-Cuvier controversy, Lyell’s presence in Paris and the 1830 Revolution invite more investigation of the circumstances contributing to Geoffroy Saint-Hilaire’s success, and the general adoption of transformism in France at that time.

Comte's divergence from Blainville included a history of personal offense, and bitter words pronounced at the latter's funeral (Petit 551, n. 39). Comte accused himself of deferring too easily to Blainville in the *Cours* and rectified his opinion in favor of Blainville's predecessor by according Lamarck a day in the month of Bichat (for the life sciences) in his *Calendrier positiviste*, with Blainville attached as a "nom accessoire" (Petit 553, 551).

Early on, Comte lauded Lamarck's claim for a hierarchy of organic beings, but there were in fact many who shared this opinion; Lamarck only differed in that his sentiment ran the clearest and deepest on the matter (Comte 1975, I, 774-775; cited in Petit 546). Comte sided with Cuvier in the controversy over the fixity of species, but he took some time in his courses to develop his critique of Lamarck's method. If Lamarck should be celebrated for having raised foundational questions in the science of biology, Comte also cautions that the *naturaliste-philosophe* supplied no answers, but rather abandoned the science to a "torrent of unchecked evolution" (Petit 544). Comte did not agree with Lamarck on the "infinite variability of species," and the abstract time upon which Lamarck based the possibility of species mutability. Comte also condemned Lamarck's fascination with "fanciful fluids" and reproached him for having invented unwarranted physical hypotheses to explain sensitivity. His hyperbole in this passage is stunning: "Aucun cas de ce genre ne m'a jamais semblé plus regrettable que celui de l'illustre Lamarck, employant, avec l'admirable naïveté qui le caractérisait toujours, son beau génie zoologique à forger de vaines hypothèses physiques pour expliquer la sensibilité" ("No other case of this kind ever seemed more regrettable to me than that of the illustrious Lamarck, employing – with ever characteristic, admirable naïveté – his beautiful zoological ingenuity to forge idle physical hypotheses to explain sensitivity." Comte 1975 I, 823; cited in Petit 544).

Lamarck had also stressed the importance of fluids in his explanation of animal modifications. The title of Chapter 7 of the first part of the *Philosophie zoologique* reads: "De l'influence des circonstances sur les actions et les habitudes des animaux, et de celle des actions et des habitudes de

ces corps vivants, comme causes qui modifient leur organisation et leurs parties” (“On the influence of circumstances over the actions and habits of animals, and that of the actions and habits of these living bodies, as causes which modify their organization and their parts”). In several of his works, Lamarck listed the circumstances he had in mind, and every revision of the list prominently features “la diversité des milieux dans lesquels (le vivant et l’homme) habitent” (“the diversity of milieux in which [living organisms and humans] live.” Braunstein 557-558). The milieux act upon the living organism in a way which is usually contrary to the progress of nature toward the perfection of its productions.

Comte did adopt the idea of the milieux and expanded upon it to establish the neologicistic “milieu” in the singular as the basis for the related science of sociology. The term was used to define “non seulement le fluide où l’organisme est plongé, mais, en général, l’ensemble total des circonstances extérieures d’un genre quelconque, nécessaires à l’existence de chaque organisme déterminé” (“not only the fluid in which the organism is found, but, in general, the sum total of the external circumstances of any kind, which are necessary to the existence of each particular organism.” Comte 1975 I, 682; cited in Braunstein 563). Comte attributes to Bichat, Lamarck, Cabanis, Gall and Broussais the work that gave rise to the “true spirit of the study of living bodies,” work which characterizes “la dernière splendeur du génie scientifique proprement dit, avant sa transformation définitive en génie philosophique” (“the final splendor of scientific genius in the proper sense, before its definitive transformation into philosophical genius.” Comte 1970, I, 566; cited in Petit 555). Comte himself ambioned to assist the transformation from science to positive philosophy. In his assessment of past scientific contributions, he adds that Buffon and Lamarck were some of the last great minds to have been correctly trained so that they could master the science of natural history (Comte 1970, I, 650; cited in Petit 552, n. 42).

Positivists after Comte sometimes neglected the reciprocal action of the organism upon its environment, which had been one of the points on which Comte differed from Lamarck (Petit, 549).

Instead of passively undergoing modification due to external influences, as per Lamarck's theory,⁴⁹ for Comte, the organism modifies its environment through its nutritive and excretory activity. Braundstein clarifies that scholars in the positivist tradition, although they adopted and reworked Lamarck's "théorie des milieux" – or Hippocrates's – treated it abstractly, and therefore their studies do not belong in a history of ecology. When Comte is named in a section of an English-language history of ecology, a section titled "Evolution: Struggle and Cooperation," it is because he used the term "altruism" to describe the opposite of self-interest (Allee). (Altruism is an idea about animal behavior which has been an important concept in the development of evolutionary theory.)

Lamarck Scholarship After Darwin's *On the Origin of Species* (1859)⁵⁰

G. Compayré comments on Lamarck's style in his 1878 article which claims that "the germ and the first outline" of evolutionary psychology appeared in Lamarck's research, in his attempt to apply the laws governing the succession of living beings to the progressive manifestation of sensitivity and intelligence (Compayré 2). Compayré was struck by Lamarck's "imperturbable confidence" in the *Philosophie zoologique*, and by the "système admirablement lié, qui en apparence n'offre ni incohérence ni lacune" ("admirably cohesive system, without any apparent incoherence or lacuna." Compayré 6). But, he continues, "Il est vrai que ces qualités systématiques sont souvent gâtées ou compromises par l'obscurité et la lenteur de l'exposition. Le style est diffus et verbeux et a pu rebuter les lecteurs. Lamarck s'entendait mieux évidemment à classer les œuvres de la nature qu'à distribuer ses propres pensées" ("It is true that the quality of the systematizing is often spoiled or compromised by the obscurity and sluggishness of the exposition. The style is diffuse and verbose and may have deterred

⁴⁹ It is debatable to what extent the organism is involved in its modification, according to Lamarck's theory. Émile Corra remarks that Isidore Geoffroy Saint-Hilaire (Étienne's son) understood the organism to be passive, in contrast to the emphasis Lamarck placed on *ses habitudes* and *sa manière de vivre*, which appear to necessitate some agency.

⁵⁰ Sander Gliboff analyzes the reception of Lamarck's ideas from 1866-1926 in what he calls the "Golden Age of Lamarckism."

some readers. Lamarck was evidently more adept at classifying the works of nature than at arranging his own thoughts." Compayré 6).

Compayré is still able to appreciate Lamarck's synthetic approach and his honest investment in his hypotheses: he writes that Lamarck admitted in at least one place, without guilt, "Tout y est le produit de l'imagination" ("This is entirely the work of the imagination." Page not cited, but probably Lamarck 1809 II, 369, in a section on the formation of ideas), but it is the same bold imagination that transformed Benoît de Maillet's "ingenious fable" into a somewhat rigorous and coherent theory (Compayré 3). The phrase is preceded by the following: "Tout ce que je vais exposer sur ce sujet important se trouve entièrement réduit à ce qui est vraisemblable" ("Everything that I will discuss regarding this important subject is entirely reduced to that which is plausible." Lamarck 1809, II, 368-369). It is followed by this qualification of the efforts of the imagination, which is familiar from the discussion of Lamarck's treatment of the imagination above: "...mais ses efforts, à cet égard, ont été bornés par la nécessité de n'admettre que des causes physiques compatibles avec les facultés connues des matières considérées, en un mot, que des causes dont l'existence est possible, et même présumable" ("...but its efforts were, in this case, limited by the necessity of admitting only those physical causes which are compatible with the known powers of the matters examined, in short, only those causes of which the existence is possible and even presumable." Lamarck 1809, II, 369).

Lamarck wrote in the foreword to the *Philosophie zoologique*, "[E]n me livrant aux observations qui ont fait naître les considérations exposées dans cet ouvrage, j'ai obtenu les jouissances que leur *ressemblance à des vérités* m'a fait éprouver, ainsi que la récompense des fatigues que mes études et mes méditations ont entraînées..." ("In giving myself up to the observations which gave birth to the considerations revealed in this work, I felt the pleasure that their *resemblance to truths* produced in me, as well as the reward for the ordeals occasioned by my studies and meditations...." Lamarck 1809, II, xxiii, my emphasis). Truth-likeness ennobles and validates the work of the imagination, and its

attainment is exhilarating. The French term *vraisemblable* covers more territory than most of its translations into English; *verisimilar* is the closest, but it is about as useful as a wooden nickel. Lamarck's seriousness in discussing what, he admits, is only plausible, shows the faith he has in this method of discerning patterns in the organization of material nature. Compayré judged that Lamarck's theory "is not such that he could share the author's satisfaction with it," but some of Lamarck's educated guesses ("une simple divination du raisonnement") about physiology had been confirmed by recent observations by the time he (Compayré) was writing. (The existence of two separate kinds of nerves [sensory and motor] is one such example.) I will leave aside his study for the moment, but I will return to Compayré's helpful comparison of Lamarck's theories to those of his peers and his discussion of their fruitfulness for evolutionary psychology in the next chapter.

Anticipating the erection of a monument to Lamarck at the Muséum d'Histoire naturelle, Émile Corra published a study, "Lamarck et son oeuvre," for the *Revue Positiviste Internationale*, in 1908. His stated goal was to associate Positivism with the "belated glorification" of Lamarck. His rehearsal of Lamarck's biography presents new information (perhaps sourced from Alpheus Packard's 1901 biography of Lamarck, which he cites; Marcel Landrieu's biography of Lamarck, *Lamarck, le fondateur du transformisme* appeared the following year), taps the *éloges*, and appears to cite a longer version of Saint-Hilaire's than the one pronounced the 20th of December, 1829, at Lamarck's interment.⁵¹ Corra

⁵¹ Corra cites Geoffroy Saint-Hilaire: "La loi de 1793 avait prescrit que toutes les parties des sciences naturelles seraient également enseignées. Les insectes, les coquilles et une infinité d'êtres, portion encore presque inconnue de la création, restaient à prendre. De la condescendance à l'égard de ses collègues, membres de l'administration, et, sans doute aussi, la conscience de sa force déterminèrent M. de Lamarck: ce lot si considérable et qui doit entraîner dans des recherches sans nombre, ce lot délaissé, il l'accepta; résolution courageuse qui nous a valu d'immenses travaux et de grands, d'importants ouvrages." ("The law of 1793 had prescribed that all the parts of the natural sciences should be taught equally. Insects, shellfish and myriad other beings, the as of yet almost entirely unknown portion of creation, was left to be covered. Some of his colleagues' condescension, who were members of the administration, and, no doubt also the knowledge of his strength in this field pointed to Mr. de Lamarck: this considerable lot, which would involve endless research, this undesirable lot, he accepted it; and by his courageous resolution he gave us vast studies and great, important works." Geoffroy Saint-Hilaire 1838, 214; cited in Corra 7-8). This passage highlights Lamarck's other considerations (apart from bonds of friendship) in assuming the chair of what would be, after ten months of preparation to teach, the *Invertebrate Animals*, a category hitherto unknown.

confirms in citing Lamarck's "Discours préliminaire" to the *Système analytique des connaissances positives de l'homme* that man must study natural history "afin de ne point se mettre en contradiction, par ses actions, avec un ordre et une force de choses auxquels il est entièrement assujetti" ("so as not to put himself at odds, by his actions, with an order and force of things to which he is entirely subject." Lamarck 1820, 82; cited in Corra 21).

Corra refers to the *Philosophie zoologique* ("Hors de la nature, tout n'est qu'égarément et mensonge." Lamarck 1873, II, 3) when he insists that "Lamarck subordonne toujours l'imagination à l'observation ; c'est dans l'observation seule qu'il puise ses idées les plus lumineuses et ses arguments les plus péremptoirs" ("Lamarck always puts observation before imagination; it is from observation alone that he derives his most brilliant ideas and most forceful arguments." Corra 19). Corra cites Cuvier's talisman/enchanted palace analogy to prove that Cuvier only spoke to the descriptive naturalist and classifier side of Lamarck, and misjudged, with "academic impertinence," the philosopher (Corra 14-15). Elsewhere, he uses Cuvier's own words to point to Lamarck's "scientific monument" of invertebrate classification which should "last as long as the objects on which it is founded" (Corra 8). Corra explains how findings in the fields of paleontology, embryology and comparative anatomy corroborate Lamarck's theories, and concludes that it is no longer possible (in 1908) to doubt the origin and evolution of living beings (Corra 83). Edmond Perrier, then director of the Muséum National d'Histoire Naturelle, responsible for the statue of Lamarck, matched Lamarck's propositions with the current state of science point for point to see which of them held up; he wrote in *Lamarck et le transformisme actuel* that "la théorie positive n'a fait que mettre des faits observés à la place où Lamarck avait mis des suppositions; elle s'est bornée à remplacer, dans l'édifice demeuré debout, une pierre altérée par une autre, d'apparence plus solide" ("the positivist theory only substituted Lamarck's suppositions with observable facts ; while the edifice he created stood, it only replaced worn stones with more apparently solid

ones").⁵² Though the man himself was gone, the “enchanted palace” took on the virtue of solidity and the “talisman” was renewed in the statue of the man! The trope is elaborated to great effect throughout Corra’s review.

A chorus composed of Lamarck’s supporters and critics would generally be singing the same tune: it is impossible to distinguish the natural philosopher from his philosophy of nature; its weaknesses are his own, and its strengths are the product of the same mind that too easily attributed real existence and causality to unverifiable entities. The voices clash in the affective realm, and echo in the rhetoric; to detractors, Lamarck was stubborn and backward, while to supporters, he was driven by the love of truth.

Comparing Buffon and Lamarck stylistically helps to illustrate the broad intellectual and institutional changes that took place in France during what Wolf Lepenies has identified as “la période charnière” (“period of transition”) or “Achsenzeit,” the years between 1778 and 1859. This period opens with the deaths of Voltaire, Rousseau, and Linnaeus and the textual foundations of three new sciences by Barthez (physiology), Buffon (biology), and Forster (anthropology), and closes with seminal works by Marx, Darwin, and Bachofen. His analysis locates the philosophical foundations for the new natural sciences in Kant’s concept of the organism. Where natural history ends, he claims, the history of nature begins.

Lamarck matured as this period opened, and actively contributed to the development of the science of biology as a discipline with a set of givens and questions unique to it. At the same time, his writing is shaped by the struggle to find language for writing natural history under the new order. The stylistic dilemma he faced was paralleled by the philosophical dilemma of nominalism versus realism, which became particularly problematic for him in his attempts to construct a coherent system of classification that fit the evidence supplied and suggested by nature. In negotiating these problems, he

⁵² In the *Centenaire du Muséum*, 1893, p. 498. Cited in Corra 83-84, n. 111.

developed the figural tool of antithesis, which left a visible trace in his writing. Between the extremes lies the link or solution, most of the time, if indeed it exists. The truth about nature logically exists in the relationship between nature and its *histoire*.

The conditioning of Lamarck's philosophy through the rhetorical potential of antithesis points to another interpretation of the phrases that Comte isolated for criticism, binary terms such as "sentiment intérieur" and "fluides subtiles." Viewed as theoretical placeholders, until better understood or deemed meaningless, their form is precarious just like their epistemological status. The "sentiment intérieur" appears paradoxical in the way that it combines the reception of sense impressions, typically originating on the outer bounds of body, with their translation into movement or feeling, originating in the inner space. The word *sentiment* represents an amalgam of ideas which are sometimes considered opposites: sensitivity/sensibility, body/mind, spoken/felt. As for *intérieur*, it exists as a given without explanation, both in its adjectival use here and as a noun: does it mean "individual," "covered in flesh," "inaccessible," "hidden from the eyes"? In some sense, Lamarck's terms may be metaphorical. But the same question applied to antithesis in other contexts may apply here: whether and what kind of mediation or rapport may exist between *sentiment* and *intérieur*.

In the next chapter, I examine Lamarck's adoption and use of the term *sentiment intérieur* as it relates to the theories and debates of his contemporaries, the *Idéologues*, and to his own theory of species change. I bring it into dialogue with similar terms, related concepts, and their use in various genres and periods before Lamarck. Lamarck's self-identification as a *naturaliste-philosophe* appears to be connected in complex ways with the discovery of the *sentiment intérieur*, and the story of how it became important for him is intricately related to changes in the organization of scientific knowledge and practice, and Lamarck's reaction to these changes.

Chapter 2: The Inner Feeling

Introduction

In the spring of 1808, a report was given at the Institut National des Sciences et des Arts which highlighted the findings in a memoir published by experimental physiologists Franz Joseph Gall (1758-1828) and Johann Gaspar Spurzheim (1776-1832). It mentioned three functions for which the brain was responsible, namely, “receiving sensory impressions, transmitting them immediately to the mind; conserving these impressions in a way that they may be reproduced in abundance with sufficient promptness and sharpness to facilitate the operations of the mind or to obey the law of association which summons them; and to transmit the commands of the will to the muscles via the nerves” (Lamarck 1809, II, 170). The authors⁵³ of the report noted, in eloquent desperation, that

...ces trois fonctions supposent l'influence mutuelle, à jamais incompréhensible, de la matière divisible et du moi indivisible, hiatus infranchissable dans le système de nos idées, et pierre éternelle d'achoppement de toutes les philosophies ; elles se trouvent même avoir encore une difficulté qui ne tient pas nécessairement à la première : non-seulement nous ne comprenons, ni ne comprendrons jamais, comment des traces quelconques, imprimées dans notre cerveau, peuvent être perçues de notre esprit, et y produire des images ; mais quelque délicates que soient nos recherches, ces traces ne se montrent en aucune façon à nos yeux, et nous ignorons entièrement quelle est leur nature, quoique l'effet de l'âge et des maladies sur la mémoire ne nous laissent douter, ni de leur existence, ni de leur siège (Lamarck 1809, II, 170).

...these three functions involve a mutual influence, which has always remained incomprehensible, between divisible matter and the indivisible ego. This has always constituted an impassable hiatus in the system of our ideas, and the stumbling block of all philosophies ; they involve us moreover in a further difficulty that has no necessary connection with the first : not only do we not understand nor ever shall understand how impressions on the brain can be perceived by the mind and produce images in it; but however refined our means of investigation, these traces cannot be made visible in any way ; and we are entirely ignorant of their nature, although the effect of age and diseases on the memory leave us in no doubt either as to their existence or their seat (Lamarck 1914, 285-286).

Lamarck cited this passage in full in the introduction to the second part of his *Philosophie zoologique*, entitled, “Considérations sur les causes physiques de la vie, les conditions qu’elle exige pour exister, la

⁵³ Signed by Jacques Tenon, Georges Cuvier, Antoine Portal, Raphaël Bienvenu Sabatier, and Philippe Pinel. See “Rapport fait à l'Institut sur un mémoire de MM Gall et Spurzheim, relatif à l'anatomie du cerveau.” *Annales du Muséum d'histoire naturelle*, vol. XI, (1808), pp. 329-76. Lamarck cites page 5 of the “Rapport.”

force excitatrice de ses mouvements, les facultés qu'elle donne aux corps qui la possèdent, et les résultats de son existence dans ces corps" ("An enquiry into the physical causes of life, the conditions required for its existence, the force exciting its movements, the faculties which it confers on bodies possessing it, and the results of its presence in those bodies"). The passage represents the challenge to which he responds in the second and third parts of the work; in part three he takes up the question of the physical causes of feeling, the force which produces actions, and the origin of acts of intelligence observed among the animals.

These two parts, he tells his reader, gave him particular pleasure, although the first part contains ideas which will no doubt be more relevant and useful given the current state of science (Lamarck 1809, I, xxiv). The second and third parts contain the exposition of his theory of the *sentiment intérieur* as it relates to animal existence, organization, sensory perception, and behavior. About this "inner feeling," he writes:

Ayant fixé mes idées à l'égard de ces objets intéressans, je considérai le sentiment intérieur, c'est-à-dire, ce sentiment d'existence que possèdent seulement les animaux qui jouissent de la faculté de sentir ; j'y rapportai les faits connus qui y sont relatifs, ainsi que mes propres observations ; et je fus bientôt persuadé que ce sentiment intérieur constituoit une puissance qu'il étoit essentiel de prendre en considération. **En effet, rien ne me semble offrir plus d'importance que le sentiment dont il s'agit, considéré dans l'homme et dans les animaux qui possèdent un système nerveux capable de le produire ;** sentiment que les besoins physiques et moraux savent émouvoir, et qui devient la source où les mouvemens et les actions puisent leurs moyens d'exécution. Personne, que je sache, n'y avoit fait attention ; en sorte que cette lacune, relative à la connoissance de l'une des causes les plus puissantes des principaux phénomènes de l'organisation animale, rendoit insuffisant tout ce que l'on pouvoit imaginer pour expliquer ces phénomènes. Nous avons cependant une sorte de pressentiment de l'existence de cette puissance intérieure, lorsque nous parlons des agitations que nous éprouvons en nous-mêmes dans mille circonstances ; car, le mot émotion, que je n'ai pas créé, est assez souvent prononcé dans la conversation, pour exprimer les faits remarquables qu'il désigne. Lorsque j'eus considéré que le sentiment intérieur étoit susceptible de s'émouvoir par différentes causes, et qu'alors il pouvoit constituer une puissance capable d'exciter les actions, je fus, en quelque sorte, frappé de la multitude de faits connus qui attestent le fondement ou la réalité de cette puissance ; et les difficultés qui m'arrêtoient, depuis long-temps, à l'égard de la cause excitatrice des actions, me parurent entièrement levées. (Lamarck 1809, I, xiii-xiv, my emphasis)

Having fixed my ideas on these interesting objects, I gave attention to the inner feeling, that is to say, that feeling of existence which is possessed only by animals which enjoy the faculty of feeling. I brought to bear on the problem such known facts as are relevant, in addition to my

own observations, and I soon became convinced that this inner feeling constituted a power which it was essential to take into consideration. **Nothing in fact seems to me so important as the feeling which I have named, considered both in man and in the animals which possess a nervous system capable of producing it.** It is a feeling which can be aroused by physical and moral needs, and which becomes the source whence movements and actions derive their means of execution. No one that I know had paid any attention to it; and this gap in our knowledge of one of the most powerful causes of the principal phenomena of animal organisation rendered all explanations inadequate to account for these phenomena. We have, however, a sort of clue to the existence of that inner power when we speak of the agitations which we ourselves are constantly experiencing; for the word emotion, which I did not create, is often enough pronounced in conversation to express the observed facts. When I had considered that the inner feeling was susceptible of being aroused by different causes, and that it then constituted a power capable of exciting actions, I was so to speak struck by the multitude of known facts which attest the actual existence of that power; the difficulties which had long puzzled me with regard to the exciting cause of actions appeared to me entirely surmounted (Lamarck 1914, 4-5, my emphasis).

He could not be clearer about the fact that his discovery of this important “power,” to his way of thinking, bridged a gap in the life sciences and represented a possibility for overcoming the chasm between the mental and the physical identified by the authors of the report on the Gall-Spurzheim memoir as “un hiatus infranchissable” and the “pierre d’achoppement de toutes les philosophies.” He would be accused of letting his imagination hold sway over him, of reifying immaterial entities, the “inner feeling” being a notable example of this particular logical fallacy, and of establishing a theoretical vicious cycle within which no animal could evolve beyond certain barriers.⁵⁴ What was it, exactly, how did he encounter it, and why did he consider it so important?

In the last chapter, I raised the possibility that the *sentiment intérieur* represents a form of antithesis or paradox, a figure of thought emanating from Lamarck’s rhetorical approach to natural history. In this chapter, I closely examine the *sentiment intérieur* in the context of Lamarck’s biological

⁵⁴ See for example the passage from Cuvier’s *Éloge*, cited in chapter one, which has so often been cited in discussions of his scientific legacy; Hugh Elliot, the author of the 1914 English translation of the *Philosophie zoologique*, blames Lamarck for materializing nature as well as the inner feeling; and Gabriel Compayré, interpreting Lamarck through Herbert Spencer, formulated a common objection. He asks how an animal without a muscular nervous system could possibly have the need to move, and how an animal with a muscular nervous system could need, and therefore, develop the ability to sense its environment: “On conçoit à la rigueur que l’usage développe un organe déjà créé, mais non que le besoin fasse naître cet organe; car le besoin est corrélatif à l’organe, il ne saurait le précéder, il naît avec lui, mais pas avant lui” (“If pressed, we may admit that use could develop an existing organ, but not that need could bring about a new one; needs are the correlates of the organ, they in no way precede it, they appear with it, but not before it.” Compayré 10).

and philosophical thought and in the context of certain trends in French philosophy throughout the early modern and revolutionary periods. The goal is to develop a richer and more nuanced discussion of the ways in which Lamarck's physiological and psychological theory both grew out of and became distinct from those of his predecessors and contemporaries. Pushing further on the polysemy of the term *sentiment intérieur* and its related concepts, I examine its literary significance while not losing sight of its potential to explain certain phenomena annexed for scientific observation and theorization. Therein is the thesis of this chapter: Lamarck's adoption of the term *sentiment intérieur* to express a physiologically and psychologically necessary abstract entity effectively inscribes his theory into literary and philosophical traditions. To the extent that Lamarck engaged these traditions, we may derive deeper understanding of the *philosophe* in the *naturaliste-philosophe*, his struggle with fundamental questions about human existence, and his concern for the progress of humanity toward a better future.

I begin by discussing the contributions of Snait B. Gissis's historical account of *sentiments* and the *sentiment intérieur* in Lamarck's biological thought (1800-1820). She sets Lamarck in contrast with the predominant sensationalist-empiricist-associationist philosophies of his contemporaries, generally, and specifically with Cabanis's. I take the analysis of Lamarck's originality further using Émile Bréhier's overview of modern philosophy and François Picavet's extensive documentary of the *Idéologues*. Robert J. Richards's study on the origins of evolutionary biology of animal behavior yields some helpful insights as well regarding Cabanis's and Lamarck's theories. I read some of the *Idéologues* together with Lamarck to elucidate the roles various faculties or properties played in their works. Specifically, I examine Cabanis's physiological approach in his *Rapports du physique et du moral de l'homme*, and Maine de Biran's findings regarding habit, sensation, and memory.

Next, I develop a longer view of the problem of the correspondence of physical and mental phenomena by analyzing the temporal patterns of the use of the term *sentiment intérieur*, as well as ways in which it was used by various authors in several genres, and how it fared by comparison to

related terms like *sens interne*, *sentiment de l'existence*, *conscience*, and *individu*. The second half of the eighteenth century features lively debates about the nature of human sensory experience, debates which were inherited from earlier philosophers and transmitted (with modifications) to at least three more generations of *Idéologues*. Jessica Riskin points to Berkeley's theory of vision and Diderot's philosophy at the heart of the synthesis between sensory experience and morality ("sentimental empiricism"). I introduce concordances among some articles in the *Encyclopédie* to gauge the degree of similarity and difference surrounding Diderot's synthesis. Turgot's "Existence" suggests that the epistemology of sensation had not yet been problematized.

I note sympathies to the materialist physics of Epicurus in some articles from the *Encyclopédie* and propose some channels through which this philosophical perspective was disseminated in Enlightenment responses to Lucretius, Gassendi, Locke, and Newton. This heritage forms, I believe, a conceptual blind spot, no pun intended, in the thought of the *Idéologues*, and becomes tangible, again, no pun intended, in Destutt de Tracy's comments on a summative translation of Kant's philosophy in the *Critique of Pure Reason*. Reaching forward from Wolf Lepenies's indictment of Kant's organism as the end of natural history and the beginning of histories of nature (physiology, biology, anthropology), I read Lamarck's attempts to resolve the incoherence of contemporary theories of sensation and cognition as a comparison of two modes of organic being similar to Kant's problematization of intuition.⁵⁵ However, together with Amanda Jo Goldstein in her helpful perspective on epigenesis, I depart from the Kantian auto-genesis understanding of life, showing how Lamarck's organic system disrupts relationships of strict causality. Where Goldstein posits a substantial fundamental continuity between *figura* or *eidola* and the particles of material organic existence in her study of Lucretian materialism, early modern poetry and romantic science, including some resonance in Lamarck's concept of the *milieux*, I propose a

⁵⁵ Richards points out that Cabanis's synthesis of physiology and sensationalist empiricism inspired Lamarck's admiration and that the two of them abandoned traditional interpretations of innate behavior in favor of the theory that "instincts were modes of phylogenetically acquired associative response (256, 256-262). As did Erasmus Darwin, so Cabanis and Lamarck also "adopted a sensationalist metaphysics and epistemology" (257).

broader reading of Lamarck which asks, with Canguilhem, how it is, within a sensationalist epistemology, that “un vivant ne se réduit pas à un carrefour d’influences” (“a living thing is more than an intersection of influences.” “Le vivant et son milieu,” § 154).

From Worms to Humans

Snait B. Gissis supplies a dense reading of Lamarck’s changing model of animal sensation. Her “internalist” approach (Gissis 2010, 215), that is, using Lamarck’s published and unpublished works, shows that from 1800 to 1820, Lamarck elaborated a framework for organic existence that combined time, heredity and causality in response to his dissatisfaction with the predominant “idéologue-sensationalist framework” (Gissis 2010, 220).⁵⁶ This study of his *sentiment intérieur* is useful for establishing the physiological phenomena which make Lamarck’s “intérieur” possible, and for distinguishing unique characteristics in Lamarck’s thought.⁵⁷ Several dimensions of these words themselves, as Catherine Davies observes with Paul Ricoeur,⁵⁸ are imbued with a certain “dynamisme sémantique,” and this “primitive instability of signification...makes it possible to express new experiences, to proceed inductively to new knowledge” (C. G. Davies 153). A history of uses of the term *sentiment intérieur* itself – in relation to, but distinct from its correlates and metamorphoses – is a

⁵⁶ See also the study of Lamarck’s methodology by Léon Szyfman, in which Szyfman compares Condillac’s method and Lamarck’s (Szyfman 252-256). Notably, Lamarck’s approach was to consider an object in its entirety *first*, then continue to an observation of the discrete facts in order to test a general theory and abstract concepts related to it. Szyfman concludes, “Enfin, d’après Lamarck, la déduction et l’induction constituent seulement des démarches auxiliaires d’une méthode plus générale qui doit être historique et évolutionniste” (“Finally, according to Lamarck, deduction and induction only represent auxiliary procedures in a more general method which must be historical and evolutionary.” Szyfman 256).

⁵⁷ Gissis singles Lamarck out as the only naturalist of his time to use invertebrates, and indeed, all species of animals, not humans, as the point of departure for the study of animal life. In the *Avertissement* to the *Philosophie zoologique*, Lamarck introduces the perspective in this way: “Ce qu’il y a de singulier, c’est que les phénomènes les plus importants à considérer n’ont été offerts à nos méditations que depuis l’époque où l’on s’est attaché principalement à l’étude des animaux les moins parfaits, et où les recherches sur les différentes complications de l’organisation de ces animaux sont devenues le principal fondement de leur étude” (Lamarck 1809, I, 2) (“It is a peculiar circumstance that the most important phenomena for us to consider have only been available since the time when attention was devoted to the study of the least perfect animals, and since the researches on the various complications in the organisation of these animals became the main object of study.” Lamarck 1914, 9).

⁵⁸ Davies 151-156. Citing Paul Ricoeur, *La métaphore vive* (Paris: Seuil, 1975), pp. 268-269, 376-379.

useful, indeed, necessary, starting point to understanding Lamarck's investment in this term, and later, its disappearance.

Gissis argues that "Lamarck's assumption of a gradually emergent *sentiment intérieur* was intended to resolve the empiricist dead-end on identity-and-continuity of the self," and that "he produced the first version of an evolutionary 'self,' and a new conception of internality" (Gissis 2010, 211). It appears that Lamarck did indeed believe that his discovery of what he called the *sentiment intérieur* solved problems in both philosophy and natural history.⁵⁹ It is also the keystone in his grand project on "biologie" (this term a recent neologism when he employed it) which he knew he would never complete, and the key to understanding his approach to teaching natural history (more about this in Chapter 3).

Surveying the array of animal organization from worms to humans, rather than deducing the animal from the human, and foregrounding those structures related to animal functions of receptivity and movement, Lamarck redefined "sentimens" in a way that blended the "discourse of organic functions" and the "discourse of faculties" (Gissis 2010, 224). Consequently, "the conventionally 'mental events' of empiricism – subsumed under the experiencing of feelings – were presented as direct consequences of physiological processes, with Lamarck refusing to give in to the demands of accounting for their being otherwise perceived ("an illusion," "une hallucination" etc.)" (Gissis 2010, 224).

Lamarck defended the originality of his approach by setting it against the positions of vitalists, *Idéologues*, phrenologists, and proponents of the "new science" and the new comparative anatomy (Gissis 2010, 226). Cabanis and his student Richerand were engaged with some of the same questions in their studies of the normal operations of the body and brain as compared with various states of augmentation, diminution, and deprivation of the faculties occasioned by physiological differences

⁵⁹ Picavet affirms this as well in his reading of Lamarck (Picavet 440).

among humans and their causes (age, developmental stage, temperament, sex, pregnancy, common illnesses, diet, climate, etc.). Lamarck described the evidence for his view in this way in 1815:

Il est si vrai que, dans l'étendue de l'échelle animale, les facultés croissent en nombre et en éminence comme les organes qui les donnent, que si, à l'une des extrémités de l'échelle, l'on voit des animaux dépourvus de toute faculté particulière, l'autre extrémité, au contraire, offre, dans les animaux qui s'y trouvent, une réunion au maximum des facultés dont la nature ait pu douer ces êtres.

It is so true that, in the range of the animal scale, the faculties increase in number and in eminence with the organs which provide them, that as, at one of the extremes, one finds animals deprived of every sort of faculty, the other extreme, on the contrary, offers, in the animals found there, a maximal joining of faculties with which nature could endow those beings (Lamarck 1815-1822, I, 252).

The temporally-determined progressive appearance of organisms of greater complexity was the key.⁶⁰

Lamarck, as noted in Chapter 1, had insisted that nature disposed of immense, perhaps infinite, time.

He described the gradual complexification of animal organization in 1802 as "cette progression dans l'organisation qui indique la marche réelle qu'a suivie la nature" ("this progression in organization which indicates the real advances made by nature." Lamarck 1802, 120). By this time, he had become convinced of the fact of evolution. It remained to be discovered what mechanisms were at play (Richards 265).

Lamarck gave as a principle the observation that everywhere one looks one finds a perfect correlation between the needs of an animal, its possession of faculties suited to meeting those needs, and the presence of the specific organ capable of supporting those faculties: "c'est donc une vérité incontestable qu'il y a toujours partout un rapport parfait entre les besoins, les facultés d'y satisfaire, et

⁶⁰ This represents a reversal of the order in which he first proposed to examine the series. In 1809, a similar formulation in the *Philosophie zoologique* reads: "...[I]l règne, d'une extrémité à l'autre de cette chaîne, une dégradation frappante dans l'organisation des animaux qui la composent, et une diminution proportionnée dans le nombre des facultés de ces animaux ; en sorte que si à l'une des extrémités de la chaîne dont il s'agit, se trouvent les animaux les plus parfaits à tous égards, l'on voit nécessairement à l'extrémité opposée les animaux les plus simples et les plus imparfaits qui puissent se trouver dans la nature" (Lamarck 1809, I, 131) ("...[T]here exists from one end to the other of this chain a striking degradation in the organisation of the animals composing it, and a proportionate diminution in the numbers of these animals' faculties. Therefore, if the most perfect animals are at one extremity of the chain, the opposite extremity will necessarily be occupied by the simplest and most imperfect animals found in nature." Lamarck 1914, 68).

les organes qui donnent ces facultés” (“it is therefore undeniably true that there is always everywhere a perfect agreement between the needs, the faculties that satisfy them, and the organs that supply those faculties.” Lamarck 1815-1822, I, 252). This principle, which approximates later notions of adaptation, clarified for Lamarck the distinction between the presence of irritability (that is, mere receptivity) at one extreme of animal organization and feeling (*sentimens*) at the opposite extreme, with intermediate examples widely available.

One special “feeling” in the higher animals was the *sentiment intérieur*, about which Gissis writes, “[it] falls under the explanatory mechanisms of feelings and was emergent in the same sense that feelings within Lamarck’s theory were. Yet on the other hand it differed in remarkable ways from them, which tended to put into question it being ‘a feeling’” (Gissis 2010, 228).⁶¹ Gissis’s “very rough sketch of the thorny field concerning ‘self’ and ‘feelings’” (Gissis 2010, 229) is the one into which I wander. It begs to be mapped (again and using new tools) and its nuances better understood. With respect to Gissis’s study, in addition to casting a wider and deeper net into the philosophical debates of the 17th, 18th, and early 19th centuries to pick up trends of influence on Lamarck, I look at the temporal patterns of use of related terms and concepts, and I catalog instances in which Lamarck’s model exceeds his use of “faculty discourse.” In light of these considerations, I advance my own interpretation of Lamarck’s evolutionary self, his materiality of the mental, and his concept of internality.

⁶¹ Gissis occasionally employs anachronistic terms such as “emergent” and “information” in her exploration and explanation of Lamarck’s meaning. I generally try to avoid borrowing from later models of mind and evolution, and I would caution my reader to be similarly aware of the danger. Concepts such as “stimulus” are distinctly post-Lamarckian, just as terms such as “impression” are quite old. Caution should be applied in order not to misrepresent, and particularly, not to smuggle current or antiquated scientific understanding into Lamarck’s theories. Wherever possible, I have preserved terms in translation which describe reasonably equivalent ideas; thus, *les facultés* are “faculties,” *le système nerveux* is “nervous system,” and *la sensation* is “sensation.” When this is not possible, Lamarck’s terms are provided in addition to the term which may be more easily understood by today’s reader.

Lamarck Among the *Idéologues*

If Lamarck owed a great intellectual debt to Buffon, his philosophy of humankind is also imbued with *idéologie*, which represents an extension of the philosophical activity of earlier periods into the nineteenth century.⁶² “Ideology is an interpretation of knowledge based on the assumption that all ideas and all the faculties of human understanding – perception, memory, judgment and will – are compounds of sensations. Nothing exists in the mind except what has first passed through sense channels” (Van Duzer 16-17). The argument against the existence of innate ideas comes from the philosophy of John Locke.⁶³ Analyzing ideas into component sensations is the first step to excluding errors of various kinds (such as Bacon’s *idola mentis*) from judgment, after which one may learn to direct the acquisition of ideas toward the discovery of new truths, always building upon principles ratified by sense experience, “des faits bien constatés” (Condillac 1749, 8).

Ideology thus represents a critical method for establishing knowledge on the firm foundation of empirical evidence which is available to anyone who sees, smells, tastes, hears, and touches. As Condillac formulated it, reasoning from abstract notions was no longer a trusted mode of discovery of truth, although to be clear, abstract principles were still considered important and useful (Condillac 1749, 7). The science resulting from the analysis of sensations and ideas is what Destutt de Tracy neologistically called *idéologie*. This knowledge of human understanding would, he thought, supply the foundation for all kinds of human pursuits: grammar, logic, instruction, education, morality, and social organization (Welch 35). Various accounts of French philosophy during the Revolution point to Condillac as the lone guardian and interpreter of earlier debates, as well as the source of philosophical principles

⁶² Richards writes: “The problems of extinction and spontaneous generation undoubtedly influenced the formulation of Lamarck’s theory [of organic species change], as Burkhardt...suggests. But the immediate conceptual environment against which his theory took shape surely also included notions made popular by the sensationalists – especially the idea that animals became adapted to environmental change through habit. If this latter idea is linked to the theory that alterations of animal organs are heritable, as Lamarck’s mentor Buffon insisted, species evolution follows as a natural consequence” (Richards 265, n. 99).

⁶³ Lamarck reports in the *Philosophie zoologique* : “C’est une chose reconnue, qu’il n’y a point d’idées innées, et que toute idée simple provient uniquement d’une sensation” (Lamarck 1809, II, 273) (“It is an established fact that there are no innate ideas, but that every simple idea arises exclusively from a sensation.” Lamarck 1914, 330).

common to many revolutionary-era philosophers, orators, and statesmen. It is debatable, however, what relations existed between Condillacism and the empiricism of Encyclopedic thought (Van Duzer 15).

François-Joseph Picavet's detailed account of the people identifiable as *Idéologues* or *Idéologues* spans 583 pages in the 1975 reprint edition of his 1891 *Les Idéologues: Essai sur l'histoire des idées et des théories scientifiques, philosophiques, religieuses, etc. en France depuis 1789*. The title alone testifies to the breadth of topics on which his historical actors were engaged. Picavet begins by showing that, contrary to enduring popular opinion, they cannot be neatly subsumed under the title "disciples of Condillac." Rather, they represent a diverse group of heirs to *all* of eighteenth-century French philosophy, and therefore also heirs to the controverted theories of Descartes, Gassendi, Pascal, Arnauld, Nicole, Malebranche, Perrault, La Motte, Spinoza, Bacon, Galileo, Newton, Locke and Leibniz. If Condillac appeared to be the only surviving philosopher in the tumult of the French Revolution, and if some thinkers, as Destutt de Tracy attested, made hay using Condillac's method, they did not agree with his results, and claimed to "have no high priest," each occupied with his own independent thoughts (Picavet 22-23). Their freedom to differ eventually earned them Napoleon's distaste when they refused to march to his tune; he used the term pejoratively, as a synonym for "métaphysicien nébuleux" (Picavet 23).

For all their differences, they were remarkably effective in gathering together, theorizing, and putting into practice the principles they derived from the philosophy of earlier generations. Although some, like Antoine Lavoisier and Marie-Jean-Antoine-Nicolas Caritat, marquis de Condorcet, gave their lives in the process, others weathered political upheaval, exile, loss of property and tarnished reputations, and survived to exert influence over their fellow citizens in the First Republic through private and public means. Privately, they met in the salon of Madame Helvétius at Auteuil and traveled widely; publicly, they represented constituents in the new bodies of government in its various revisions,

voted (some on the fate of the king), and orated in support of new legislation, they published in a multitude of philosophical and political journals, and joined the ranks of the academy in its revised forms. This last function was perhaps the one to which they devoted the most enduring efforts; Joseph-Dominique Garat wrote that the Revolution would be completed “par les perfectionnemens de toutes les sciences, de tous les arts, et surtout l’art de penser rendu populaire” (“by perfecting all the sciences, all the arts, and above all, by the art of thinking being practiced by the common man.” Moravia 190, n. 2).⁶⁴

The Institut de France, or the National Institute was created when the Convention passed Daunou’s Law, that is, *la loi sur l’organisation de l’instruction publique du 3 brumaire an IV* (“the law on the organization of public instruction of Tuesday, 25 October 1795”). Its three “classes” resembled the royal academies that they replaced, so that the first, *la Classe des sciences physiques et mathématiques* was like the former Académie des Sciences, and the third, *la Classe de littérature et de beaux arts* recuperated the Académie française, the Académie des inscriptions et belles-lettres, and the Académie des beaux-arts. The second, *la Classe des sciences morales et politiques*, was new and short-lived: Napoleon dissolved it in 1803.

The second class, in which Garat taught, was devoted primarily to the analysis of ideas, and was intended to support the other classes by undergirding research in these fields with sound philosophy. Condillac’s method, as interpreted by Destutt de Tracy, was useful for its rigor in rejecting systems, suppositions, and seeming truths in favor of observable facts, logical consequences, and even absolute ignorance (Picavet 22-23). Analysis of ideas leads naturally to discussions of how they are formed by the concurrence of the human faculties of sensitivity, memory, judgment, comparison, attention, imagination, understanding and will. Some philosophers organized the faculties genealogically, while others insisted on their mutual independence. For Condillac, the faculties gave rise to others in a series.

⁶⁴ Moravia cites Garat, *Mémoires historiques sur M. Suard, sur ses écrits et sur le XVIII^e siècle* (Paris: Belin, 1820), vol. II, p. 317.

For Tracy, sensation, judgment, and desire were equally primitive and independent of one another, and formed the basis for the simultaneity of distinct sensations. Ideology after Tracy's *Éléments d'Idéologie* entertained many different configurations of the faculties with respect to one another and to the proper domain(s) of their function.

Tracy's solution to Condillac's complicated model of perception was to connect the will (manifest in us as a feeling) to muscle movement, and resistance to this movement, to the matter ("ce qu'on appelle la matière") existing apart from our sensitive capacity which wills ("cette vertu sentante qui veut/qui constitue notre moi"). The awareness of the existence of things which are not us depends upon the direct and immediate action upon them of the will: "Si notre volonté n'avait jamais agi directement et immédiatement sur aucun corps, nous ne nous serions jamais douté de l'existence des corps" ("If our will had never directly and immediately acted upon another body, we might never have guessed that such bodies existed." Destutt de Tracy 1804, IV, 21-220; cited in Bréhier 603-604). Tracy's introduction of muscle movement, and his implication that the whole human being (and not just the senses) are involved in this discovery is comparable in some ways to Buffon's hypothetical primitive man who collides with a tree, and thereby realizes the existence of things outside himself.

Tracy and Buffon represent similar strains of thought about how the senses contribute their various impressions to form concerted ideas. As to the problem of how exactly sensations, and thus ideas, could be compared among themselves, various interpretations of association (temporal, spatial, etc.) were available. Aristotle's notion of the "common sense" as a faculty which integrates the sensations reappeared in Buffon's "Discours sur la nature des animaux" (1753), as well as in other works by speculative philosophers and sensory physiologists, who traced nerves from the sensory organs to a junction in the brain, the *sensorium commune* (Riskin 25). The philosophical assumption of the "indivisibility of personality" thus had a physiological counterpart whose existence was arguably contingent upon the necessity of the other (Figlio 1975; cited in Riskin 25, n. 23 and 24). Hermann

Boerhaave, Albrecht von Haller, Charles Bonnet, together with Buffon, and later Cabanis, Lamarck, and Cuvier, would all appeal in some way to the “integrity of the conscious self” (Figlio 181).

Lamarck refers twice to “le moi indivisible,” first in citing the report given at the Institut on memoir of Gall and Spurzheim (Lamarck 1809, II, 170-171; see above), then in the context of his own theory of sensation, as “le moi indivisible de l’individu” (Lamarck 1809, II, 275). In his conclusions to volume two chapter three of the *Philosophie zoologique*, he writes that the “moi indivisible” perceives the fluid mechanical *va-et-vient* (flux) of sensation, and the individual notices the sensation, accompanied by the determination of the precise location of the impression upon the body (“le point qui a reçu l’impression” Lamarck 1809, II, 275). The speed of this process gives rise to the illusion that the effect of the sensation is limited to the point of reception of the impression. An individual who notices the sensation, locates it, and judges it forms an idea through an act of the intelligence and thereby proves to have an organ especially capable of producing such activity. On the other hand, the sensations may exist without the added system of understanding (*l’entendement*), so that the individual in this case only receives “de simples perceptions qu’il ne remarque point, mais qui peuvent émouvoir son sentiment intérieur, et le faire agir” (Lamarck 1809, II, 275) (“simple perceptions which it does not notice, although they may arouse its inner feeling and make it act”) (Lamarck 1914, 331).

In the example above, the documentation of Gall and Spurzheim’s research is just one instance of several where Lamarck names his colleagues in reference to their ideas. Despite his growing isolation, he still conceived of his research in community with his fellows at the Institut, a fact which is propped up by his stated concern for consensus (see above, chapter one), as well as the subtle clues in his grammar. For instance, he writes “c’est une chose reconnue qu’il n’y a point d’idées innées” (Lamarck 1809, II, 273) (“It is an established fact that there are no innate ideas.” Lamarck 1914, 330), thereby indicating agreement among philosophers who together “recognize” the validity of this idea.

On another occasion pertinent to this study, Lamarck uses the pronoun “on” – as he often does – to highlight the collaborative nature of scientific progress (or lack thereof):

Ainsi, c'est à tort que **l'on a confondu** le système des sensations avec le système qui produit les actes de l'entendement, et que l'on a supposé que les deux sortes de phénomènes organiques qui en proviennent, étoient le résultat d'un seul système d'organes capable de les produire. Cela est cause que des hommes du plus grand mérite, et à la fois très-instruits, se sont trompés dans leurs raisonnemens sur les objets de cette nature qu'ils ont considérés (Lamarck 1809, II, 271, my emphasis).

Thus it is wrong to confuse the system of sensations with the system that produces acts of the understanding, and to imagine that the two kinds of organic phenomena arising from them can be the result of a single system of organs. This is why men of the highest capacity and knowledge have been mistaken in their arguments on subjects of this nature (Lamarck 1914, 329).

In this citation, it is well worth noting, the two meanings of the word “système” – as both a set of parts forming a complex organic whole, like “le système de circulation,” and a set of principles which form a broader method or schema – converge. And indeed, in their search for answers to the epistemological problem of sensation, physiologists and philosophers converged.

The intense sharing of observations, ideas, and sets of terminology among the faculty at the Institut make the project of differentiating Cabanis's and Lamarck's ideas difficult and renders the motivation for such a project suspect. Further compounding the difficulty is the fact that opinions and alliances often changed among the *Idéologues* as the details of their theories were worked out and new evidence was made available.⁶⁵ As this study of Lamarck's peers and predecessors continues, I will be attentive to overlap with other “systems,” but mostly to distinctions drawn by Lamarck himself. Some of the work of determining the modes and directions of influence has been done by Richards in his “evolutionary” study of the role of animal behavior in the development of evolutionary theory. He writes, “It now seems fairly clear that, while there may have been direct interaction between Cabanis

⁶⁵ See for example Picavet's narrative of how Destutt de Tracy's logical predicament regarding the roles of movement and the will for discovering our own existence was solved by leaning on Cabanis's theory and resulted in the repudiation of Biran's work on the role of effort. A sort of schism grew out of this between Tracy and his former disciple (Picavet 340-343).

and Lamarck on the species question, neither of them knew anything of Erasmus Darwin's ideas. But there was another kind of relation connecting them, or so I think. They were related by processes of conceptual descent and selection. The similarities between the two French thinkers and Darwin can be understood as resulting from a common theoretical inheritance shaped by similar intellectual and social environments" (Richards 257).

While it is harder to separate the "common theoretical inheritance" of ideas from direct exchange in the case of Cabanis and Lamarck, Richards does reach some conclusions: Lamarck was heavily influenced by Cabanis's work, possibly directly, which is supported by similarities in their theories and the fact that Lamarck cites Cabanis. On the other hand, Cabanis – usually inclined to give credit where it was due – did not cite Lamarck in his *Rapports du physique et du moral de l'homme* (1802), the same work in which Cabanis exposed his evolutionary theory (Richards 263). As I mentioned in chapter one, the first public exposition of Lamarck's views occurred earlier, and the coalescence of his thoughts on the subject may have occurred as early as 1794.⁶⁶ In any case, by 1801, Lamarck had published the opening discourse to his invertebrates course at the Muséum, which had been drastically revised in 1799 and given again in much the same form in 1800.⁶⁷ So in fact, the arrow of influence may point in the opposite direction.⁶⁸

Cabanis was an imposing figure by the breadth and depth of his interests and studies. He was much more than a clinical and experimental practitioner of medicine and admirer of Homer and Hippocrates. His first two volumes of the *Mémoires* for the second class contained six of the twelve that would comprise his *Rapports du physique et du moral de l'homme*. Thurot, reporting on them for the

⁶⁶ Goulven Laurent points out the abrupt shift from reading the animal series as a "distribution" to reading it as a progressive "formation" in the first public course that Lamarck gave at the Muséum in 1794 (pp. 46, 48). See Laurent 1975, 334-335.

⁶⁷ See Burkhardt 1972 and Burkhardt 1977, 143-144, for a thorough discussion of the timing of consolidation of various key ideas in Lamarck's theory.

⁶⁸ More research into the archive of memoirs given at the Institute may shed some light on the direction of influence.

Décade, credited him with having placed metaphysics and moral philosophy on equal footing with the physical and natural sciences, by demonstrating the degree to which they may be reliably based on evidence (Picavet 224). Picavet considers him to have been, after Descartes, the true founder of French physiological psychology (Picavet 225). Bichat, Biran, Lamarck, and others after him benefited from the richness of his research but may also have caught the brunt of the backlash against his philosophy. Picavet explains, “Nous comprenons pourquoi la *Philosophie zoologique* de Lamarck fut si mal accueillie ou si peu lue en France⁶⁹ : Cabanis en avait lié les doctrines à une philosophie condamnée comme ‘essentiellement matérialiste’” (Picavet 258) (“It is understandable why Lamarck’s *Zoological Philosophy* was so poorly received or so little read in France: its doctrines had been linked to a philosophy condemned as being “essentially materialistic” – Cabanis’s.” Picavet 258; de Bonald 289).

Neither was the confusion unfounded: Lamarck’s *Philosophie zoologique* starts with acknowledging Cabanis’s eminent work on the influence of the physical upon the moral, in a footnote preserved in the translation, which states, “See the interesting work of M. Cabanis entitled *Rapports du physique et du moral de l’homme*” (Lamarck 1914, 10, n. 1). Lamarck then endeavors to show the opposite, the influence of the moral upon the physical:

[À] leur source, le physique et le moral ne sont, sans doute, qu’une seule et même chose ; et c’est en étudiant l’organisation des différens ordres d’animaux connus qu’il est possible de mettre cette vérité dans la plus grande évidence. Or, comme les produits de cette source sont des effets, et que ces effets, d’abord à peine séparés, se sont par la suite partagés en deux ordres éminemment distincts, ces deux ordres d’effets, considérés dans leur plus grande distinction, nous ont paru et paroissent encore à bien des personnes, n’avoir entre eux rien de commun. Cependant, **on a déjà reconnu l’influence du physique sur le moral** ; mais il me paroît qu’on n’a pas encore donné une attention suffisante aux influences du moral sur le physique même. Or, ces deux ordres de choses, qui ont une source commune, réagissent l’un sur l’autre, surtout lorsqu’ils paroissent le plus séparés, et on a maintenant les moyens de prouver qu’ils se modifient de part et d’autre dans leurs variations. Pour montrer l’origine commune des deux ordres d’effets qui, dans leur plus grande distinction, constituent ce qu’on nomme le physique et le moral, il me semble qu’on s’y est mal pris, et qu’on a choisi une route opposée à celle qu’il falloit suivre (Lamarck 1809, 3-4, my emphasis).

⁶⁹ When Lamarck’s library was auctioned off after his death, many unsold copies of his *Philosophie zoologique* were listed among the other books in his possession (Lamarck 1830).

At bottom, the *physical* and *moral* are without doubt one and the same thing. It is by a study of the organisation of the different orders of known animals that this truth can be set in the strongest light. Now since these products from a common origin, at first hardly separated, become eventually divided into two entirely distinct orders, these two orders when examined at their greatest divergence have seemed to us and still seem to many persons to have nothing in common. The influence of the physical on the moral has however already been recognised, but it seems to me that sufficient attention has not yet been given to the influence of the moral on the physical. Now these two orders of things which have a common origin react upon one another, especially when they appear the most widely separated; and we are now in a position to prove that each affects the variations of the other. It seems to me that we have gone the wrong way to work in the endeavour to show the common origin of the two orders of results which, in their highest divergence, constitute what is called the *physical* and the *moral* (Lamarck 1914, 10, emphasis original to the translation).

In this way, his most famous work may be considered a complement to, or continuation of, rather than just a critical response to, Cabanis's *Rapports*. This observation is not intended to diminish the status of Lamarck's *Philosophie zoologique*. Several others drew inspiration from the *Rapports*. Cabanis cited Xavier Bichat's anatomical study, while obliquely accusing him of borrowing *his* ideas without citing the source (Picavet 249, 435-436). Tracy desired that his *Principes Logiques, ou recueil de faits relatifs à l'intelligence humaine* (1805) should be viewed as a corollary to the principles laid out in the *Rapports*, as he wrote in the dedication to Cabanis (Picavet 361).⁷⁰ As to the charge of materialism, there is abundant evidence to establish the materialist *methods* used by both Cabanis and Lamarck in their research, but as the legacy of Cabanis shows, friends and critics on all sides found fodder for controversy about his beliefs and intentions after his death (Picavet 289-291); the same is true for Lamarck, as I have already explained above, in the introduction. This passage leads us to examine Cabanis's principles in the *Rapports*.

Cabanis's Philosophy and Physiology

Cabanis had taken a course on the philosophy of Locke and decided to reteach himself rhetoric, philosophy, and theology by the time he met Condillac at the home of Madame Helvétius (Picavet 177).

⁷⁰ Tracy added, "Ainsi serait réalisé le désir de Locke : l'histoire détaillée de notre intelligence serait une portion et une dépendance de la physique humaine" ("Locke's wish may be granted in this way: that the detailed history of human intelligence should be part of and dependent upon human anatomy and physiology." Picavet 361, n. 3).

He made many acquaintances there, including Condorcet and Benjamin Franklin. D'Holbach's *Système de la nature* made an impression on him (Picavet 179). He established himself as a doctor under the mentorship of Dubreuil, then published two works which demonstrated his philosophical leanings and culminated his early work translating, analyzing and commenting upon Hippocrates and Galen: the *Serment d'un médecin* (1783), a poetic version of the Hippocratic oath, and *Du degré de certitude de la médecine* ("On the degree of certitude in medicine," 1788) (Picavet 180). The latter publication grew out of his clinical observations.

In mastering medicine and philosophy, he was prepared to bolster the science of physiology by joining it with the analysis of ideas. From this point of view, it is clear that he did not intend for physiology to offer material solutions to metaphysical problems (Bréhier 407). Cabanis defended himself from this charge as early as 1805, when the second edition of his *Rapports* appeared, just after the publication of Chateaubriand's *Génie du Christianisme* (Picavet 248). A similar phrase is repeated in a later edition: "Le lecteur verra souvent, dans le cours de l'ouvrage, que nous regardons ces causes [les "causes premières"] comme placées hors de la sphère de nos recherches, et comme dérobées pour toujours aux moyens d'investigation que l'homme a reçus avec la vie" ("The reader will frequently be given to understand in the course of this work that we believe these [first] causes to be outside the scope of our research, and forever hidden from the means of investigation which man was given at birth." Cabanis 1824, I, xxvii). These means of investigation are, of course, the senses.

Locke, Bonnet, Condillac and Helvétius had reasonably proven, according to Cabanis, that physical sensitivity (*la sensibilité physique*) is the source of all human ideas and habits which form human moral existence (Picavet 229). What they lacked was an understanding of human physiology. According to Picavet, Cabanis considered that while it was likely "qu'on ne pourrait jamais rattacher la sensibilité à un fait plus général, il n'est pas éloigné de penser qu'on découvrira un jour la liaison qu'elle peut avoir avec certaines propriétés bien reconnues de la matière" ("that we may never be able to

correlate sensitivity with more general facts, it is conceivable that we will one day discover the relationship that it may have with certain well-understood properties of matter.” Picavet 250).⁷¹ The tone is optimistic, if cautious.⁷² Cabanis’s faith in the method of understanding the phenomena related to a state of health by studying various states of illness with respect to the human brain, body, physiological processes and sensory abilities is solid, as he expresses it in the seventh memoir of his *Rapports* (Picavet 197, n. 2). Moreover, the findings were immediately applicable in attempting to restore disturbed individuals to health.

Although he devotes one memoir to an exploration of animal sensation and hypothesizes that animal organization and faculties represent a continuum of development from mollusks to humans, Cabanis does not apply the term *sentiment intérieur* in his work, not even in the sections which analyze sensation in animals and humans. The closest idea is the *centre commun* of the nervous system, but at the brink of the mind-body divide, the physician chose a term safely on the side of anatomy, and one that rings technical. Richards points out that Cabanis’s two-class theory of instinct was a response to the “deficiencies of Condillac’s exaggerated environmentalism,” that is, the notion that all thoughts are derived from external sense impressions (Richards 261). In turn, Lamarck responded to Cabanis that all sensations were internal, registering in the common nerve center, the *sentiment intérieur* (Lamarck 1809, II, 322-323). Richards notes that Lamarck may have based his criticism of Cabanis’s position on the summary that Anthelme Richerand, Cabanis’s disciple, gave of it. In this way, he emphasized a minute difference. Elsewhere, Cabanis’s method is to examine the predisposition and degeneration of tissues, and the resulting pathology in the individuals presenting these characteristics. He often

⁷¹ Picavet cites Cabanis, *Rapports du physique et du moral de l’homme* (Paris: Crapart, Caille et Ravier, 1805) vol. I, p. 158, n. 1.

⁷² Baertschi says that Cabanis’s hope of finally electing between hylozoism (matter can sense) and what Mario Bunge called “emergentism” (sensation is a property of matter organized as a system) (Bunge 32) was fulfilled by Lamarck (Baertschi 455).

mentions habits (habitudes) in the Rappports, generally in the sense of mannerisms or practices, but it was François-Pierre-Gonthier (Pierre) Maine de Biran who developed a complete treatise on the subject.

Maine de Biran's *Influence de l'Habitude sur la faculté de penser*

Biran wrote a response to the question proposed (twice, first in 1799, then in 1801) by the second class at the Institut, "to determine what influence habit may have over the faculty of thought; or, in other words, demonstrate the effect produced by frequent repetition of the same operations on each of our intellectual faculties." His *Influence de l'Habitude sur la faculté de penser* (1802) was intended to facilitate the project of educating the Republic. He announces the ideological (and Ideological) underpinning of his work:

Sachant d'ailleurs qu'un ouvrage de ce genre est bien moins recommandable par l'exactitude de sa théorie, que par l'utilité pratique de ses applications, et convaincu d'un autre côté, que tout l'art de l'éducation consiste à former de bonnes habitudes *physiques, intellectuelles et morales* (c'est-à-dire, à modifier persévéramment l'organisation, l'esprit et le cœur de l'homme, de telle manière, qu'il se dirige ensuite vers tout ce qui est bon et vrai, avec cette nécessité, cette sorte d'instinct d'une heureuse habitude), j'avais songé à faire converger, vers ce grand but, l'application de plusieurs principes répandus dans le cours de ce Mémoire, et à lui donner ainsi tout le degré d'utilité dont la nature du sujet le rendait susceptible (Maine de Biran 1802, viii-ix).

Knowing, moreover, that a work of this kind is less deserving of regard for the correctness of its theory than for the practical utility of its applications, and convinced, also, that the whole art of education consists in forming good physical, intellectual and moral habits (that is to say, in perseveringly modifying man's organisation, mind and heart, in such a way, that he then directs himself towards all that is good and true, with that necessity, that sort of instinct, which is produced by a fortunate habit), I had thought of making the application of many principles scattered through this Memoir converge towards this great end, and of thus giving it as great a utility as the nature of the subject permits (Maine de Biran 1929, 44).

He remained skeptical about whether sensation is a unique and indivisible faculty. He recognized that the question could not be answered by any one discipline from within, but through collaboration between two fields of research. "J'ai voulu essayer d'unir, par certains côtés du moins, l'idéologie à la physiologie; j'étais conduit là par la nature de la question, qui appartient en même tems aux deux sciences; j'ai pensé même que l'idéologie en général ne pouvait que gagner à cette alliance..." (Maine de Biran 1802, 10-11) ("I wanted to try to unite, at least in certain respects, ideology and physiology. I was

led to this by the nature of the question, which belongs at the same time to two sciences. I even thought that ideology in general could only gain by this alliance....” Maine de Biran 1929, 51-52).

His stated approach is the same as the chemist’s: In order to understand the effects of habit, it is necessary to invert it, in a sense, by combining fundamental thought processes and objects in an attempt to recreate in the laboratory of one’s own mind, the process by which habit veils our own thoughts from us (Maine de Biran 1802, 4). Condillac and Bonnet had followed this method. Biran’s insistence that habit is to blame for the resistance to analysis which we encounter in the chaos of our minds is reflected in his phrase, “la pente de l’habitude” (Maine de Biran 1802, 6). This phrase, like others, invites a reading in parallel with Lamarck, whose penchans played an important role in his definition of man (see above, chapter one).

Biran analyzes sensation in the introduction to his essay. Sensation and perception (two modes of activity) are not only combined in most sensory impressions that we receive, but they respond to habit inversely with respect to each other and may even exist antagonistically in certain impressions. Destutt de Tracy picks up on this important point in his summary of Biran’s essay, “It is a general rule that whenever feeling predominates, there is no longer knowledge” (Destutt de Tracy 1929, 26). Vivid sensibility excludes perception. This is true for all kinds of sensation, in all the sensible/sensitive organs (hands, eyes, ears, tongue, nose, internal organs), and the degree to which this is the case increases in this direction as well, from hands (least sensitive, most perceptive) to the nose (most sensitive, least perceptive). The internal organs do not perceive at all, they are only subject to sensation. In the middle of the spectrum, the ears of a sensitive person may be stimulated excessively by the timbre of some instruments, so that they no longer perceive the sound but feel it.

Biran's exploration of habit in relation to sensation, perception, memory, and imagination led him to develop the concept of effort, which is the perceptive counterpart to resistance in external objects:

Si l'individu ne *voulait* pas ou n'était pas déterminé à commencer de se mouvoir, il ne connaîtrait rien. Si rien ne lui résistait, il ne connaîtrait rien non plus ; il ne soupçonnerait aucune existence, il n'aurait pas même d'*idée* de la sienne propre. Le mouvement commencé, s'il s'arrêtait à la première résistance (par exemple, si lorsqu'un corps est posé sur sa main, ses doigts, en se fermant, s'arrêtaient au plus léger contact), l'individu saurait simplement qu'il existe un obstacle ; mais non point si cet obstacle est absolument impénétrable, solide, dur ou mou, etc. Ces propriétés de la matière ne peuvent se manifester à lui qu'autant qu'il *veut* continuer le mouvement, et c'est l'intensité de son effort qui en est la mesure... (Maine de Biran 1802, 26).

If the individual did not *will* or was not determined to begin to move, he would know nothing. If nothing resisted him, he likewise would know nothing, he would not suspect any existence; he would not even have an *idea* of his own existence. If the movement having begun should stop at the first resistance (for example, if, when an object is placed on his hand, his fingers, in closing, should stop at the slightest contact), the individual would simply know that an obstacle exists; but in no way whether this obstacle is absolutely impenetrable, solid, hard or soft, etc. These properties of matter can only be manifest to him in so far as he *wills* to continue the movement and it is the intensity of his effort which is their gauge (Maine de Biran 1929, 58).

Tracy had posited in his dissertation eight years earlier (reported by the *Décade philosophique*, 30 germinal an VI, notice par Lacuée) (Picavet 310, n. 3) that habit was almost solely responsible for our knowing anything, and at the same time the greatest hindrance to finding out more about our intelligence (Picavet 310). In the revised edition of his memoirs, he corrected Condillac's idea that we derive the notion of extension and thereby of bodies from sensation, positing instead that motility is the source of this understanding. Motility for Tracy was distinct from the sense of touch, just as Biran's mobility was distinct from tactile sensation, but unlike Biran's mobility, Tracy's motility was not associated with the hands at all, or with any particular organ, but existed as a "sixth sense" or "faculty" that seeks resistance from external bodies, which in turn informs us of their existence (Picavet 310).

Biran's philosophical gaze instead turned inward: considerations on muscle effort led naturally to formulations of the self which involved voluntary, that is, willed, movement.⁷³

Here, Biran encountered a problem which he felt he could not resolve within the framework of *idéologie* available in his time. Arthur Robinson points to a passage in Biran's *Oeuvres inédites* that characterizes the muddle in which Biran found himself:

Sentir et agir; avoir conscience des modifications passives; apercevoir ses actes dans leur propre détermination, ou percevoir simplement les résultats, et cela toujours dans un exercice actuel et positif de certains instruments organiques, soumis directement ou indirectement à une puissance de vouloir, *moi*, laquelle n'est point constituée elle-même dans sa propre réflexion, hors de cet exercice. . . . Voilà, je crois, des facultés, bien distinctes, *sui generis*, mais voilà tout. Telles sont, du moins, les bornes de ma vue " (Robinson 269, citing Biran's *Oeuvres Inédites*, i, xlii)

To sense and to act; to be aware of passive modifications⁷⁴; to be conscious of one's actions in their proper aspect,⁷⁵ or to simply perceive their results, and this always in the current and positive exercise of certain organic instruments,⁷⁶ directly or indirectly subject to a power to will, *me, I*,⁷⁷ which has no separate constitution in its own reflection outside of this exercise... These are, I believe, distinct faculties, each one unique, but that is all. These are, at least, the limits of what I can see (Maine de Biran 1859, I, xlii; cited in Robinson 269).

⁷³ Cabanis also connected movement with a sense of self in the human fetus, citing Tracy's "effort voulu" as the source of impressions of resistance *in utero* leading to awareness of self: "D'après cela, nous voyons que le fœtus a déjà reçu les premières impressions dont se composent l'idée de résistance, et celle des corps étrangers, et la conscience du moi ; car il exécute des mouvemens qui sont bornés et contraints par les membranes dans lesquelles il est renfermé; il a le besoin et le désir, c'est-à-dire la volonté d'exécuter ces mouvemens: et quant à la conscience du moi , on peut croire qu'il lui suffirait, pour l'acquérir, d'éprouver des impressions de bien-être et de malaise, et de tenter, pour prolonger les unes et faire cesser les autres, des efforts voulus, quelque mal conçus et vagues qu'on puisse d'ailleurs les supposer" ("According to this principle, we see that the fetus has already received the first impressions which compose the idea of resistance, and that of external bodies, and the awareness of self; because he carries out movements which are obstructed and constrained by the membranes in which he is enclosed; he has both need and desire, that is, the will to carry out these movements: and as for the awareness of self, we may believe that all that is needed for him to acquire it would be to experience impressions of well-being and discomfort, and to attempt to prolong the former and put an end to the latter by voluntary efforts, however poorly planned and vague we might suppose them to be." Cabanis 1815, 294). Notably, Buffon asserted that the fetus becomes animated at forty days' gestation.

⁷⁴ "Modifications" is the term typically used in reference to the affective states of the soul: "les modifications de l'âme." Biran appeals to earlier psychological models and vocabularies.

⁷⁵ Translating "détermination" as "aspect" no doubt introduces more ambiguity. Margaret Donaldson Boehm uses "determination" and Robinson uses "disposition" to describe the mode (sensory or motor or both) of an impression.

⁷⁶ Presumably, the organs of sense, including the "cerebral organ, which [Biran] regards as the universal sense of *perception*" (Destutt de Tracy 1929, 32).

⁷⁷ I give both pronouns in English to account for the object pronoun *and* tonic or disjunctive values of the French "moi."

For Biran, the *puissance moi* supplies the will of voluntary movement, the source of perception and consequently of judgment, knowledge, and consciousness (it is we who exist and feel). Obliquely, a physiology of the *moi* is also proffered in Biran's work. Tracy summarizes:

Vital movement, [Biran] says, incessantly sustains in all parts of the living being, a certain degree of sensibility proper to each and all of its parts. When this general *tone* is not lowered, the living being may and must have a dull feeling of his existence, but he has no sensation in the strict sense of the term. When he receives an increase or a general diminution, or a sudden weakening in some parts, there is sensation, but in this last case the irritated organ reacts upon the others, the equilibrium is gradually re-established, and at the most the general tone remains augmented or diminished, sometimes even it is, moreover, one or the other when through the cessation of the irritating cause, the organ which has suffered has already resumed its previous condition; which produces a new inequality in the opposite direction (Destutt de Tracy 1929, 31-32).

The *moi* is mostly insensible (undiscoverable), or it is sensible only in the absence of perturbation of a system in equilibrium; the equilibrium is not, however, a *static* equilibrium, but an *ecstatic* or fluctuating one. This concept of "vital movement" resembles Lamarck's concept of *orgasme (vital)*.

The *orgasme vital*, according to Lamarck, is a basic property of living beings, sustained by a subtle fluid (exclusively by this fluid for animals lacking blood vessels), which renders organic movement possible (Lamarck 1802, 71, 81).⁷⁸ Organic movement, in turn, may be defined as all of the internal movement of fluids and solids of a living being: "On donne, en général, le nom de mouvement

⁷⁸ "La vie est un ordre et un état de choses dans les parties de tout corps qui la possède, qui permettent ou rendent possible en lui l'exécution du mouvement organique, et qui, tant qu'ils subsistent, s'opposent efficacement à la mort. Dérangez cet ordre et cet état de choses au point d'empêcher l'exécution du mouvement organique, ou la possibilité de son rétablissement, alors vous donnez la mort. Ce dérangement, qui produit la mort, la nature le forme elle-même nécessairement au bout d'un temps quelconque, et en effet c'est le propre de la vie d'amener inévitablement la mort. A l'ordre et à l'état de choses dont je viens de parler, et que j'ai dit constituer la vie, il faut ajouter l'existence d'un *orgasme vital* dans toutes celles des parties du corps vivant, qui doivent se prêter au mouvement organique et concourir à l'exécuter" ("Life is an order and a state of things in the parts of a body that possesses it, which permit or enable in it the execution of organic movement, and which, as long as they are in place, effectively resist death. Disturb this order and this state of things to the point of impeding the execution of organic movement, or the possibility of its resuming, and you cause death. This perturbation which produces death, is necessarily formed by nature itself after a certain period of time, and in fact, it is an essential property of life that it inevitably leads to death. To the order and state of things which I just discussed, and which I said constitute life, I must add the existence of a *vital orgasm* in all the parts of the living body which support organic movement and promote its continuance." Lamarck 1802, 71). Lamarck's *two* fluids – subtle and nervous – are contiguous, that is, *ébranlemens* (commotion) of the subtle fluid may be communicated to the nervous fluid. Otherwise, they are distinct, and while subtle fluids may freely penetrate bodies, nervous fluids are contained in reservoirs and channels.

organique ou vital, à l'ensemble des mouvemens essentiels qui s'opèrent dans les parties d'un corps qui possède de la vie et qui en jouit positivement" ("The term organic or vital movement is generally used to designate all of the essential movements which occur in the parts of a body which possesses a measure of life and manifestly benefits from it." Lamarck 1809-1815, 7). The various physical elements of this theory were sourced from Haller, Friedrich Hoffmann, l'Abbé Nollet, Joseph Toaldo, and Lavoisier, and represent commonly accepted notions (Burkhardt 1977, 63-66). On this level of organization, the living being not only possesses the conditions necessary to support life but also, as per Biran's conditions, to feel its existence as a living being (though in no way to qualify or perceive it). In Lamarck's terms, it delights, but its ecstasy, so to speak, does not yet constitute a feeling, not even a feeling of existence (Lamarck 1809, II, 279).

Perhaps even the dullest impression of existing, together with fluid movements within and without, represents the degree zero of animal life which still contains the possibility of the development of rational thought among the higher animals. Lamarck's seemingly unnecessary division between possessing life and enjoying it – he could reasonably have excluded one or the other phrase – could actually secure coherence for his theory. Even though he denies the possibility of the *sentiment intérieur* (his synonym for *le sentiment de l'existence*) existing in animals lacking a common nerve center, it seems that the potential, however meager, is present, especially considering that at this extreme the only remaining option is no feeling at all, like unorganized matter. (More about the most rudimentary animals later.)

The organic origins of human intelligence could almost be established without a doubt, but for the apparently great gulf between sentience and rational thought. Biran at this point referred to Buffon, and in doing so, introduced the possibility of a constructive middle way. Biran "quotes with approval a remark of Buffon's that it is to a similar blending of sensitivity and mobility in the trunk of an elephant that the notable intelligence of that animal is due, and adds that, through all the scale of living creatures

in which feeling and movement are combined in such various degrees, in man alone do feeling and movement combine in the precise balance most favourable to the development of intelligence” (Robinson 261).

Sensation was not enough in Biran’s model of the faculty of thought. Biran balked at the notion that sensation could somehow be transformed through its operations into other faculties like memory and attention (Robinson 263). Using Condillac’s premises, Biran exposed the weakness of the associationism on which his ideas rested. Robinson explains, “It is a contradiction to suppose that the self is identified with all its modifications and yet that it compares and distinguishes them. In a sensation renewed and weakened there is no base for recollection: "pour que l'être sentant pût distinguer le souvenir de la sensation, ou pour qu'il y eût en lui l'équivalent de ce que nous appelons souvenir, il faudrait que le moi modifié actuellement, se comparât au même moi modifié dans un autre instant; il faudrait comme l'a dit Condillac, 'qu'il sentit faiblement ce qu'il a été, en même temps qu'il sent vivement ce qu'il est': mais est-ce donc la même chose que de sentir faiblement, et de sentir qu'on a été ? Comment trouver une relation de temps dans cette seule circonstance d'affaiblissement ? Est-ce que la sensation faible n'est pas présente comme la sensation vive ? " (Maine de Biran 1841, I, 49; cited in Robinson 264).

To Biran’s problem, which both he and Destutt de Tracy struggled to resolve in terms of the will, Lamarck applied a physiological solution. Motor-organs and sense-organs, in Biran’s terms, were in fact united at their source in the nervous system of higher animals. Animals from insects on up display a common nerve center, connected to the rest of the body by nerves of two kinds. One set of nerves was responsible for movement and a separate set was responsible for sensation, but they mingled where they entered the brain.⁷⁹ So, unlike in Biran’s account, sensation took place internally, not at the site of

⁷⁹ “On a donc lieu de croire que, parmi les différens systèmes particuliers qui composent le système nerveux dans son perfectionnement, celui qui est employé à l'excitation des muscles est distinct de celui qui sert à la production

impressions.⁸⁰ Motor impulses similarly originated in the *sensorium commune*, or sentiment intérieur. These may have a role in memory, as they did in Biran's theory ("En un mot, sans détermination motrice (originaire) il n'y a ni reminiscence ni idées" ("In short, without initial motor disposition, there is no memory, and no ideas." Maine de Biran 1841, I, 52; cited in Robinson 265).⁸¹ Although what appears as purely "mental" events or products arises from different processes, they have a common physical origin.

Lamarck bolsters his case by distinguishing between sensations (simple perceptions, fleeting glimpses, imperfect ideas) and thoughts or ideas, and calling upon other physical elements of his theory for support:

En effet, toute sensation qui ne cause qu'une simple perception, n'imprime rien dans l'organe, n'exige point la condition essentielle de l'attention, et ne sauroit qu'exciter le sentiment intérieur de l'individu, et lui donner l'aperçu fugitif des objets, sans produire aucune pensée chez cet individu. D'ailleurs, la mémoire, qui ne peut avoir son siège que dans l'organe où se tracent les idées, n'est jamais dans le cas de rappeler une perception qui n'est point parvenue dans cet organe, et qui conséquemment n'y a rien imprimé. Je regarde les perceptions comme des idées imparfaites, toujours simples, non gravées dans l'organe, et qui peuvent s'exécuter sans condition, ce qui est très-différent à l'égard des idées véritables et subsistantes. Or, ces perceptions, au moyen de répétitions habituelles qui frayent certains passages particuliers au fluide nerveux, peuvent donner lieu à des actions qui ressemblent à des actes de mémoire. L'observation des mœurs et des habitudes des insectes nous en offre des exemples (Lamarck 1809, II, 273-274).

Indeed, no sensation, which causes only a simple perception, makes any impression on the organ; it does not need the essential condition of *attention*, and can do no more than excite the inner feeling of the individual and give it momentary perceptions of objects, without the production of any thought. Moreover memory, whose seat can only be in the organ where ideas are traced, can never bring back a perception which did not penetrate to this organ, and therefore left no impression on it. I regard perceptions as imperfect ideas, always simple, not graven on the organ and needing no condition for their occurrence; and this is a very different

du sentiment" (Lamarck 1809, II, 205) ("Hence there are grounds for the belief that, of the various special systems which compose the nervous system at its highest perfection, that which is engaged in muscular excitation is distinct from that which serves for the production of feeling." Lamarck 1914, 301).

⁸⁰ Seven years later, Lamarck observed, "Nous n'apercevons rien qu'en nous-mêmes : c'est une vérité qui est maintenant reconnue" (Lamarck 1809, II, 265) ("All that we perceive is within ourselves: this is now a well-established truth." Lamarck 1914, 326).

⁸¹ Biran's theory of memory is much more elaborate than its presentation here. What we might call "kinaesthetic learning" (similar to what small children accomplish when they imitate – indeed, he discusses this fact in his essay) was for him a first and necessary step, but not the totality of the operations of memory. He himself clarifies this fact by qualifying his statement with the parenthetical (*originaire*).

state of affairs from what prevails in the case of true and lasting ideas. Now these perceptions, by means of habitual repetitions which cut out certain channels for the nervous fluid, may give rise to actions which resemble those of memory. Examples are furnished to us in the manners and habits of insects (Lamarck 1914, 330).

Lamarck is grappling with many models of sensation, and their corresponding terminologies. He had just cited Cabanis, Richerand, and Condillac to show how his ideas differed. Now, without citing Biran, we cannot positively affirm that he was inspired by Biran's work, but at least that he was engaged in a similar line of inquiry, and that he was operating with a similar set of principles.

If Lamarck concurs with Biran about sensation, however, he does not define perceptions in the same way. In his theory, habit plays a different physiological role, since it is related only to sensation and is therefore not routed through memory. That is, at least, at a certain level of sophistication of animal organization. The insects become important because they represent a distinct middle point between the simplest animals and humans: their complex behaviors, while apparently motivated by memory, are not so. The insect body "remembers" sense perceptions that are repeated because channels for nervous fluid grow to supply the appropriate organs. How it is that the animal modifies its *actions* through the simple enervation of a particular part of its body is unclear.

Biran's objection to Condillac's associationism, that there would be no base for recollection from a sensation renewed, is thus diverted from the mental to the physical plane, but the lack of connection remains in the difference between the habit of sensing and the habit of doing. It would be wrong to try to force a connection here, because Lamarck admitted that nature had seized upon different solutions for different problems of animal organization⁸²; in other words, real gaps exist between groups of

⁸² "J'en étois là, lorsqu'ayant considéré que sans les excitations de l'extérieur, la vie n'existeroit point et ne sauroit se maintenir en activité dans les végétaux, je reconnus bientôt qu'un grand nombre d'animaux devoient se trouver dans le même cas ; et comme j'avois eu bien des occasions de remarquer que, pour arriver au même but, la nature varioit ses moyens, lorsque cela étoit nécessaire, je n'eus plus de doute à cet égard" (Lamarck 1809, I, xv-xvi) ("I had reached this point when I reflected that without internal excitations plant life would not exist at all, nor be able to maintain itself in activity. I recognised the fact that the same consideration applied to a large number of animals; and as I had very frequently observed that nature varies her means when necessary in order to attain the

animals up and down the chain. By 1809,⁸³ Lamarck understood this well, writing about divisions between the classes of animals, he remarked: "...[S]urtout dans le règne animal, plusieurs de ces coupes paroissent réellement formées par la nature elle-même" ("Especially in the animal kingdom, several of these discontinuities really seem to have been formed by nature herself." Lamarck 1809, I, 26). And so, although nature conserves the progress made from one level to the next,⁸⁴ intermediary forms were not always available to attest to the reality of this progress. This is true in the difference between forms of animal organization which support the existence of higher faculties and those that do not.

En supposant que j'eusse été assez heureux pour saisir une vérité, dans la pensée d'attribuer au sentiment intérieur des animaux qui en sont doués, la puissance productrice de leurs mouvemens, je n'avois levé qu'une partie des difficultés qui embarrassent dans cette recherche ; **car il est évident que tous les animaux connus ne possèdent pas et ne sauroient posséder un système nerveux ; que tous conséquemment ne jouissent pas du sentiment intérieur dont il est question ; et qu'à l'égard de ceux qui en sont dépourvus, les mouvemens qu'on leur voit exécuter ont une autre origine** (Lamarck 1809, I, xv, my emphasis).

Admitting that I had been fortunate enough to alight upon a truth in attributing to the inner feeling of animals which have it the power which produces their movements, I had still only

same end, I had no further doubt about the matter." Lamarck 1914, 5). N.B. The translation provided by Elliot betrays Lamarck's meaning by rendering "excitations de l'extérieur" ("excitations from outside") as "internal excitations." The analogy of animals to plants is logical even though Lamarck clearly distinguished the two kingdoms. There were species that were difficult to identify as belonging to one or the other in older systems of classification.

⁸³ Laurent maintains that in the early years of the nineteenth century, Lamarck's philosophical views and his classificatory practices diverged over the issue of continuity and discontinuity, and developed in parallel, but independently.

⁸⁴ "De plus, si la nature n'avoit pu donner aux actes de l'organisation la faculté de compliquer de plus en plus l'organisation elle-même, en faisant accroître l'énergie du mouvement des fluides, et par conséquent celle du mouvement organique ; et si elle n'avoit pas conservé par les reproductions tous les progrès de composition dans l'organisation, et tous les perfectionnemens acquis, elle n'eût assurément jamais produit cette multitude infiniment variée d'animaux et de végétaux, si différens les uns des autres par l'état de leur organisation et par leurs facultés. Enfin, elle n'a pu créer au premier abord les facultés les plus éminentes des animaux ; car elles n'ont lieu qu'à l'aide de systèmes d'organes très-complicés : or, il lui a fallu préparer peu à peu les moyens de faire exister de pareils systèmes d'organes" ("Moreover, if nature had not enabled acts of the organization to render organization itself increasingly more sophisticated, by causing the energy of the fluid movements to grow, and consequently that of organic movement; and if she had not preserved by means of reproduction the successes of composition in organization, and all the acquired perfections, she surely could never have produced the infinitely varied multitude of animals and plants, so different from one another with regards to the state of their organization and by their faculties. Finally, she cannot have created from the start the most eminent of the animal faculties, since these do not occur without the support of highly complex systems of organs: rather, it was necessary for her to prepare little by little the means by which such systems of organs were made to exist." Lamarck 1809, I, 273).

surmounted a part of the difficulties by which this research is hampered. **For it is obvious that not all known animals do or can possess a nervous system; consequently, all animals do not possess the inner feeling of which I am speaking; and in the case of those which are destitute of it, the movements which they are seen to execute must have another origin** (Lamarck 1914, 5, my emphasis).

Thus for Lamarck, irritability and sensation do not represent two different degrees of the same phenomenon, and the movements associated with them are not derived from the same source.⁸⁵ The language of “faculties” that subsumed “irritability” and “sensibility” under the same order of phenomena did *not* distinguish between living beings of different sets of sensory givens, nor did it even distinguish between living and non-living, since “faculties” could be ascribed to entities such as the sun, the air, the elements, etc.⁸⁶ The word itself could be highly misleading, especially when applied to psycho-physical processes: the “faculty of thought,” or the “faculty of sensation.”

With what did Lamarck replace such language? I would argue that by defining “attention” as a “condition,” “sensation” as a result of fluid movements, or an “effect,”⁸⁷ and the “inner feeling” or *sentiment intérieur* as a “power,” Lamarck began a process of emancipating his language from the misunderstandings that would ensue from employing a vocabulary laden with connotations to other

⁸⁵ “Mes observations n'eussent produit aucun éclaircissement satisfaisant sur les sujets dont il s'agit, si je ne fus parvenu à reconnoître et à pouvoir prouver que le sentiment et l'irritabilité sont deux phénomènes organiques très-différens ; qu'ils n'ont nullement une source commune, comme on l'a pensé ; enfin, que le premier de ces phénomènes constitue une faculté particulière à certains animaux, et qui exige un système d'organes spécial pour pouvoir s'opérer, tandis que le deuxième, qui n'en nécessite aucun qui soit particulier, est exclusivement le propre de toute organisation animale” (Lamarck 1809, I, x) (“My observations would not have thrown any satisfactory light upon the subjects treated, if I had not recognised and been able to prove that feeling and irritability are two very different organic phenomena. They have by no means a common origin, as has been supposed; the former of these phenomena constitutes a faculty peculiar to certain animals, and demanding a special system of organs, while the latter, which does not require any special system, is exclusively the property of all animal organisation.” Lamarck 1914, 3-4).

⁸⁶ Lamarck used the term “faculté” more than a thousand times throughout his works on both living and non-living nature, and while some of these instances reflect meta-level statements about observation, comparison, and the facticity of theoretical views, I would venture to guess that these represent no more than half.

⁸⁷ Some passages from the *Philosophie zoologique* give it as an effect, a phenomenon, or a capacity for experiencing sensations, and sometimes it appears as the direct object of the verb “to produce,” while other passages clearly denote it as a faculty. Gissis only cites “effect” passages in her analysis, but comments, ““Feeling” could be defined from the point of view of the discourse on organic functions, and also from that on faculties. Lamarck was clearly juggling to make the two overlap so as to constitute “feelings as a basic physico-mental unit” (Gissis 2010, p. 224).

theories. Gissis remarks, “When Lamarck called the ‘self’ a feeling, he was using an option already there in the repertoire of models of enduring cohesive identity; once again, his innovativeness lay in the evolutionary grid applied to this notion” (Gissis 2010, 230). The term that he chose, however, to represent the sense of self, was not new but bore a history of usage all its own.

The Curious History of *le sentiment intérieur*: Where It Is Found

Lamarck conceded that “others” (he reveals no names) had sometimes obliquely referred to some of the functions for which the *sentiment intérieur* is, in his theory, responsible, calling it *conscience*, that is, conscience or consciousness (Lamarck 1815-1822, 243). But Lamarck’s use of it is decidedly more expansive. Also, while the history of the term *conscience* – its polysemy dating back to the difficulty faced by Malebranche and Pierre Coste, Locke’s French translator, in expressing a new discovery in philosophy which we know today as “consciousness” – and its many metaphorical models have been fairly well examined, and while the related term *sentiment de l’existence* has also come under scrutiny by scholars such as John S. Spink, neither of the fields of inquiry surrounding these terms have completely accounted for the separate history of the *sentiment intérieur*. Davies’s study ends with Diderot, and Spink’s with Rousseau. Entries in Barbara Cassin’s *Dictionary of Untranslatables: A Philosophical Lexicon* also record the densely woven history of these concepts in Western philosophy up to the present⁸⁸ but in the many articulations of the phenomenon, no coherent story emerges which could inform us as to what reasons motivated Lamarck’s choice of this particular term as a linguistic umbrella and a conceptual model for the phenomena he observed in forms of life from some of the simplest to the most complex. If it seems that I am belaboring the issue, I would point out, in Jacques Roger’s words, “un vocabulaire n’est jamais innocent” (Roger 20).

⁸⁸ *Dictionary of Untranslatables: A Philosophical Lexicon*, ed. Barbara Cassin, Emily Apter, and Jacques Lezra (Princeton: Princeton University Press, 2013). See especially “Consciousness,” “Conscience,” “Awareness.”

In the paragraph of the *Philosophie zoologique* where Lamarck first mentions the *sentiment intérieur*, he underscores it with a superlative, however negatively framed:

En effet, **rien ne me semble offrir plus d'importance que le sentiment dont il s'agit**, considéré dans l'homme et dans les animaux qui possèdent un système nerveux capable de le produire ; sentiment que les besoins physiques et moraux savent émouvoir, et qui devient la source où les mouvements et les actions puisent leurs moyens d'exécution. Personne, que je sache, n'y avoit fait attention ; en sorte que **cette lacune**, relative à la connaissance de l'une des causes les plus puissantes des principaux phénomènes de l'organisation animale, **rendoit insuffisant tout ce que l'on pouvoit imaginer pour expliquer ces phénomènes**.

Indeed, **nothing seems more important to me than the feeling named**, considered in humans and in animals possessing a nervous system capable of producing it; a feeling which is responsive to physical and moral needs, and which becomes the source where movements and actions derive their means of execution. No one, to my knowledge, has paid attention to it, so that **this lacuna**, related to the knowledge of one of the most powerful causes of the principal phenomena of animal existence, **represented an obstacle to everything we had imagined to explain these phenomena** (Lamarck 1809, I, xiii-xiv, my emphasis).

Eighty-eight years later, in 1897, Frédéric Houssay wrote of Lamarck's *Philosophie zoologique*, "Le chapitre où Lamarck traite du *sentiment intérieur* est le plus intéressant peut-être du livre tout entier, le plus important aussi pour comprendre comment le *besoin peut créer un organe*, formule classique à laquelle on oublie généralement d'ajouter avec l'auteur: *chez des animaux suffisamment élevés*" ("The chapter where Lamarck writes about the *sentiment intérieur* is perhaps the most interesting one in the whole book, the most important one as well for understanding how *need can create an organ*, classic formula to which we generally forget to add, with the author: *in higher-order animals*." Houssay 972, emphasis original). From the perspective of science at the turn of the twentieth century, this idea constituted one of the most relevant and interesting theoretical problems. One might say the same today, observing the theoretical and experimental scaffolding propping up contemporary models of the physiological foundations (or traces) of consciousness.⁸⁹

⁸⁹ Stanislas Dehaene summarizes the current state of cognitive neuroscience consciousness research for the lay reader in his *Consciousness and the Brain: Deciphering How the Brain Codes Our Thoughts* (New York: Viking Penguin, 2014). In 1998, he and J. P. Changeux proposed a "neuronal model of a global workspace" which hypothesizes that information shared between multiple specialized local processors in the brain becomes conscious whenever that information accesses the global workspace: Stanislas Dehaene and J. P. Changeux, "A Neuronal Model of a Global Workspace in Effortful Cognitive Tasks," *Proceedings of the National Academy of*

The *sentiment intérieur* is, to summarize Lamarck's theory of it, more than mere sensitivity to stimuli (that is, *irritabilité*, individual instances of which he refers to as *perception*), and it is different from sensation, in which the perceived impression may last longer than the stimulus itself, and which may be linked to ideas (pain or pleasure, for instance). The ability to feel (and presumably, to suffer) (*la faculté de sentir*, or *le sentiment*) overlaps slightly with sensation, but includes such ideas as *les passions et les penchants*. These are quite different from *l'instinct* but are not subsumed under the *ordre des pensées* (Lamarck 1817b, 331-343). The *ordre des sentiments*, like the *ordre des sensations*, is a source of needs ("besoins"), to which the *sentiment intérieur* is receptive ("susceptible à être [ému] par tout besoin senti." Lamarck 1817b, 332). But the *sentiment intérieur* is also productive: The animal endowed with a notion of its own existence is simultaneously inclined to self-preservation, one of the *penchants* in the *ordre des sentiments*, according to Lamarck. But the key point here is that the *sentiment intérieur* exists independently of reactivity, sensation, and feeling (Lamarck's hierarchy of sentience).

An index of the occurrences of *sentiment intérieur* in all of Lamarck's digitized works shows that the term only appears for the first time in his 1809 *Philosophie zoologique*. The number of references in this book, 105, surpasses every other work of his which contains occurrences of the term, from his 1815 *Histoire naturelle des animaux sans vertèbres* (38 occurrences), to his 1817-1818 Détéville dictionary entries (seven of the twenty contain occurrences), to his 1820 *Système analytique des connaissances positives de l'homme* (90 occurrences). This temporal distribution reasonably demonstrates that from 1809 until his death, *le sentiment intérieur* occupied an important place in his thought. The dictionary entries which refer to this concept include: "Habitue," "Homme," "Idée," "Instinct," "Intelligence,"

Sciences 95.24 (1998), pp. 163-165; Fig. 24, p. 164. In attempting to uncover previous models like theirs, Dehaene points to Hippolyte Taine's 1870 "theater of consciousness." Taine's metaphor, as Dehaene points out, implies that much activity occurs behind the scenes; viewed in this way, Taine's theater appears to have anticipated Sigmund Freud's discovery of the unconscious. Lamarck's model of the *sentiment intérieur* is strikingly similar, with the exception of the location and role of the subliminal; in Lamarck's model, all "unconscious" activity as we know it falls under the heading of "instinct." Lamarck soon left irritability and instinct behind in order to address models of sensation and reaction in more complex animal systems.

“Jugement,” “Nature.” In his entry, “Instinct,” Lamarck claims to have discovered both the *sentiment intérieur*, and consequently, the true nature of *instinct*. He must have been quite proud of this discovery, or worried about its correct attribution; he mentions his claim on it twice.⁹⁰

Lamarck did not coin the term *sentiment intérieur*. Far from it. In employing it many times throughout his corpus, however, Lamarck indisputably endowed it with a particular meaning and importance. Certainly, it has a more organic connotation when Lamarck uses it, and yet it is found in many genres and subjects – religion, philosophy, art, history, fiction, and correspondence – and dates back at least as far as the 17th century. A progressive elimination of its many related terms, through an ideological and historical understanding of Lamarck, can help us isolate the specific conceptual import of the term and shed light on competing claims to originality and discovery. Let us now turn to two Latin terms, whose French cognates are quite transparent, to examine a formal and conceptual merger which may prove to be a more compelling history than that of *conscience*, namely, *sensus internus-sensus communis*.

Within the rubric of meanings (including Greek origins, Latin interpretations, and subsequent French derivatives) represented by each of these terms, many of Lamarck’s key ideas are already present: sense as an essential property of the animal (with the accompanying connotation of smell, as in the French word *flair*); the dignity of this faculty (bordering on divinity); the coinciding (that is, synchrony) of sentient subject and sensible object; and the idea of a principal sensory faculty. In fact, even imagination finds a place under the umbrella of the *sensus communis*. If we extend the rubric to include *sensorium commune*, the idea of an organ particular to each sense except the “common” sense is added to this semantic network. The histories and sources of these terms are nicely treated in the *Dictionary of Untranslatables*.

⁹⁰ Richards’s analysis of the similarities between Lamarck’s and Cabanis’s theories of instinct reveals fine differences between them; no doubt Lamarck would have been concerned that his ideas might be attributed to Cabanis instead (Richards 261).

Terms which may have competed with *le sentiment intérieur* include, but are not limited to, *le sentiment intime*, *le sens interne*, and to a much lesser extent, *le sentiment d'existence*.⁹¹ In raw numbers, *conscience* far outweighs these four in its frequency, as indicated by a Google Ngram analysis of the occurrence of these phrases relative to one another (Fig. 1). From its first detected appearance after 1550, *conscience* dominated the pages of books published in the French language, compared with the other four. After 1700, it suffered a dip in popularity (not exactly a crisis) which lasted until the early years of the nineteenth century, when it rose again quite drastically.

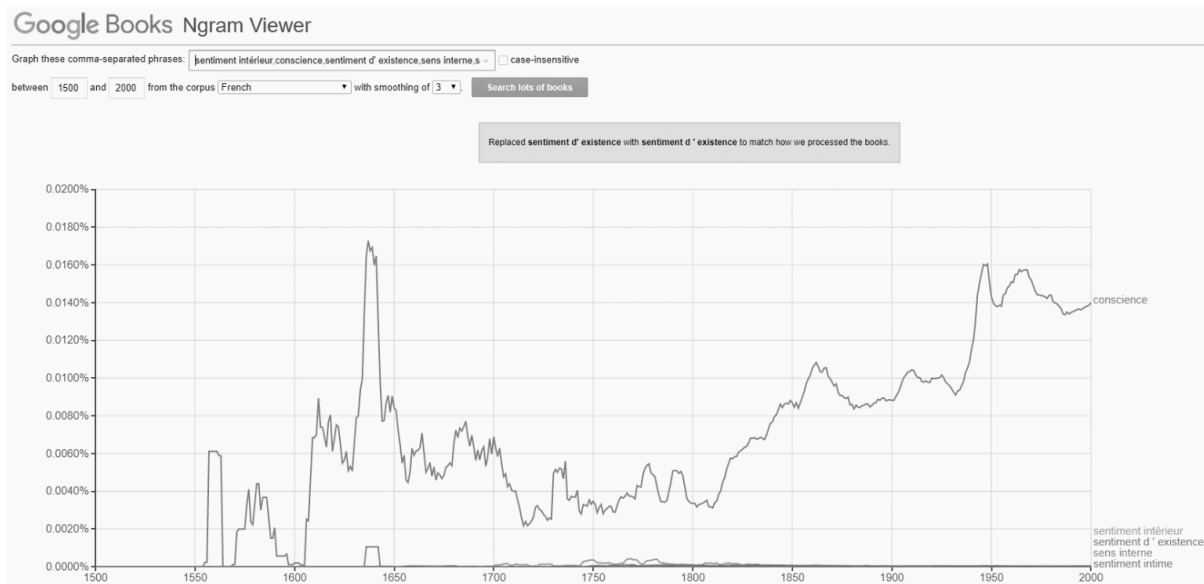


Fig. 1. Trends in use of the terms “conscience,” “sentiment intérieur,” “sentiment intime,” “sens interne,” and “sentiment d’existence” in digitalized books included in the Google Books French corpus, 1500-2000. Frequencies are normalized by the number of books published in each year.

By removing *conscience*, the pattern of use of the other terms is much clearer and the Ngram shows a bubble of active use of these terms between 1700 and 1850.

⁹¹ Probably due in part to the fact that several variants exist, such as “le sentiment d’existence,” “le sentiment de *mon* existence.”

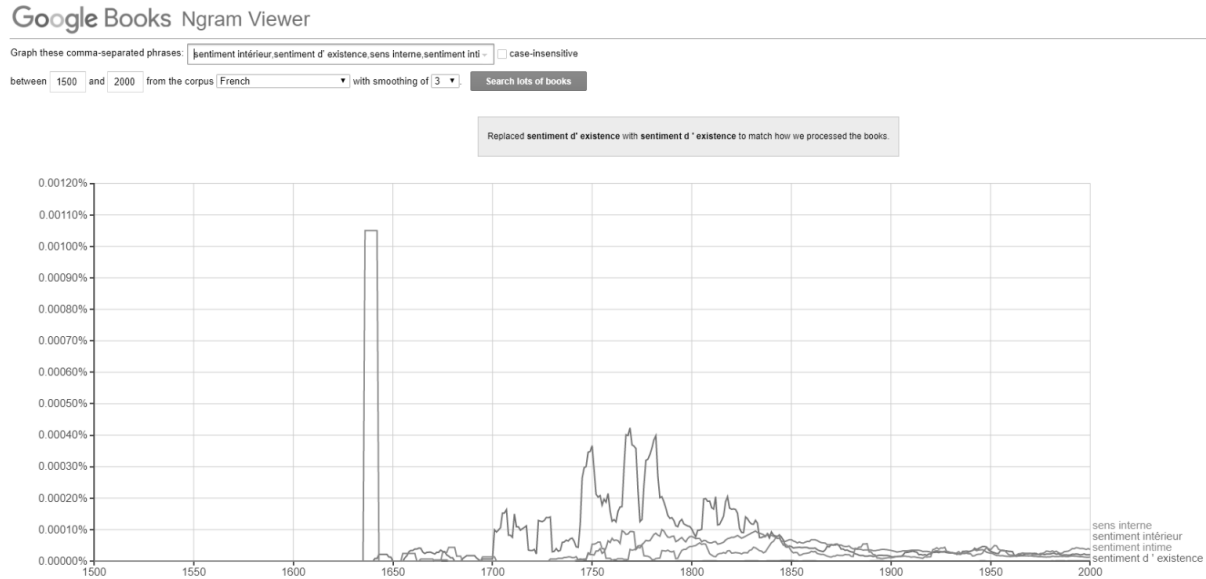


Fig. 2. Trends in use of the terms “sentiment intérieur,” “sentiment intime,” “sens interne,” and “sentiment d’existence” in digitalized books included in the Google Books French corpus, 1500-2000.

From this scant evidence, it appears that the dip in *conscience* may have been related to the gains in popularity made by some of its rival terms. Furthermore, while *sens interne* skyrocketed in 1636, and represents the most popular term as of the year 2000, it lagged behind *sentiment intime* in the boom period identified. So did *sentiment d’existence*, which rose in popularity at the same time as *sens interne*, around 1750. During the boom, *sentiment intérieur* was the clear winner in the rivalry, peaking three times in 1750, 1767, and 1782 before Lamarck tapped it in 1809.

The following analysis of the ARTFL-Frantext database occurrences of the term is motivated by the following hypothesis: Lamarck differed significantly from his forbears (notably, Buffon) and even his fellow *Idéologues* in the emphasis which he placed on this term. Obviously, this conjecture, to be proven or disproven, would require finer modeling and statistical tests than what may be possible using just this one database. However, an exploration of the environments in which the term appears across works and authors is instructive.

First, a word about the ARTFL-Frantext database: It includes “more than 3,500 French language texts spanning from the 12th through the 20th centuries, 215 million words and 675,000 unique word

forms,” and the texts range “from classic works of French literature to various kinds of non-fiction prose and technical writing. The eighteenth, nineteenth, and twentieth centuries are about equally represented, with a smaller selection of seventeenth century texts as well as some medieval and Renaissance texts. Genres include novels, poetry, theater, journalism, essays, correspondence, and treatises. Subjects include literary criticism, biology, history, economics, and philosophy. In most cases standard scholarly editions were used in converting the text into machine-readable form, and the data contain page references to those editions.”

The term *le sentiment intérieur* is most often found in works of philosophy (43) and fiction (30), but is also employed in history (15), art (8), correspondence (6), government (4), and religious writing (4), with the number of works in which it is employed totaling 118. Some works did not fit neatly into any of these categories; some are counted in multiple categories. In general, scientific and pedagogical treatises are loosely considered here as works of “philosophy.” The concordance picks up occurrences in works dating from 1662 (Blaise Pascal, *Pensées sur la religion, et sur quelques autres sujets*) to 1971 (Léon Brunschvicg, *Spinoza et ses contemporains*). It is probably safe to say, based on these two references, that the compound term was invented, or at least that it rose to prominence, in the 17th century, since Pascal and Spinoza were contemporaries. Whether both received the term via the same path of intellectual inheritance from an earlier period or author merits further exploration.

The temporal pattern of occurrences is fascinating. After its first occurrence in 1662, the term enjoyed peaks of popularity in the mid-1700s (1745-1771), in 1805 and 1809 (where only a single reference by another author pales in comparison to Lamarck’s 183), then more sporadically, in 1828, 1842, 1893, 1905, and 1971. George Sand employs the term *sentiment intérieur* in no fewer than eight separate works, only two of which appeared in the same year, and all of them (fictional) novels. In most of these, however, the term is only used once, whereas Diderot employs the term seven times in a single work, the *Essai sur mérite et vertu*, to which the question of conscience is essential. The frequency

of reference to this concept appears to depend in part on genre: Rousseau uses it three times in *Julie, ou la Nouvelle Héloïse*, and six times in *Émile, ou, de l'Éducation*. Therefore, we are given to understand that the *sentiment intérieur* primarily inhabits the non-fiction space, but is frequently introduced (often, as we shall see, as an authority) into the fictional space.

The Curious History of *le sentiment intérieur*: A Constellation of Meanings

Let us now examine the way that the term developed in its usage over some three hundred years. Although some authors explicitly equated the term with *la conscience* (Émilie du Châtelet, Charles Duclos, and Stéphanie Genlis, to name a few), many others refer exclusively to the *sentiment intérieur*, and some list it alongside *conscience*, which indicates that they considered it as being distinct from the latter. Neither is the soul (*l'âme*) to be confused with the “inner feeling.” In fact, while conscience is indisputably a *faculty* belonging to most, if not all, members of the human species, and the soul either a faculty or a property, the *sentiment intérieur* may be either a faculty or an event. As an event, it may be described as the realization of one’s freedom to act as one wills (*liberté, libre*, are the terms which co-occur with it), as a discrete moral or aesthetic experience or judgment, as a memory of a particular kind, or finally, as a moment of contact between the divine and the human realms.

Pascal’s two uses of the term (1662) are different, but related, since it refers to both the moment of divine revelation and the means by which it is made possible. Fallen humankind possesses a memory of former greatness (“le **sentiment intérieur** qui leur reste de leur grandeur passé.” Pascal 1952, 146, my emphasis). In a separate *pensée*, Pascal interprets the meaning of prophecy as described in the second chapter of the book of Acts of the Apostles: “Car Dieu se fera sentir à tous. Vos fils prophétiseront. Je mettrai mon esprit et ma crainte en votre cœur. Tout cela est la même chose. Prophétiser, c’est parler de Dieu, non par preuves de dehors, mais par *sentiment intérieur* et immédiate” (“God will make himself to be perceived by all. Your sons will prophesy. I will put my spirit and the fear of me in your heart. All this is the same thing.” Pascal 1952, 202). The “inner feeling” he describes this

time is therefore a channel of communication between God and man which may be opened in extraordinary circumstances. Its connection to the heart (*le cœur*) and to language must be understood in a biblical context, the illumination of which is mostly outside of our scope.

Pascal was not the last to describe the *sentiment intérieur* in religious terms. Condillac, d'Alembert, Diderot, Montesquieu, Rousseau and d'Holbach each discussed its witness and possible best interpretations of it.⁹² Depending upon the position each came to hold regarding the legitimacy of revelation, the *sentiment intérieur* could be indisputable, susceptible to bias, the helper of the weak-minded, or the accomplice to cowardice. Its usefulness in the moral realm is evident in the variety of articles in the *Encyclopédie* in which it appears: "Bien," "Charité," "Civilité, Politesse, Affabilité," "Conscience," "Droit naturel," "Droit de la Nature, ou Droit naturel," "Hernhutisme," "Liberté," "Manichéisme," "Obligation," "Passions," and nineteen more. Condillac's response to Malebranche in the *Traité des Sensations* 1749, reveals the great debate which often hinges on the inner feeling: determinism versus freedom of the will. Rousseau uses the term in a variety of ways and contexts, making its meaning rather ambiguous. Among his peers, he probably employs it in the least consistent manner, but this is worthy of a separate study. In his works, it may be found in its strongest and weakest meanings: most strongly, as the channel of communication with the divine and the foundation for natural religion; less strongly, as the guiding force of moral imperative (*une règle*); and at its weakest, as a vague and passing sensation (*un mouvement secret*).

What Rousseau added, which was previously unmentioned, is that women have an inner feeling too, since Julie is subject to the pangs of her conscience. After Julie, many a heroine of a novel would consult her *sentiment intérieur*. Marie de Riccoboni's Miss Jenny describes the inner feeling as a feeling of her own dignity and worth, a somewhat stronger use of the term than that of Germaine de Staël and

⁹² In the Preliminary Discourse to the *Encyclopédie*, for instance, d'Alembert solves the mind-matter divide with an appeal to an omnipotent Intelligence, whose existence needs no other proof than the witness of our *sentiment intérieur* (d'Alembert, I, iv).

George Sand, whose pensive characters experience a wide variety of *mouvements secrets* from the raptures of love, to affectionate attachment to a particular place, to the quiet retreat of reflection. In all cases, even the most indistinct experience of the inner feeling excludes doubt as to its legitimacy. In the romantic tradition, the *sentiment intérieur* is a voice of authority. The discovery of the uses of this term in the history of the novel will have to be relegated to another study. For now, let us see how the moral sense is connected through the *sentiment intérieur* to the aesthetic sense, and how the most mechanical of its applications come about. Unless otherwise specified, all emphasis of the term is mine; italics do not occur in the original.

Diderot picked up the thread of aesthetic judgment related to the *sentiment intérieur*, identifying two separate processes which are equally valid and necessary, but which vary in their vulnerability to bias. In his 1745 *Essai sur mérite et vertu*, he writes:

Mais le cœur regarde-t-il avec indifférence les esquisses des mœurs que l'esprit est forcé de tracer, et qui lui sont presque toujours présentes ? Je m'en rapporte au *sentiment intérieur*. Il me dit qu'aussi nécessité dans ses jugements que l'esprit dans ses opérations, sa corruption ne va jamais jusqu'à lui dérober totalement la différence du beau et du laid, et qu'il ne manquera pas d'approuver le naturel et l'honnête, et de rejeter le déshonnête....

But does the heart look upon the sketches of mores that the mind is compelled to make, and which are ever present before it, with indifference? I defer to the *sentiment intérieur*. It tells me that as compelled in its judgments as the mind is in its operations, its corruption is never so great as to completely conceal from it the difference between the beautiful and the ugly, and that it will not fail to approve of the natural and the honest, and to reject the dishonest... (*Essai* 34).

The connection between moral and aesthetic judgment is rendered sensible in this way. Jean-Baptiste-René Robinet (1735-1820) performed the same analysis, linking not only the moral and the aesthetic, but also the realm of sensation. In *De la nature* (1761), he defines instinct and moral sense by way of analogy to the sensations of bitterness and sweetness, which incur a particular *sentiment intérieur*, or judgment. What begins as an analogy quickly becomes the thing itself, since in each case, a certain inner feeling is active:

La douceur nous flatte, l'amertume nous répugne, de la même sorte que nous approuvons la vertu et blâmons le vice. Je trouve dans l'une et l'autre circonstance, un *sentiment intérieur* excité par l'impression d'un objet extérieur (je ne parle pas encore de l'intermède de ce sentiment) : il est dans nous à l'insçu de notre volonté.

Sweetness flatters us, bitterness repulses us, in the same way that we approve of virtue and condemn vice. I find in both the former and the latter a *sentiment intérieur* excited by the impression of an exterior object (I am not yet discussing the lull in this sentiment): it is in us quite unknown to our will (Robinet 339).

Where Robinet is less clear about the relationship between the soul and instinct (also called *une disposition intrinsèque*), Jean de Sales neatly lays out the relationship between them in his 1769 *De la philosophie de la nature*. His “triple certitude” neatly resolves some of the different temporal manifestations of the *sentiment intérieur* into a single thought: The sensation of present existence, the memory of having existed in the past, and the hope of existing in the future. By a kind of triangulation, the desire to continue existing is derived through the use of reason and reflection.

Jean Bouillet (1690-1777) writes about the *sentiment intérieur* in his *Encyclopédie* article, “Faculté vitale,” but it does not acquire the status of an object of inquiry. It is taken as a given before the inquiry begins. It most frequently occurs as a notable *absence*, introduced by *aucun* (four out of ten times), *sans* or *ni* (one each). The rest of the time it is treated as an isolated event, introduced by the indefinite article *un*. Bouillet describes three models for how it is that human beings feel, think and act; one he attributes to Descartes and his followers (“machinists,” Bouillet 366), one to animists such as Perrault, Borelli, and Stahl, and one to physiologists such as Haller. The “vital faculty” that Bouillet describes is “a force that engages our vital organs” that resides in us humans, “who are composed of both soul and body” (Bouillet 365). The question that he initially poses, then decides, is whether it belongs to the body or to the soul (he opts for the soul). Two kinds of “inner feelings” exist, some of which are very clear, and some of which are so obscure that they may go unnoticed. These two correspond to two modes of action: free and deliberate action, on the one hand, and necessary, involuntary, unpremeditated action on the other.

Pour moi je pense que la *faculté vitale* réside dans l'ame ; & je crois qu'outre la volonté & la liberté, outre les actes libres, réfléchis, & dont nous avons un sentiment intérieur bien clair, notre ame est capable d'une action nécessaire, non réfléchie, & dont nous n'avons aucun sentiment intérieur, ou du moins, dont nous n'avons qu'un sentiment bien obscur ; & par conséquent, que ce n'est point par une *faculté* active, libre, réfléchie, & devenue nécessaire par l'habitude & la coutume que notre ame influe sur nos actions vitales & sur les mouvemens spontanés de toutes les parties de notre corps, mais par une *faculté entièrement* nécessaire, indépendante de la volonté, non libre ni réfléchie.

It is my opinion that the *vital faculty* inhabits the soul; and I think that besides the will and freedom, besides free, deliberate acts of which we have a very clear inner feeling, our soul is capable of necessary, unpremeditated action, of which we have no inner feeling, or at least, of which we have only a very obscure feeling; and consequently, it is not through an active, free, and premeditated *faculty*, having become necessary by habit and custom that our soul influences our vital actions and spontaneous movements in every part of our body, but by an *entirely necessary faculty*, independent of the will, neither free nor premeditated (Bouillet 366).

Bouillet therefore numbers the active powers of the human soul as two: the will which is directed toward “the objects of the exterior senses known to everyone,” and the vital faculty which is directed toward the “instruments of a little-known sense that [he calls] vital” (Bouillet 366). Trained as a doctor (Kafker 61), Bouillet was particularly interested in how the senses are related to organs and tissues (particularly “fibers”), and how it is that the soul and the *sensorium* (vital) communicate when one experiences appetite, pain, pleasure, worry or tranquility. He imagines that the soul affects the vital organs by movements of the nervous fluid. The humors lap against the *sensorium*, and an agreeable or disagreeable feeling arises which reflects the state of the organic movements. The lack of *awareness* of this feeling is inconsequential:

J'ajoute [...] que quand même nous ne nous appercevrions pas de cette sensation, il ne s'ensuivroit point que l'ame ne l'ait point, parce que nous ne connoissons pas toutes les modifications de notre ame, & qu'il y en a sans doute qui ne se replient pas sur elles-mêmes, ou dont on n'a aucun sentiment intérieur. Mais il y a plus : si nous faisons une sérieuse attention à tout ce qui se passe dans l'intérieur de notre ame, en quelqu'état que nous nous trouvions, nous nous appercevrons bientôt, du moins confusément, qu'elle sent son existence agréable ou désagréable, dépendamment du bon ou mauvais état de nos organes intérieurs ou vitaux ; & notre conscience nous rendra un témoignage, du moins obscur, que nous avons une sensation qui dépend de ces mêmes organes, & qui nous informe de leur bonne ou mauvaise disposition.

I would add [...] that even if we were not aware of this sensation, it does not follow that the soul does not have it, because we do not know all of the modifications of our soul, and because **there**

are probably some which are not folded back on themselves, or of which we have no inner feeling. But there is more: if we pay serious attention to everything that goes in in the interior of our soul, in whatever state we find ourselves, we soon become aware, at least confusedly, that it feels its own agreeable or disagreeable existence, depending on the good or poor state of our interior or vital organs, and **our conscience will bear witness, if only vaguely,** that we have a feeling which depends on these same organs, and which informs us of their good or poor disposition (Bouillet 368, my emphasis).

The witness of the grammar here supports my earlier statement that for many other writers, the *sentiment intérieur* represented an event, not an enduring faculty, property or power. Also, it is associated with conscience and consciousness, but exists independently of these and of another term, the *sens vital*, that Bouillet introduces. This entry, which reunites terminology found in Lamarck's theory, relates a very different view of the phenomenon of the mind-body(-soul) connection. It does, however, show how Lamarck's theory combines elements of all three models, notably: the primacy of organization, the inscrutable inner feeling, and Hallerian irritability.⁹³

Jean-Joseph Menuret de Chambaud (1739-1815) credited Louis de La Caze (1703-1765), Louis XV's attending physician, with the discovery of the *sentiment intérieur* as an instrument of medical research in his entry "Économie Animale":

Ce nouveau moyen de recherche, ce guide éclairé, & jusqu'alors trop négligé, que notre réformateur a scrupuleusement suivi, c'est le sentiment intérieur : en effet, quel sujet plus prochain, plus approprié, plus continuellement soumis à nos observations que nous-mêmes, & quel flambeau plus fidele & plus sûr que notre propre sentiment, pourroit nous découvrir la marche, le jeu, le mécanisme de notre vie ?

This new means of research, this enlightened guide, heretofore too neglected, that our reformer followed scrupulously, is the *sentiment intérieur*: indeed, what subject closer at hand, more appropriate, more continually available for observation than ourselves, and what torch more faithful and more certain than our own feeling, could reveal the process, the play, the mechanism of our life? (Chambaud 365).

⁹³ Lamarck uses the term "faculté vitale" only once: "Sans doute, aucune faculté vitale ne peut exister dans un corps, sans l'organisation, et l'organisation elle-même n'est qu'un assemblage d'organes réunis" ("Without a doubt, no vital faculty can exist in a body without organization, and organization itself is no more than an assortment of organs joined together." Lamarck 1809, II, 113). This is the position that Bouillet associates with Descartes and his disciples, saying that they deny perception of any vital faculty, but that it "belongs uniquely to the human body duly organized" (Bouillet 365). Lamarck rejects Cartesian dualism, however, claiming no knowledge of the soul, if it exists.

La Caze, Chambaud relates, proceeded from observing himself and newborn babies, and possibly other living beings, to determine the relationship between the functions of the various animal systems: circulatory, digestive, respiratory, and nervous, and to discover the “true principle of life and animality” (Chambaud 365). The resulting revolution in medicine, according to Chambaud, consists in the revival of diet management – including the sensations and passions – in order to promote the health of the whole being (Chambaud 366).

In addition to his works in Latin, La Caze’s *Idée de l’homme physique et moral* appeared in 1755, followed by a new edition of his *Mélanges de physique et de morale* in 1763. His *Idée* was reissued in an VII of the Republic (1798). The way the publication of his works coincides with the period identified above as the height of popularity of the *sentiment intérieur* and related terms, and particularly the last half of the eighteenth century, suggests that the continuing influence or revival of his thought had something to do with the popularity of the term. Furthermore, in the way it is described by Chambaud, at least, it touches on some of the essential points of Lamarck’s theory. Could Lamarck in fact have adopted La Caze’s notion in formulating his own? It is rather likely that Cabanis was aware of La Caze’s theory and his medical practices – the similarity in the titles of their works would suggest it (compare to Cabanis’s *Rapports du physique et du moral de l’homme*) – but Cabanis does not refer to La Caze by name.

The theme in the 45 total occurrences in the *Encyclopédie* entries, if there is one, would be complex.⁹⁴ The constellation of meanings and implications of the term is generally predictable, however, since they cluster around the *sentiment intérieur* as moral conscience (or its pangs), and around the *sentiment intérieur* as the site of divine revelation. Boucher d’Argis’s entry “Droit de la nature” appears

⁹⁴ The term occurs in: the *Discours préliminaire*, *Bien*, *Charité*, *Civilité*, *Conscience*, *Construction*, *Droit naturel*, *Droit de la nature-Droit naturel*, *Egards*, *Explétif-Explétive*, *Faculté vitale*, *Génitif*, *Hernhutisme*, *Homonyme*, *Infirmier*, *Liberté*, *Manichéisme*, *Métaphore*, *Mort*, *Obligation*, *Œconomie animale*, *Œconomie politique*, *Parasite*, *Passions*, *Plastique*, *Résurrection*, *Sens*, *Spasme*, *Invalides*.

at first glance to identify the *sentiment intérieur* with instinct. However, this occurs in the context of the three ways in which the creature is able to distinguish between the just and the unjust: instinct, reason, and the will of God. The corollary of the *sentiment-intérieur-as-moral-conscience* is the *sentiment intérieur* as the guarantor of free will. We might reasonably ask – but this would require another careful study – how instinct and free will can coexist so cozily in the same concept. Perhaps the beginning of the answer is simple: Every creature instinctively desires its preservation, and it is the rare one who wills to die.

Therefore, the *sentiment intérieur* is intimately linked to thought; indeed, de Sales writes that together with the sense organs, it provides the raw material for human thought, at which point the soul (*l'âme*) undertakes to rearrange the impressions until they acquire meaning. It is on the side of rational information-gathering, although it may venture to project its conclusions into the future. In passing, we will note that Charles Bonnet's formulation of the *sentiment intérieur* is, as far as one can tell, equivalent, being the conjunction between impressions which is also related to self-preservation. Bonnet's *Palingénésie philosophique*, and some of his other works certainly provided one possible source of ideas (to dispute, accept, or modify) for Lamarck. From among the hypotheses of the *sentiment intérieur* as conscience, instinct, aesthetic or moral sense, instrument of research or thought hub, Lamarck had a rich substrate upon which to found his idea of the *sentiment intérieur*. What he did not have was public appreciation for such ideas.

The Curious History of *le sentiment intérieur*: The Problem of the Individual

In 36 of the 380 occurrences of *sentiment intérieur* in the ARTFL database, the term *individu* follows within five words. All of these occur in the *Philosophie zoologique*. Clearly, we would not expect to find the phrase “[le] sentiment intérieur de l'individu” in a fiction genre, since in these cases it is generally attributed to one of the named characters, and usually, the protagonist. Among the non-fiction treatises on moral philosophy, natural history, history, religion, and politics, however, although

the individual is an extremely important concept (5775 occurrences in the same time period, 1700-1900), it does not appear that the *sentiment intérieur* is as closely correlated with the individual anywhere other than in Lamarck's text.

In fact, why mention the individual at all? Isn't it implied every time Lamarck mentions the *sentiment intérieur*? Furthermore, how could there be any interior other than in the individual organism? This may be where our perspective conceals the relative novelty of the idea – both the idea of interiority and the idea of the individual, but especially their conjunction. In any case, by Lamarck's time, even if much of the work of generating a more modern conception of each of these two ideas may have already been done, they could by no means be considered stable concepts, and they certainly depended for their coherence on the whole philosophical systems in which they were found.

Why then could it be so important for Lamarck to link these two repeatedly? This is a term that may be found in classification studies in natural history, to which Diderot's *Encyclopédie* entry "Individu" attests, but which was also considered a concept proper to the field of metaphysics (see below). Lamarck uses the term *individu* 210 times in the *Philosophie zoologique*. A cursory glance at the concordance shows that this outnumbers occurrences in any other work. There is, however, a noticeable concentration of occurrences in works around the same time period, and by some authors we have previously mentioned: Maine de Biran (101 in his *Influence de l'Habitude sur la faculté de pensée* [1803]; 71 in his *Mémoire sur la decomposition de la pensée* [1805]), Cabanis (77 in his *Rapports du physique et du moral de l'homme* [1808]), and Quetelet (54 in his *Sur l'homme et le développement de ses facultés* [1835]). This fact alone, although inconclusive, seems to indicate a significant wave of interest in the concept of the individual, which may have peaked with the creation of the French empire. Given Jessica Riskin's observation (discussed below) that at the time of the writing of the *Encyclopédie*, terms such as "culture" and "social" were just emerging, it makes sense that the "units" of these more general entities would also garner interest.

To expand on the question, “why the expression *sentiment intérieur*,” we may also ask, “why use it in conjunction with *individu*”? To begin to answer this, let’s examine the *Encyclopédie* definition of *individu*:

INDIVIDU, s. m. (Métaphysiq.) c'est un être dont toutes les déterminations sont exprimées. Quand il reste des déterminations à faire dans la notion de l'espece, & qu'on les assigne toutes d'une manière qui ne répugne pas à l'espece, on parvient à l'individu ; car l'espece n'exprimant que les choses communes aux individus, omet les différences qui les distinguent. Indiquez-donc ces différences, & vous dépeindrez par-là même l'individu. L'espece de cheval renferme tout ce qui se trouve dans chaque animal de cette espece, certaine figure, proportion de parties ; & ajoutez-y tel poil, tel âge, telle conformation précisément déterminée, tel lieu où un cheval se trouve, & vous aurez l'idée d'un individu de cette espece ; & voilà le vrai principe d'individuation, sur lequel les scholastiques ont débité tant de chimeres. Ce n'est autre chose qu'une détermination complète, de laquelle naît la différence numérique. Pierre est un homme, Paul est un homme, ils appartiennent à la même espece ; mais ils different numériquement par les différences qui leur sont propres. L'un est beau, l'autre laid ; l'un savant, l'autre ignorant, & un tel sujet est un individu suivant l'étymologie, parce qu'on ne peut plus le diviser en nouveaux sujets qui ayent une existence réellement indépendante de lui. L'assemblage de ses propriétés est tel, que prises ensemble elles ne sauroient convenir qu'à lui. Les scholastiques expriment les circonstances d'où l'on peut recueillir ces propriétés par le vers suivant, Forma, figura, locus, stirps, nomen, patria, tempus. Les différentes subtilités qu'ils proposent là-dessus ne méritent pas de nous arrêter ; il vaut mieux lire le chapitre du Traité de l'entendement humain, où M. Locke examine ce que c'est qu'identité & diversité. Je rapporterai ici une partie de ce qu'il dit liv. II. chap. 27, v. 3. « Il est évident que ce qu'on nomme principium individuationis dans les écoles, où l'on se tourmente si fort pour savoir ce que c'est ; il est, dis-je, évident que ce principe consiste dans l'existence même, qui fixe chaque être, de quelque sorte qu'il soit, à un tems particulier, & à un lieu incommunicable à deux êtres de la même espece. . . Supposons, par exemple, un atôme, c'est-à-dire un corps continu sous une surface immuable qui existe dans un tems & dans un lieu déterminé. Il est évident que dans quelque instant de son existence qu'on le considere, il est dans cet instant le même avec lui-même ; car étant dans cet instant ce qu'il est effectivement, & rien autre chose, il est le même, & doit continuer d'être tel aussi long-tems que son existence est continuée ; car pendant tout ce tems il sera le même, & non un autre. . . Quant aux créatures vivantes, leur identité ne dépend pas d'une masse composée des mêmes particules, mais de quelque autre chose ; car en elles un changement de grandes parties de matiere ne donne point d'atteinte à l'identité. Un chêne qui d'une petite plante devient un grand arbre, est toujours le même chêne. Un poulain devenu cheval, tantôt gras, tantôt maigre, est toujours le même cheval ». Voyez Identité.

INDIVIDUAL, masc. sing. noun, (Métaphys.) is an entity for whom all the determinations are expressed. When there remain distinctions to be made in the notion of species, and they are assigned in such a way that they do not violate those of the species, one arrives at the level of the individual; this is because the species, expressing only those things common among individuals, omits the differences which distinguish them one from another. Note these

differences, and you effectively describe the individual. The species horse englobes everything found in each animal of that species, its countenance, the proportions of its parts; add to this the kind of pelt, the age, the precisely determined form, the location of the horse, and you will have the idea of an individual of the species; there you have the true principle of individuation, over which the scholastics have spewed so many strange ideas. It is nothing else but the complete determination, which allows for numerical difference. Peter is a man, Paul is a man, they belong to the same species; but they differ numerically by the characteristics belonging to each. The one is handsome, the other plain; the one knowledgeable, the other, ignorant, and a subject is an individual in accordance with the etymology, because one cannot subdivide him into new subjects which really exist independently of him. The assortment of properties displays is such that, taken together, they could only describe him. The scholastics expressed the circumstances from which one may collect these properties in the following verse: *Forma, figura, locus, stirps, nomen, patria, tempus*. The various subtleties that they propose based on this are not worthy of mention; it is better to read the chapter in *An Essay Concerning Human Understanding* where Mr. Locke examines the meaning of identity and diversity. I cite here part of what he says in Bk. II, ch. 27, sect. 3.

“It is evident that what is called *principium individuationis* in the schools, where everyone gives himself great pains to know what it is; it is evident, I say, that this principle consists in existence itself, which attaches each being, of whatever sort it is, to a particular time and a space which may not be simultaneously occupied by two beings of the same species... Consider, for example, an atom, that is, a continuous body under a changeless surface which exists in a particular time and place. It is evident that at each instant of its existence in which one considers it, it is in that instant self-similar; for, being in that instant what it is effectively, and nothing else, it is the same, and must continue to be so for as long as its existence endures; for during this entire time it will be the same and not another... As for living creatures, their identity does not depend on a mass composed of identical particles, but on something else; for in them, altering a great portion of the matter does not destroy the *identity*. An oak which grows from a seedling to a great tree is still the same oak. A foal having become a horse, sometimes fat and sometimes lean, is always the same horse.” See *IDENTITY* (Diderot 2017b, 684).

After the discussion of species in connection with the individual, the last three sentences are the most interesting, since they deal with the question of living creatures. The question is open, then, at the time of the publication of the *Encyclopédie*, as to what constitutes the individuating principle among living things. Furthermore, in attempting to solve this puzzle, one would not unlikely be led to examine Locke’s interpretation, since he dismisses the prevailing scholarly fascination with the subject.

In the *Rêve de d’Alembert*, Diderot’s Bordeu reflects, “It is this power of constantly and invariably referring all impressions back to this common starting-point which constitutes the unity of the animal,” to which Mademoiselle de Lespinasse responds, “It is the memory and comparison which

follow necessarily from all these impressions which makes for each animal the history of its life and self” (Diderot 1969, 71) (“...[C]’est le rapport constant, invariable de toutes les impressions à cette origine commune qui constitue l’unité de l’animal... [C]’est la mémoire de toutes ces impressions successives qui fait pour chaque animal l’histoire de sa vie et de son soi.” Diderot 1961, 330). Here certain unmistakable elements of Lamarck’s *sentiment intérieur* are posited in connection with a formulation of associationism. Philosophers and physiologists could agree that if there were no innate ideas, then there must be a way for the senses to work together to inform the “common sense.”

Associationism of various kinds, in the style of Locke, Hume, and so forth, provided coherence in what would otherwise remain a soup of discrete sensations. In one version, the habit of perceiving the same sensations in the same place at different times teaches us to associate those sensations with something that has the permanence of an object, and in which certain properties coincide which correspond in some way to our ability to sense them. Anne-Robert-Jacques Turgot describes the epistemological problem sensationalists encountered in the *Encyclopédie* article attributed to him, “Existence”:

Concluons qu'aucune sensation ne peut immédiatement, & par elle-même, nous assurer de l'*existence* d'aucun corps. Ne pourrions-nous donc sortir de nous-mêmes & de cette espece de prison, où la nature nous retient enfermés & isolés au milieu de tous les êtres ? Faudra-t-il nous réduire avec les idéalistes à n'admettre d'autre réalité que notre propre sensation ? Nous connoissons un genre de preuves, auquel nous sommes accoûtumés à nous fier ; nous n'en avons même pas d'autre pour nous assurer de l'*existence* des objets, qui ne sont pas actuellement présents à nos sens, & sur lesquels cependant nous n'avons aucune espece de doute : c'est l'induction qui se tire des effets pour remonter à la cause.

We conclude that no sensation can in itself, immediately assure us of the *existence* of any body. May we never therefore exceed ourselves and this sort of prison in which nature keeps us enclosed and isolated in the midst of all beings? Must we succumb to this difficulty and admit with the idealists no other reality but that of our own sensation? We are familiar with a kind of proof, which we are accustomed to trust; indeed, we have no other proof to assure us of the *existence* of objects which are not currently present to our senses, and about which, however, we entertain no doubt of any kind: it is induction which reaches back from the effects to their cause (Turgot 267).

The reality of intellectual operations seems so obvious and appears to follow so naturally from observation originating in sense impressions, that the physiology of the understanding should, by analogy, be quite simple. Voltaire characterized “common sense” as the opinion held by the creators of the term that “nothing enters into the soul except by the senses” (Voltaire 1964, 351-353; cited in Riskin 25-26, n. 26). Tracy put it this way, and attributed the idea to Condillac: “Penser, comme vous voyez, c’est toujours sentir, et ce n’est rien que sentir” (“Thinking, you see, is always feeling, and nothing but feeling.” Destutt de Tracy 1804, 25, 157, 239, 241). This privileged position granted to the senses, this mistrust of abstraction (à la George Berkeley) describes assumptions common to many philosophers and physiologists at this time. Sense experience, according to Riskin’s reading, represented the unmediated perception of both physical and moral qualities, so that the world “must be apprehended by means of an ever-active, intuitive sensitivity” (Riskin 31).

This is what Diderot grasped when he proposed a moral equivalence between blindness and a Cartesian “esprit de géomètre,” following the experimental studies of blindness inspired by Molyneux’s Problem (Riskin 21). Molyneux had posed the problem to Locke about whether a man blind from birth could visually identify a sphere and a cube once he gained sight, having only known them by touch up to that point. The question was whether knowledge was specific to each sense, or whether it was transferable between them. Diderot’s sentient statue in his *Éléments de physiologie* seemed to epitomize the way in which the entire being is modified by a sensation, so that man exists only in the eye when he sees, in a point on his finger when he touches (Riskin 46).

Similarly, Condillac used a thought experiment which endowed a statue with the five senses separately, then in combination. This statue, if given the sense of smell, would not suspect that the odor of a rose is in any way related to, that is, caused by, something outside its own self, at least until it was also given the sense of touch. By comparing the experience of touching itself and touching a foreign body, it would understand, by the fact that only its hands feel modified, that the foreign body

exists outside the boundaries of its own (the statue's) body (Condillac 1788, Parts I-III; summarized in Riskin 44-47).

From these considerations on the boundaries of the individual and its ability to know anything about itself or about anything outside itself, it is easy to understand the urgency of related research projects from approximately 1750 onward. The *Encyclopédie's* remark that "social" was a word newly introduced into French introduces a period of intense interest and new developments in the concepts of culture and society as well (Riskin 235). The social application of the "common currency of sensibility" would bring cohesion (natural or artificial) derived from the collective gathering and building of knowledge. The two moral alternatives, it would seem based on the general characteristics of the intellectual climate at that time, were sensitivity or solipsism (Riskin 21-22). Everything about Enlightenment culture, viewed in this way, was leaning in favor of sensitivity.

A Strain of Lucretian Epicureanism Among the Philosophes

Earlier, in 1733, Voltaire brought together in his *Temple du goût* such diverse figures as the Cardinal de Polignac, Rousseau, Fontenelle, Lucretius, and Leibniz, who all take their place together in the temple in the afterlife. His fantasy is the pretext for fun and philosophy. Philosophy that is, without too much reason: When the Cardinal de Polignac points out that Lucretius's Epicurean denial of the immortality of the soul was manifestly wrong, Lucretius responds, "Ah! Laissons ces disputes là, [...] j'ai fort mal connu la nature, mais ne me poussez point à bout : que votre muse me pardonne ; vous êtes chez le dieu du goût, non sur les bancs de la sorbonne" ("Oh! Let's move past our differences, [...] I badly misunderstood nature, but don't press me on the matter; may your muse excuse me; you are in the presence of the god of good taste, not on the benches of the Sorbonne"), and the narrator continues, "Ces messieurs n'argumentèrent donc point, et épargnèrent une dispute aux gens de goût, qui n'aiment pas volontiers l'argument. Lucrèce récita seulement quelques-uns de ses beaux vers qui ne prouvent

rien ; le cardinal dit aussi des siens, ce qui lui arrive trop rarement à Paris : on leur applaudit également à tous deux” (“These gentlemen therefore did not argue, and spared the people of good taste, who are not fond of confrontation. Lucretius simply recited some of his beautiful verses which prove nothing; the cardinal likewise cited his, which happens too rarely to him in Paris: then all of us applauded them both equally.” Voltaire 1953, 79-80). Then in his “Catalogue des écrivains” (“Writers’ Catalogue”), Voltaire briefly summarizes Polignac’s philosophical mistake: “Malheureusement pour lui, en combattant Lucrèce, il combat Newton” (“Unfortunately for him, in opposing Lucretius, he opposed Newton.” Voltaire 1775, “Catalogue” § 8).

When Diderot wrote his article “Épicurisme” for the *Encyclopédie*⁹⁵ twenty-odd years later, he judged, “...l'on voit qu'en quelque lieu & en quelque tems que ce soit, la secte épicurienne n'a jamais eu plus d'éclat qu'en France, & sur-tout pendant le siecle dernier. Voyez Brucker, Gassendi, Lucrece, &c.” (“...it is clear that of any place and time, the Epicurean sect has never been as fashionable as in France, especially in the last century. See Brucker, Gassendi, Lucretius, etc.” Diderot 2017a, 785). His treatment of Epicureans is sympathetic, and from his moving interpretation of Epicurus’s philosophy, he could easily have won followers for him. Furthermore, through the beautiful verses of Lucretius’s poetic exposition of Epicurean physics, *De rerum natura*, available in an admirable French translation by Jacques Parrain Des Coutures since 1685,⁹⁶ Epicurean physics was apparently both aesthetically pleasing and intellectually stimulating to generations of French thinkers, who saw in it certain resonances with the popular physical theories of Newton.⁹⁷ Gassendi authored the *Syntagma Philosophiae epicuri*

⁹⁵ A search for “Lucrèce” in the *Encyclopédie* returns 130 hits, divided between makes reference to to the (male) poet Lucretius (107) and the (female) Lucretia of Roman history or people named after her or the poet (23). For those relating to the poet, the entries describe philosophical and rhetorical or poetic concepts, or cite verses in service of the definition. Headwords include (in addition to “Lucretius” and “Epicureanism”): “Atheists,” “Atomism,” “Beauty,” “Certitude,” “Chaos,” “Didactics,” “Earth,” “Epenthesis,” “Fate,” “Soul,” “System,” etc.

⁹⁶ Voltaire judged that it was the best French translation. See his “Avis à l'auteur du Journal de Gottingue” in *Le Siècle de Louis XIV*.

⁹⁷ In 1750, there was cause for a revival of interest in Epicurean philosophy. When a well was to be dug at the Villa of the Papyri, the ruins of the Roman city of Herculaneum were freed of the volcanic material covering them since

(1649) as a continuation and refinement of Epicurean science, after which, it may be noted, immediately followed the largest spike in occurrences of “Lucretius” in the French corpus.⁹⁸ For those disposed to disagree with Descartes, Gassendi was a breath of fresh air. Gassendi’s disciples convened at Neuilly and Auteuil, and through the combined influences of this multi-generational network, the *Idéologues* would have preserved a proclivity for Lucretian materialism.⁹⁹

Lucretius may have inspired some of the ideas in Tracy’s *Grammaire* – in any case, they are common to the two (Picavet 355). Sometimes affinities are quite faint, and the most that may be said without documentation is that it was in the air, and sometimes in theories about the air. David Simpson explains, “Greek atomism and Lucretius’ account of the universe as an infinite, lawfully integrated whole provided an important background stimulus not only for Newtonian science, but also (if only in a negative or contrary way) for Spinoza’s pantheism and Leibniz’s monadology” (Simpson). Among Lamarck’s works, I have found no direct references to Epicurean philosophy, its enemies or its partisans, except where Lamarck pointedly leaves the speculation on first causes, on the origins of the universe, etc. to the great minds of Leibniz, Descartes, and Newton (Lamarck 1794, I, 9-11).

Erasmus Darwin’s “educable bodies” and Lamarck’s *Zoology of Desire*

Amanda Jo Goldstein has recently connected the substrate of Lucretian materialism to a romantic understanding of life in poetry and science which “passes outside the facile but persistent antinomy between active, teleological autonomy and passive, mechanical determination and has no need of the Kantian heuristic solution to this paradox” (Goldstein 2018, 18). Although Kant’s idea of the

the eruption of Mount Vesuvius in AD 79. Among the findings of the archeological dig which ensued under the direction of Charles III was a scroll containing, it was discovered in 1754, the end of book IV of Philodemus’s *Musica* (Delattre 31). Philodemus was an Epicurean philosopher-poet who had studied under Zeno of Sidon. See also *Les Épicuriens*, ed. Daniel Delattre and Jackie Pigeaud (Paris: Gallimard, 2010).

⁹⁸ Google Ngram: *Lucretius*, *Diogène*+*Laërce*.

⁹⁹ Due to constraints of time and space I do not undertake here a review of the literature on Epicurean philosophy among the *philosophes* and the *Idéologues*. This would be the subject matter for another study, one which would be useful in determining the possibility and limitations of applying Amanda Jo Goldstein’s reading of Romantic poetry and science in the French context.

“organized and self-organizing being” no doubt helped to establish the disciplinary legitimacy of a science of life in the early nineteenth century, understanding it as just one option among many for the life sciences to build upon helps to see what other options existed. She explains that the biological theories of Erasmus Darwin and Lamarck conceive of the living being as “a bit of body endowed with [...] a susceptibility of experience” (Goldstein 2018, 7), an “educable” body (Goldstein 2018, 18), or elsewhere, as belonging to a group of forms “that tend, for better or worse, to make an organ of experience, their developing bodies presenting a compounding archive of prior interactions with their social and material surrounds,” and that “owe their very capacity for improvisation to the gap between present exigencies and the pasts embodied in their very organs” (Goldstein 2017, 40).

Goldstein’s characterization of Lamarck’s theory is drawn in part in contrast to Xavier Bichat’s vitalism (Goldstein 2017, 57-58). Lamarck asserted that no inherent antagonism exists between a living body’s non-living surroundings and the life contained in it; in fact, for many animals, external influences are the unique source of their conservation. She points to passages where Lamarck emphasizes the suppleness of the bodies of simple animals: they must be consistent enough to detain fluids, but permeable enough for the *milieux* to flow through them and to influence the shape that they take. Lamarck identifies the maximum degree of suppleness in their gelatinous consistency: their physical composition hangs in the balance between a solid and a fluid (Lamarck 1802, 95). The internal movement that constitutes life, Goldstein writes, interpreting Lamarck, is “a kind of eddy in the surrounding movement, an ‘intussusception’ that waylays circumambient motion into a vital tension that cannot persist without it” (Goldstein 2017, 58).

Goldstein proposes that the “logics of life” of Lamarck, E. Darwin, and Blake “will not sort into autonomy or contingency, power or passivity, ‘the physical’ or ‘the moral,’ because they theorized life as transpiring between or athwart such alternatives in a domain of *use, disuse, needs, habit, practice, circumstance* and *desire* articulated in their stead” (Goldstein 2017, 60). In support of this, she cites

Darwin's *Zoonomia*: "The spirit of animation has four different modes of action" – "or, in other words the animal sensorium possesses four different faculties, which are occasionally exerted." in "their passive state [they] are termed *irritability, sensibility, voluntarity, and associability*; in their active state...*irritation, sensation, volition and association*" (Darwin I, 32; cited in Goldstein 2017, 246, n. 110). She argues from his use of "associability" that the problem of association had been resolved for Darwin by physiological evidence supplied by experimental medicine (Goldstein 2018, 19).

In Lamarck's theory, however, while we may recognize the overlap with Darwin's in the importance of concepts like irritability and sensibility or sensitivity, and to a lesser extent, volition, association has almost no significance. He mentions it in connection with classification only. As discussed above in comparing Lamarck's theory with Biran's, not all sense impressions lead to the formation of ideas, even in higher animals capable of thought. If no traces are left in the memory, no ideas can exist and no association of ideas can arise. However, if association simply means the coordination of the various senses to provide a multi-faceted single impression of an encounter between an organism and something in its environment, then it is clear that "association," for the lower animals deprived of senses, is meaningless, and for higher ones, the possibility for the different sensory impressions to mingle into a single idea is assured by the existence of the "foyer" or *sentiment intérieur*, which in turn is supported by the existence of a common nerve center.

On the other hand, as Lamarck asserts, sensory impressions cause the fluids in the organism to be moved, and the ebb and flow impacts the tissues, causing them to change shape, the more the flow is drawn to the location of the impression. In this case, "association" may be understood as the cumulative effect of environmental contact with the organism at a particular location on its body, which sculpts it. It follows that for higher animals, the ability to direct movement toward the contact would concentrate those impressions into a shorter period of time, and the resulting sensation(s) would be more intense, offering the possibility that the commotion in the *sentiment intérieur* would overflow into

memory as ideas, that is, that the rebounding waves of nervous fluid in the medullary reservoir would overflow into the *hypocéphale*, or cerebral hemispheres, the part of the brain where intelligent acts are produced (Lamarck 1809, 226-227). Lamarck insisted on the role and importance of this part of the brain, as distinct from other parts commonly lumped together with it and designated by the term “cerveau” (Decourt 169).

The remaining questions about association still are, “Why does the animal do what it can to repeat the sensation?” and its corollary, “Why does the animal summon ideas from memory?” To the first, Lamarck answers that there is a simple mechanism of attraction to things which promote its preservation (which it may experience as pleasurable) and repulsion from things which would tend to destroy it (which it may experience as painful) (Lamarck 1809, II, 324-326). Beneficial encounters (ones that ultimately satisfy its needs, which are fourfold) will be sought after, while detrimental ones will be avoided. Habits are formed by the successful fulfillment of needs, and are transformed into penchants over time, becoming imperatives that we call “instinct.” To the second question, Lamarck has an elaborate response regarding *attention*. In short, attention represents an effort of the *sentiment intérieur* responding to a need (due to a sensation) or a desire (due to an idea).

Attention is treated towards the end of the *Philosophie zoologique*. Lamarck’s title for this section names it the “first of the principal faculties of the intelligence.” His own principle of the correspondence of faculties and organs certainly constrained him to call it a faculty, since attention is active within the *hypocéphale* with which it is correlated (or coëmergent as we may understand it now) (Lamarck 1809, II, 400). On its basic definition, Lamarck differs with Garat, citing his “Programme des leçons sur l’analyse de l’entendement, pour l’École normale, page 145”:

Il est évident pour moi que l’attention n’est point une sensation, comme l’a dit M. le sénateur GARAT (1) ; que ce n’est point non plus une idée, ni une opération quelconque sur des idées; conséquemment, que ce n’est point encore un acte de volonté, puisque celui-ci est toujours la suite d’un jugement ; mais que c’est un acte du sentiment intérieur de l’individu, qui prépare telle partie de l’organe de l’entendement à quelqu’opération de l’intelligence, et qui rend alors

cette partie propre à recevoir des impressions d'idées nouvelles, ou à rendre sensibles et présentes à l'individu, des idées qui s'y trouvoient déjà tracées.

It is obvious to me that attention is not a sensation, as Senator Garat has said; that neither is it an idea, or an operation on the ideas; consequently, that it is not yet an act of the will, because such an act always follows a judgment; but rather that it is an act of an individual's *sentiment intérieur*, which prepares part of the organ of understanding for some operation of the intelligence, and which thus renders that part ready to receive the impressions of new ideas, or to make perceptible and present to the individual ideas which are already traced in it (Lamarck 1809, II, 392).

It is therefore through the preparatory work of attention that any ideas at all are traced in the memory of the brain (Lamarck 1809, II, 395). For this reason, it appears to inscribe the *acte de naissance* or birth certificate of the intelligence.

Up to this point in the animal organization (to read the progression), the functions of the *sentiment intérieur* were restricted to receiving sensory impressions and organizing muscle movements. Mystery shrouds the sensory impression first fixed by the attention as an idea. Sometimes Lamarck discusses the operations of thought on ideas previously acquired (Lamarck 1802, 166), sometimes the formation of ideas is a potential which is realized in the future (Lamarck 1809, I, 188), sometimes it is a given: mammals have a small number of ideas (Lamarck 1809, II, 396). What is it about that sensory impression which moves the *sentiment intérieur* to "attend" to it, that is, to record it? One clue from his understanding of physiology exists: the nervous fluid contained in the intelligent part of the brain ("l'organe de l'entendement"), joined as it is to the rest of the nervous system by a very narrow passage, does not receive any movement from the *sentiment intérieur* except when the latter is extremely agitated, which, he says, affects *almost* every function and faculty when it happens (Lamarck 1809, II, 250).

Such excitement can happen in the context of satisfying a basic need, upon discovering the object capable of giving satisfaction: "Aussi, à l'exception des objets qui peuvent satisfaire à leurs besoins, et qui font naître en eux des idées, parce qu'ils les remarquent, tout le reste est comme nul pour ces animaux" ("So with the exception of objects which can satisfy their needs, and which induce

ideas in them, because they notice these objects, everything else is non-existent for these animals.”

Lamarck 1809, 396). Animals possessed of these kinds of ideas appear “fixated” on those objects which directly satisfy their cravings and they are not capable of curiosity or wonder (Lamarck 1809, II, 396).

That is, unless they are trained and thereby urged to vary the acts of their intelligence (Lamarck 1809, II, 397).

Through the various contributions of the senses and levels of organization of material animal bodies, this seems to be as far as we can go with the *sentiment intérieur*. Theoretically, all the pieces are in place for the highly perfected animal which has acquired certain ideas – ideas which we may say are useful for its existence – to think (Lamarck 1809, II, 227-228). The problem of association was solved materially, but Lamarck was aware of the difficulty of making the next step:

Il est, sans doute, très-difficile de concevoir comment se forment les impressions qui gravent les idées ; et il est surtout impossible de rien apercevoir dans l'organe qui indique leur existence. Mais que peut-on en conclure, sinon que l'extrême délicatesse de ces traits, et que les bornes de nos facultés en sont la cause ? Dira-t-on que tout ce que l'homme ne peut apercevoir n'existe pas ! Il nous suffit ici que la mémoire soit un sûr garant de l'existence de ces impressions dans l'organe où elle exécute ses actes.

It is doubtless very difficult to conceive of how impressions are formed which engrave ideas; and it is most of all impossible to glimpse anything in the organ which indicates their existence. But what else may we conclude except that the extreme delicacy of these lines and the limits of our faculties are to blame? Shall we say that everything man cannot perceive does not exist?! It is enough for the present that memory be a certain guarantee of the existence of these impressions in the organ in which it is active (Lamarck 1809, II, 228).

So, how can the animal notice anything regarding which it has no prior experience? If memory ultimately serves the needs of the animal through the sensations, only one source of sensation, and thereby excitement to attention, remains which could, it seems, bring about the command of attention which transforms any and all of the sensations the individual may have into ideas. The source of this sensation is in the *sentiment intérieur* itself:

Les émotions du sentiment intérieur ne peuvent être connues que de l'homme, lui seul pouvant les remarquer et y donner de l'attention ; mais il n'aperçoit que celles qui sont fortes, qui ébranlent, en quelque sorte, tout son être, et il a besoin de beaucoup d'attention et de réflexions, pour reconnoître qu'il en éprouve de tous les degrés d'intensité, et que c'est

uniquement le sentiment intérieur qui, dans diverses circonstances, fait naître en lui ces émotions internes qui le font agir ou qui le portent à exécuter quelque action. (Lamarck 1809, II, 284)

The emotions of the inner feeling can only be known by man, since he alone can notice and mark them; but he only perceives those which are strong, and which agitate, so to speak, his whole being; close attention and thought is necessary before he can recognize that he experiences them in all degrees of intensity, and that it is exclusively the inner feeling that under various circumstances stirs up in him those inward emotions which lead him to the execution of some action. (Lamarck 1914, 335)

Man is the only species, Lamarck says, in whom the susceptibility of being moved (*être ému*) is joined by the sensation of that movement. The way the *sentiment intérieur* is connected to the ideas is not only through its intimate relationship with attention, but because its own movements (emotions), when they are sufficiently strong, spread throughout the body and cross the threshold between sensation and idea. The moment when this happens must inaugurate the existence of the interior to which our attention retreats when, for instance, we are “distracted.” When this happens, what is exterior resolves and distinctions become possible.

Knowledge of the inner feeling and its sensory objects is possible because ideas are uniquely derived from noticing sensation: “Il n’y a donc que les sensations remarquées...qui fassent naître des idées” (“Only noticed sensations...induce ideas.” Lamarck 1809, II, 395). There is more here, however, than in Tracy’s assertion that “quand on ne fait rien que sentir, on ne sent que sa propre existence” (“when one does nothing but feel, one only feels one’s own existence.” Destutt de Tracy 1804, 157). Tracy’s feeling represents an act and a manner of being; Lamarck’s feeling is a combination of readiness and potential. The fact that Lamarck uses the term “puissance” (“might”) to describe the *sentiment intérieur* is significant: in this way it is conceived outside of a relationship of strict causality. Neither cause, nor effect, it combines receptivity and activity, and closes the continuous system composed of organism-and-environment. It is self-referential.

I am inclined to agree with Goldstein’s conclusion that the Kantian notion of the living being as “organized and self-organizing,” in its history of success, has very nearly eclipsed alternative

understandings like Lamarck's. Lamarck's *corps vivant* is not organized around the will, neither at its origin, nor at its highest degree of perfection. Kant and Lamarck both appear to have been problematizing the origin of the first idea by navigating between various poles representing philosophical extremes. Lamarck leaned on the idea of life in the abstract to understand organisms and ideas in their particulars; Kant leaned on pure, abstract reason to show how it is that we intuit them. If there is a likeness between the two philosophies, it may be in the way Lamarck conceives of nature and how our knowledge of it depends on our ability to sense, and the further ability of this sense to sense itself. Something in the sentient organism reaches out to meet... Call it attention, curiosity, desire, intuition; the infinite verb without an object (to meet...) and the indeterminate subject of the conjugated verb (something) represent two vanishing points on either side of the sentient organism, conceived in human language. In the *Critique of Pure Reason*, Kant defines "immanent physiology" apart from "transcendent physiology":

Immanent physiology, on the contrary, considers nature as the sum of all sensuous objects, consequently, as it is presented to us – but still according to *à priori* conditions, for it is under these alone that nature can be presented to our minds at all. The objects of immanent physiology are of two kinds: 1. those of the external senses, or *corporeal nature*; 2. the object of the internal sense, the soul, or, in accordance with our fundamental conceptions of it, *thinking nature* (Kant 1990, 474-475).

Lamarck would no doubt chafe at the distinction between *à priori* and *à posteriori* modes of cognition; he would probably have challenged the role and direction of time as implied by these terms. Kant at the time of the first *Critique* might object that the common root of sense and understanding, the two sources of human knowledge, is unknown *and* unknowable to us (Kant 1990, 18).

Gissis writes that Lamarck came to see "emergence of complexity and of complex self organization" as principal features of living things (Gissis 2010, 234). Cautioning that this terminology may be misleading, I hope I have shown that Lamarck's notion of self-organization is unique to him and cannot be understood apart from his theory. In his theory, the only driving force is that of fluids – up until the time that those fluids, accelerating through the tissues of the complex organism in its highly

conductive nerves, make a lasting mark on the growing organ of intelligence. To Kant's idea that the study of living organisms reveals to us how humans "step beyond nature" (Kant 2000, 261), and Gissis's milder characterization of Lamarck's *sentiments* as "an emergent category, embodied yet endowed with a qualitative surplus which pointed beyond" (Gissis 2010, 224), I respond that Lamarck never imagined humans beyond or outside of nature, in either of nature's two realms on both sides of the "pellicule" which separates them: only closer or farther from it (Lamarck 1809, II, 58). In our bodily existence, we are entirely subject to natural laws (Lamarck 1817a, 271). The human imagination is capable of producing extravagant ideas which may exit the "champ des réalités" and the "ordre de choses" which constitute nature, but the source of these ideas is in (human) nature itself (Lamarck 1809, II, 418; 1818, iii).

In the long story of the *prise de conscience*, it arrived late and is quite fragile, subsisting, as it does, on a limited supply of nervous fluid (Lamarck 1809, II, 401, 409). The method, Lamarck's "art des distinctions," reconstitutes the organism by telling its history up to the point where the organism distinguishes itself (Lamarck 1816-1817, 5). In the third part of the *Philosophie zoologique*, Lamarck "was using the evolutionary mechanism both rhetorically and substantially" in order to establish sensation, and therefore, thought, as processes identical with the fluid movements that produce them (Gissis 224). Between irritability and higher mental faculties, he posited the existence of "an obscure feeling," "an intimate feeling," "a feeling of existence," or an "inner feeling" before decisively employing the last term. As we have seen, however, the *sentiment intérieur* contains in its functions both the real and present *sentiment d'existence* and in humans, the potential for awareness of the feeling of existence, or its idea.

Where do these considerations lead concerning the question of humankind? In his discussion of attention, Lamarck surprises himself¹⁰⁰ by exploring the convergence of the animal condition with the human condition in the paucity of ideas displayed in individuals of each kind. Humans in this state, unlike animals, may be blamed for having the *ability* to direct their attention toward all of nature around them and not *using* it. Lacking curiosity, they give themselves over to habit, following their penchants instinctually (Lamarck 1817a, 272-274). This fact recalls the complex interrelation of knowledge of nature and knowledge of self that Lamarck articulated in his definition of humankind, which I examined in the last chapter: the perfection of each is contingent upon the other. For the flip side of “puissance,” that is, “might,” is a contingency of another kind: the possibility of being ignored or unused.

In his definition of humankind, Lamarck spent much time discussing penchants and passions (see Appendix A). In this respect, he appears to belong among the sentimental empiricists: Julien Offray de La Mettrie, Claude-Adrien Helvétius, and David Hume all agreed on the utility of the passions (Riskin 50). In moments of intense feeling, the possibility of knowing arises. Two kinds of feeling are joined in the French verb éprouver (“to feel,” “to test”); both are applicable in this model of understanding. In turning inward in his own mind, after having observed the animals, Lamarck discovered the common source of both, which was, ultimately, nature itself.

Philosophically, Lamarck engaged with Voltaire and Rousseau on the question of disorder, change, or alteration in nature, claiming that such terms were meaningless. Human interest in our own survival skews our perception of the laws which nature obeys even when destroying and reforming its

¹⁰⁰ “Le dirai-je ! que d’hommes aussi, pour qui presque tout ce que la nature présente à leurs sens, se trouve à peu près nul ou comme sans existence pour eux, parce qu’ils sont, à cet égard, sans attention, comme les animaux ! Que d’hommes qui, par suite du peu d’emploi qu’ils font de leurs facultés, bornant leur attention à un petit nombre d’objets qui les intéressent, n’exercent que très-peu leur intelligence, ne varient presque point les sujets de leurs pensées, n’ont réellement qu’un petit nombre d’idées, et sont fortement assujettis au pouvoir de l’habitude !” (“Dare I utter it?! how many men also, for whom almost all that nature presents to their senses, is null or as having no existence at all, because they lack attention for those things, like the animals! How many men there are, who, as a result of the meager use that they make of their faculties, limiting their attention to only a few objects which interest them, hardly exercise their intelligence, rarely vary the content of their thoughts, have in reality only a small number of ideas, and are strongly subjected to the power of habit!” Lamarck 1809, II, 306).

works (Lamarck 1815-1822, 329, n. 1; 327-330). He complained in 1816 that the concept of “nature,” so frequently invoked in speech and in writing, was still meaningless in the minds of those who used it (Lamarck 1816-1817, 4). In his own thought, Lamarck had had to personify nature in order to explain how it was that one class of animals gave rise to the next, particularly in the thorny case of the passage from the mollusks to the vertebrates (Laurent 357). By 1809, nature had acquired a goal, and prepared the steps along the way to reach it; by 1815, Lamarck relied less on explaining changes by external circumstances and more on nature’s plan to diversify the animals and render them more and more complex (Laurent 359).

Lamarck’s natural history becomes the story of nature told by nature itself. Narration proceeds from a new space, the *sentiment intérieur*, which is more of an interstice, a process more than a place, a potential more than a true faculty (not instinct, memory, reason, emotion, or judgment). Perhaps this accounts for the contingent nature of imagination, instinct, and memory in Lamarck’s model. These faculties, which are so closely related to narration, are eclipsed or displaced by the *sentiment intérieur*. If Lamarck’s work has literary import, this would be one possible source.

Conclusions

Amid great interest in phenomena eventually accounted for by Lamarck’s *sentiment intérieur*, the exact source(s) of the term may be impossible to pin down. He may have been motivated to choose it precisely because it did not appear as often in the works of his peers in natural history (not at all in Cabanis’s *Rapports*). He could make it his own. Furthermore, it represented the simplest, clearest formulation of his theory. As he put it, “Le sentiment dont il est question, et qui est maintenant bien reconnu, résulte de l'ensemble confus de sensations intérieures qui ont lieu constamment pendant la durée de l'existence de l'animal, au moyen des impressions continuelles que les mouvemens de la vie exécutent sur ses parties internes et sensibles” (“The feeling in question, and which is now clearly

recognized, results from the muddle of interior sensations which happen constantly throughout the duration of the existence of the animal, by way of the continual impressions that the movements of life make on each of its internal sensitive parts." Lamarck 1809, II, 280). No term would therefore be sufficient which did not emphasize 1) the difference between a singular, event-like sensation and an enduring feeling or sentiment; 2) the difference between the *faculty* of sensation and the power that is the *sentiment intérieur*; 3) the difference in connotation between "interne" and "intérieur," which, as soon as I note it, offers many points of view. "Interne" defines an enclosure out of which nothing may issue, whereas "intérieur" describes an inward focus toward which things from outside may be drawn, or out of which things may be produced, making the "intérieur/extérieur" boundary more permeable than the "interne/externe" one. "Interne" tends to define concrete institutional spaces (hospitals, schools, prisons), whereas "intérieur" tends to define abstract spaces (country, home, mind).

Lamarck's insistence on the coherence of the *sentiment intérieur* in itself, that is, its continuity both in time and space, does rather elide the differences between the philosophical or psychological entity known as "conscience" ("consciousness") and the physiological process the inner feeling represents: "[E]n ce qu'il est le résultat des sensations obscures qui s'exécutent, sans discontinuité, dans toutes les parties sensibles du corps : sous cette considération, je le nomme simplement sentiment intérieur" ("Given that it is the result of obscure sensations which occur, continuously, in every sensitive part of the body: for this reason, I name it simply inner feeling." Lamarck 1809, II, 281).

The coherence of the *sentiment intérieur* arises from disparate but contiguous sensations, compounded in their force by their co-occurrence in time and by the physical conditions of the nervous system; therefore, the *sentiment intérieur* is summative. Furthermore, it provides the essential connection between the higher organism and its environment. The initial connection, but in the renewal of (e)motion in the *sentiment intérieur* by things encountered in its environment, it does not transcribe the same pattern of action-reaction as before: it *responds*. There are many misleading and

unsatisfactory ways to interpret what I mean by this. I submit it as a way to understand Lamarck's theory that concurs with Canguilhem when he concludes that the organism is more than an arena of influences. "...[O]n peut, transposant le procès dialectique de la pensée [biologique] dans le réel, soutenir que c'est l'objet d'étude lui-même, la vie, qui est l'essence dialectique..." ("One may, by transposing the dialectical process of [biological] thought into the real, argue that it is the object of study itself, life, which is the dialectic essence..." Canguilhem 108).

For all of Lamarck's enthusiasm about this aspect of his theory, the *sentiment intérieur* lost ground after he used it. Wherever one encounters the term *sentiment intérieur* after the nineteenth century, it is likely to be italicized. There may be many reasons for this; following are some hypotheses. First, it represents an outmoded way of thinking about the introspective subject; not since the heyday of the romantic novel has anyone invoked this term to describe the inner life of the individual. Second, it was eclipsed by a term with which it was often found in tandem: *la conscience*, the latter – used and understood in a new sense – rising to prominence in philosophy and science alike (C. G. Davies). Third, it proved to be limited in its explanatory power, that is, its ability to bear and transmit the weight of scientific observation and hypothesis, as in Lamarck's use of it; in this way it was a kind of failed neologism. It was fossilized in a period to which twentieth and twenty-first century histories of science, philosophy, and literature must necessarily refer in any discussion of conscious awareness (and its opposite, the unconscious). For these reasons also, it would seem, it resists translation into English, and remains an artifact, a clumsy object whose meaning is obscure.

Lamarck's communication of his theory to his students and to the wider public, moreover, appears to have failed. Compayré noted Charles Martins's 1873 comment that no one had studied Lamarck's psychological theory and set out in his article to "save it from oblivion" (Compayré 6). Lamarck himself seems to have worried about the transmission of his ideas, since he remarks that he wrote the *Philosophie zoologique* in part to use it in his lessons and to help his students better

understand him (Lamarck 1809, I, i). Among the students who frequented his lectures, one was a fictional character, Amaury, in the only novel written by Charles-Augustin Sainte-Beuve. In chapter three, I examine possible traces of Lamarck's thought in his and two other novels.

These works represent an adventure of youth written by an older person, and sometimes the youthful protagonist is doubled by a world-wise secondary character. The unresolved problems of habit and penchants appear to motivate these literary explorations of human existence. Time, habit, and experience are collapsed in the fictional worlds which appear to be new experiments in natural history and *idéologie*. Lamarck may have resolved Aristotle's paradoxical "rational animal" by another paradox, the "inner feeling," but from the latter stem other paradoxes of human existence in, over, and against nature.

Chapter 3: Lamarck's Literary Heritage

Introduction

Voltaire opined in the thirteenth of his *Lettres philosophiques* that Locke had developed for mankind an understanding of human reason like an anatomist uncovers the workings of the human body. Locke observes a child from birth, notes the progress of his understanding, remarks in what ways he is similar to and superior to animals, and finally, “il consulte surtout son propre témoignage, la conscience de sa pensée” (“he especially consults his own witness, the consciousness of his thought.” Voltaire 1956, 63). Voltaire is exultant: “Tant de raisonneurs ayant fait le roman de l'âme, un sage est venu, qui en a fait modestement l'histoire” (“So many thinkers having written the romance/novel of the soul, a sage has arrived who has modestly written its history.” Voltaire 1956, 63). Using the same methods, the naturalists, philosophers and physiologists surveyed in the last chapter endeavored to further refine the anatomy of human intelligence. Their work did not fail to influence the actual writing of novels; indeed, they introduced a set of problems to be solved, hypotheses to be tested, and methods for doing so.

The influence of the *Idéologues* waned during the Premier Empire, and many were displaced when the second class at the *Institut national* ceased to exist between 1803 and 1832. Throughout the tumultuous years of the Bourbon Restoration (Louis XVIII, king from 1814-1815, 1815-1824, then Charles X from 1824-1830) and the July Monarchy (Louis-Philippe 1^{er} from 1830-1848), their ideas were modified, applied, contested, rejected, inherited, and in this way shaped French *sciences humaines* for years to come. During this time, within a period of eight years (1827-1834), Stendhal (1783-1842), Honoré de Balzac (1799-1850) and Charles-Augustin Sainte-Beuve (1804-1869) became novelists, each in his own way. Stendhal's *Armance* (1827), his first novel, was published anonymously; Balzac's novel *Les Chouans* (1829) was the first to be published under his own name, preceding *La Peau de chagrin* (1831) by two years; and Sainte-Beuve's *Volupté* (1834) was the only novel he would ever write. Each writer, to

the extent that it may be demonstrated, invested his protagonist in these early novels with autobiographical material. Each one, grappling with history, both in the large sense and in the intimate, personal sense, turned away from biography¹⁰¹ to the novel. They probed possible applications of the philosophy of prior generations, and particularly, *idéologie*. The novel provided a kind of laboratory for testing the analysis of passions. This literary outgrowth of *idéologie* represented extensive efforts by all three authors to collect samples of human nature *in situ* (individuals in their native environments), and to classify these according to their characteristics.

Due in part to the variety of specimens, and the infinite number of “facts available to anyone,” the three novels studied here differ quite a lot in setting, characters, tone, and plot. However, the three male protagonists (Octave, Raphaël, Amaury, respectively) are alike in their youth and their engagement with philosophy through reading journals and book, attending classes and otherwise wandering about at the Muséum national d’histoire naturelle, the Bibliothèque nationale and the Jardin des Plantes. Like other young men of their cohort, they have studied philosophy, physiology, physics and engineering. This preparation does not, however, steel them against the forces that come into play in their lives: fortune and misfortune, confidence and doubt, unrequited love and debauchery. Each protagonist faces death or voluntary exile, in spite of the unwavering, pure devotion of a *belle âme* (Armance, Pauline, Mme de Couaën), to borrow Stendhal’s phrase (Stendal 1975, 65).¹⁰² In the space for competing worldviews which the novel affords, we find young protagonists consulting the wisdom of the aged, revealing the impoverishment of older philosophies, and striking out on their own. Balzac identified this trend among his peers (who also worked with his editor, Charles Gosselin) early in 1831: “Il y a dans ces

¹⁰¹ Balzac had been co-authoring works of biographical fiction before writing *La Peau de chagrin*; Stendhal rejected the form after unsatisfying attempts to find truth in this form of history (Fowlie 236); Sainte-Beuve pursued his compendium of *portraits* of the great thinkers and writers of the past; in this vein, *Volupté* offers a portrait of Victor Hugo, as well as a chaste tale of Sainte-Beuve’s budding love affair with Adèle (Foucher) Hugo.

¹⁰² Balzac’s Raphaël likewise characterizes his desire for Fœdora as spiritual, having nothing to do with physical consummation: “...je n’en voulais pas à son corps, je souhaitais une âme, une vie, ce bonheur idéal et complet, beau rêve auquel nous ne croyons pas longtemps” (“...I was not after her body, I wished for a soul, a life, that complete ideal happiness, beautiful dream which we entertain for only a short time.” Balzac 1996, 205).

quatre conceptions littéraires le génie de l'époque, la senteur cadavéreuse d'une société qui s'éteint. [...] La *Physiologie [du mariage]*, de Balzac lui-même, publiée anonymement en 1829), la *Confession* [de Jules Janin], *Le Roi de Bohême [Histoire du roi de Bohême et de ses sept châteaux]* de Charles Nodier], *Le Rouge et le Noir* [de Stendhal]... sont les traductions de la pensée intime d'un vieux peuple qui attend une jeune organisation; ce sont de poignantes moqueries; et la dernière est un rire de démon, heureux de découvrir en chaque homme un abyme de personnalité où vont se perdre tous les bienfaits" ("One finds in these four literary conceptions the spirit of the age, the deathly odor of a perishing society. [...] The *Physiology [of Marriage]*, by Balzac himself, published anonymously in 1829), the *Confession* [by Jules Janin], *The King of Bohemia [History of the king of Bohemia and of his seven castles]*, by Charles Nodier], *The Red and the Black* [by Stendhal]... are the translations of the intimate thought of an old people waiting for a young organization; they are poignant mockeries; the last of them is a demon's laugh, who is happy to discover in each human being an abyss of personality in which all benefits are lost." Balzac 1831). This is the novelistic formula for the protagonist who bears the weight of *la pensée intime* of the past in his frail young flesh.

My analysis of these three novels in relation to *idéologie*, generally, and to Lamarck's philosophy, in particular, rests in part on previous literary scholarship and biographical research which has demonstrated the engagement of their authors with the principles and practices of the *Idéologues*, often through close personal interaction with them. I proceed by commenting on their novelistic practices and the circumstances of creation, as these may be known through their other writings (prefaces and other front matter, notes, correspondence, diaries, marginalia, etc.). I note the personal experiences, philosophical influences and interests common to the authors and their protagonists. I analyze character and plot development, dialogue, narrative style, and other aspects of the novels to highlight what I call "Lamarckian moments," or spaces in the texts where engagement with Lamarck's ideas is possible, probable, or certain. I propose that these moments exist in the novel not so much for

the sake of manipulating reader response or tone (humor, irony, sympathy, credibility, etc.),¹⁰³ or for the convenience of representing believable places, people and psyches, or in other words, as auxiliaries of the novels' realism, but rather for the purpose of illustrating certain physiological and psychological features under controlled circumstances: something like stress-tests on human subjects. These novels transcribe the results of a thought experiment, and the transcription bears the mark of *necessity* even while it calculates the sum of multiple contingencies.

My approach therefore stands alongside Thomas Pavel's theory of the novel in *La Pensée du roman*: "Pour saisir et apprécier le sens d'un roman, il ne suffit pas de considérer la technique littéraire utilisée par son auteur ; l'intérêt de chaque œuvre vient de ce qu'elle propose, selon l'époque, le sous-genre, et parfois le génie de l'auteur, une *hypothèse substantielle* sur la nature et l'organisation du monde humain" ("To grasp and appreciate the meaning of a novel, it is necessary to consider more than the literary technique used by its author; the significance of each work depends on its putting forth, according to the era, the sub-genre, and sometimes the particular genius of the author, a *substantial hypothesis* about the nature and organization of the human world." Pavel 46). In this way, my understanding of the early 19th-century novel is that it is the mirror image of the work of natural history: the latter gathers discrete facts in an effort to produce a coherent system, while the former tests a system or systems on a series of discrete individuals. It would be tempting to consider the novel as dependent upon the (prior) work of natural history, but realistically, *both* processes are combined in the naturalist's and in the novelist's creation, to varying degrees with respect to each.

Although references to physics, natural history, physiology, psychology and *idéologie* form a diffuse background in the narration of the novels, and occasionally become salient in the plot,¹⁰⁴ some

¹⁰³ I leave out "empathy." I absolutely think that empathy may be aimed at in these moments, just as it plays a primordial role in the novel in general. I distinguish it from sympathy, which is rather too close to pity or niceness.

¹⁰⁴ Frequent makes reference to to physiology and medicine portray the characters speculating on the physical sources of their maladies, and oscillating between theories of illness in the stomach, chest or head. Makes

of the ideas I identify as potentially having Lamarckian overtones revolve around the internal organization of the protagonist, that is, his sensations, thoughts and feelings in relation to his bodily and external circumstances. I am interested in how each protagonist experiences integrity or dissonance, ability or inability to act and to alter himself or his surroundings, and the proofs he gives of his consciousness of these experiences: meditations, monologues, dialogues with other characters, etc. They represent three different metaphysical predispositions: Octave, materialist monadism; Raphaël, skepticism; Amaury, vitalism/spiritualism. In this way, they face the problem of the possibility of knowledge, and of self-knowledge, in three ways. They also respond to their physical environment differently, illustrating, in addition to the vigor of their personal motivation, the degree to which they identify themselves as casualties of their circumstances. The corollary to this is the role of nature in each *récit* or story: far from being a backdrop, a prop, or character in these novels, I propose, as I mentioned at the end of the last chapter, that nature occasionally assumes the role of narrator.

There is no mention, direct, oblique, or otherwise, of Lamarck in Stendhal's novel. Stendhal's diary instead points to an appreciation of Cabanis's *Rapports du physique et du moral de l'homme*. Lamarck is indirectly involved in Balzac's novel in the characterization of the zoologist Latreille (originally Lacrampe) and to a certain extent, in the passage where the narrator praises Cuvier, because Cuvier was Lamarck's foremost critic. Sainte-Beuve is the only one of the three to discuss Lamarck deliberately and by name in his novel. Yet in many ways, Lamarck's work represents a bridge linking the natural history of the past, contemporary natural philosophy and biology, and social science of the future. The reception of his work (positive or negative) by the young novelists reveals the human stakes in the sweeping political, philosophical and social changes that they experienced.

reference to to species, taxonomy, animal behavior, and extinction are sometimes foregrounded, and the materials of analogy and symbolism include plants (often trees) and inanimate nature (streams, lakes, rocky cliffs).

Stendhal's *Armance* (1827)

Stendhal's professor of general grammar, Gattel, introduced him to the faculties and operations of the mind through the works of Locke and Condillac (Van Duzer 125-128). Apparently finding himself too steeped in Rousseau's philosophy, Stendhal undertook to read Antoine Destutt de Tracy in 1804.¹⁰⁵ This essential step into *idéologie* deserves some elaboration. Tracy's published works at that time included *Quels sont les moyens de fonder la morale chez un peuple* (1797-98), *Analyse de l'origine de tous les cultes, par le citoyen Dupuis, et de l'abrégé qu'il a donné de cet ouvrage* (1799 and 1804), *Projet d'éléments d'idéologie à l'usage des écoles centrales de la République française* (1800), and *Observations sur le système actuel d'instruction publique* (1800). How exactly Stendhal hoped to correct his Rousseau-bias is impossible to know, but as of 1802 he had quit the army and had been sojourning in Paris, filling his time with reading and theater. Perhaps he was dissatisfied with Rousseau's exposition of his fundamental philosophy, natural religion, and the proper upbringing of children in *Émile, ou de l'éducation* (1762), or maybe with Rousseau's quarrel over the social utility of the theater in his *Lettre à d'Alembert* (1758). In any case, at this time, Stendhal came to ally himself with *idéologie*. In 1805, he read Cabanis's *Rapports* for the first time, although he claimed it elsewhere as "ma bible à seize ans" ("my bible when I was sixteen." Manzani 174). Stendhal even engaged in a virtual dialogue with Cabanis in a later novel, *Lucien Leuwen* (1834) (Manzani 175).

Although Stendhal may have come to criticize the ambitious social programs of the *Idéologues* (Manzani 169), his philosophy and literary style are nonetheless clearly marked by *idéologie*. Émile Bréhier is unequivocal: "...[L']idéologie, plus qu'une doctrine est un esprit, et cet esprit anime l'œuvre entière de Stendhal ; il consiste en une vision des hommes qui se préserve d'interposer aucun principe universel entre l'observateur et la réalité; que l'on songe, pour juger à son prix la froideur de son regard

¹⁰⁵ "Dérousseauiser mon jugement en lisant Destutt," *Journal* from May 23rd, 1804; cited by Armand Hoog in Stendhal 1975, 262.

en face des choses, à l'illuminisme et au romantisme montant..." (*"Idéologie*, more than a doctrine, is a mind-set, and this mind-set animates Stendhal's entire oeuvre; it consists of a vision of human beings which refrains from placing any universal principle between the observer and reality; one should consider, to correctly estimate the coldness of his gaze with regard to things, the illuminism and the rising Romanticism...." Bréhier 409). It was intended that Stendhal should take the entrance exam to the École Polytechnique, but he did not show. Instead, he began to write.

Twenty-five years later, after travels and disappointments in love and work, *Armance* was published. Stendhal was forty-four. His other, better known novels would follow, and would attest to Stendhal's continued interest in political economy, in spite of his disgust (Arrous 173, 175). He had published an ideological essay, *De l'amour*, in 1822, in which he discussed the halo of perfections adorning the object of one's growing affections together with the phenomenon of mineral crystallization (Stendhal 1906, 5). *Armance* is at once so simple a story and so eclectic a novel that it has sparked many and various readings. A young graduate of the École Polytechnique, Octave de Malivert, suffers from a secret condition that has isolated him from human society from the age of fifteen, and he has on account of this condition forbidden himself from falling in love and marrying, which he cannot help but do in the course of the novel. He remains unaware of the bond that is forming between his faintly exotic cousin, Armance Zohiloff, and himself until it is too late.

On the one hand, Octave is, as his uncle le commandeur de Soubirane says, "*le devoir incarné*" ("duty incarnate." Stendal 1975, 50). Octave is devoted to his mother and conscious of his impressive heritage (which includes an ancestor who fought in the crusades). He wills to obey his father, if he can. His sensibilities are often offended by coarse behavior on the part of others. He is admired in society for his spirited conversation, a relic of a bygone era, except by envious and petty persons. The Prince de R*** tells his mother that Octave "ne dit jamais un mot de *cet esprit appris* qui est le ridicule de notre âge" ("never says a word exhibiting *that schooled wisdom* which is currently so ridiculous." Stendal

1975, 204), which is to say that Octave does not show off by parading his erudition. He is, in some sense, an old soul in a young and attractive body: his “remarkable beauty” includes large dark eyes, “the most beautiful in the world,” curly blond hair and generous stature, together with his noble manners and impressive wit (Stendal 1975, 63, 70, 49).¹⁰⁶ On the other hand, he also suffers from the youthful *maladie de son siècle* which consists in believing oneself to be a philosopher.¹⁰⁷ He reads political pamphlets and his nemesis in the novel is a young royalist. He was educated at the École Polytechnique and entertains many different career options, something rather unusual for a man of “great expectations.”¹⁰⁸ He would like to be a chemist, or a math teacher, or carry out agricultural experiments in some rural part of France or in Brazil (Stendhal 1975, 160-161).

Scholars have mentioned this contradiction in Octave’s nature without pursuing it further. Wallace Fowlie points out that the subtitle, *Quelques scènes d’un salon de Paris en 1827*, indicates a desire on the part of Stendhal to represent a fleeting phenomenon among the aristocracy at that time. But Stendhal’s realism is unconvincing, even if some of his readers swallowed the bait and took his novel to be a *roman à clé* about the duchesse de Broglie. Bardèche agrees, calling *Armance* “un roman manqué” because of the absurd subject. Stendhal’s attention to sentimental mechanics and disease is, as Armand Hoog notes, probably not drawn from sources such as Cabanis, but may be the result of intensive self-observation, reflection, and introspection (Stendal 1975, 16).

Octave’s secret, the persistent mystery (*babilanisme*, or impotence) in the plot, has drawn much scholarly attention, and its expressions and symbolism are quite rich. Stendhal adopted the subject from a prior novella of impotence, *Olivier*, attributed (incorrectly) to Madame de Duras, and very nearly

¹⁰⁶ “Quelle que fût la cause de sa profonde mélancolie, Octave semblait misanthrope avant l’âge” (“Whatever the cause of his deep melancholy, Octave seemed to be a young misanthrope.” Stendal 1975, 50).

¹⁰⁷ “On échappe difficilement à la maladie de son siècle : Octave se croyait philosophe et profond” (“It is difficult to escape the illness of the age: Octave believed himself to be philosophical and profound.” Stendal 1975, 117).

¹⁰⁸ He is expected to inherit a great sum from his mother’s *indemnité*, to the tune of two million francs.

titled his own novel *Olivier* as well.¹⁰⁹ Like his unhappy protagonist, Henri Beyle reveals in his journals that he experienced periods of hypersensitivity, nervous failure, impotence, isolation, despair and suicidal thoughts (Stendhal 1975, 14-15, 20-23, 281, n. 6),¹¹⁰ giving him a firsthand grasp of how his (much younger) protagonist might feel. Stendhal endows Octave with all the sensitivity he himself felt; Octave becomes almost likeable in his ability to perceive certain nuances, particularly in his relationship with Armance. A glance, a word, a fleeting thought move them both to great joy or sorrow (Bardèche 142-143).

Subtle references in the text orient the reader toward a reading of the novel which oscillates between the physiological and the psychological. The protagonist seems to embody the physical problem of mind over matter, since he suffers from a mysterious condition which is often interpreted as impotence. He is given to sudden fits of rage or despondency that send him out of the theater or *salon*, away from social card games, and into violence, when he seizes a lackey and throws him out of a window or provokes his classmates to duels, resulting in minor injuries (Stendhal 1975, 76, 68-71). Stendhal has Octave regret abandoning his plan to become an imitator of Newton, who, he notes ‘was accused of bablanism’ (Stendhal 1975, 56, 280, n. 12). On another level, Octave embodies the hesitation which followed the Revolution between Old Regime habits, their renewal during the reign of Charles X, and republican values (Bardèche 134). One must ask in reading *Armance* side-by-side with an Enlightenment text like Diderot’s *Rêve de d’Alembert* whether Octave’s impotence is symptomatic of a much larger problem of translation from one regime to another, from one kind of consciousness of the self to another.

¹⁰⁹ It was actually written by a “very minor Restoration-era writer,” Hyacinthe de La Touche (Stendhal 1975, 10-11). The duchess Claire de Duras had in fact written such a story and read it to her friends but did not publish it. Prosper Mérimée persuaded Stendhal to change the name of the protagonist (Bardèche 133).

¹¹⁰ Hoog documents this well in the introduction to *Armance*, concluding with regards to impotence that Stendhal knew what he was writing about (15), even if, medically speaking, he did not suffer from permanent disfunction, and that Octave, although the novel was supposed to be a rewriting of *Olivier*, is not a romantic character based on this borrowing: “Octave, le plus secret Octave, c’est Henri Beyle” (“Octave, the most secret Octave, is Henri Beyle.” Stendhal 1975, 20).

Octave seems to represent, in his moments of greatest self-control, the repression of the rest of the body by the head, such as Diderot explains it in his *Rêve de d'Alembert*. The opposite case, of course, marked by activity and likened to political anarchy, is when members are stronger than the head, and do not obey its impulses. The competing impulses in Octave are sketched out in detail: he represents both the old nobility (indemnified to the tune of two million francs during the Restoration [Stendal 1975, ch. 2]) and the new republicanism; the transition from one regime to the other is characterized by ambivalence, which Octave embodies, even while he is driven by an “inexorable logic” (Stendal 1975, 139). Suggestively, he suffers from tetanus after his duel with the marquis de Crèveroche. It is likely the only time in the novel when he is bothered by stiffness, or by lockjaw, for that matter, since the narrator often describes him as speaking easily in company.

His conversion to republican ideals is completed through his reading of “de bien mauvais livres,” according to his mother and her cousin, Madame de Bonnivet (Stendal 1975, 55, 75). Octave stumbled upon *idéologie* while researching pious subjects: “Pendant longtemps Octave avait pensé à se retirer du monde et à consacrer sa vie à Dieu. [...] Mais en cherchant à mieux connaître les vérités de la religion, Octave avait été conduit à l'étude des écrivains qui depuis deux siècles ont essayé d'expliquer comment l'homme pense et comment il veut, et ses idées étaient bien changées...” (“For quite a while, Octave had considered retiring from society and devoting his life to God. [...] But in trying to better understand religious truths, Octave had been led to study writers who for the past two centuries have been attempting to explain how it is that man thinks and how it is that he wills, and his ideas had quite changed....” Stendal 1975, 53). A battle of philosophies simmers in the text between an Enlightenment philosophy of utility and German mysticism, pitting *idéologie* against its competitors for authority on epistemology and ontology. The “philosophie de l'utile” of the eighteenth century from which Madame de Bonnivet would like to convert Octave to German mysticism is represented by Helvétius, Bentham, and Bayle; Stendhal having claimed Helvétius to be the greatest of the French philosophers, it appears

that he traced his own preference for and familiarity with certain philosophers in the character of Octave (Stendal 1975, 88; Souche-Dagues 214).

According to Armand Hoog, it is in his encounters with Schlegel that Stendhal came to grapple with the concept of a *sens intérieur* or *sens intime* (Stendal 1975, 287, n. 5). His perplexity is understandable. As I demonstrated in the last chapter, terms like these, including *sentiment intérieur*, *conscience*, etc. taken together cover an enormous variety of contexts and concepts. The reader *should* be unsettled by Octave's confession to the pious Madame de Bonnivet that he lacks a *conscience*, not because he may be a sociopath, but because the term itself could mean more than even his usage suggests:

[J]e n'ai point de *conscience*. Je ne trouve en moi rien de ce que vous appelez le *sens intime*, aucun éloignement *instinctif* pour le crime. Quand j'abhorre le vice, c'est tout vulgairement par l'effet d'un raisonnement et parce que je le trouve nuisible. Et ce qui me prouve qu'il n'est absolument rien chez moi de divin ou d'*instinctif*, c'est que je puis toujours me rappeler toutes les parties du raisonnement en vertu duquel je trouve le vice horrible.

[I] don't have a *conscience*. I find no evidence in me of what you call the *intimate sense*, no *instinctive* repugnance for wrong-doing. When I abhor vice, it is merely the effect of a line of reasoning and because I find it detrimental. And the proof I have that there is absolutely nothing in me which is divine or *instinctive* is that I can always remember every step in my reasoning by which I find vice to be horrible (Stendal 1975, 93, emphasis original).

Octave, like others before him, claims no knowledge of a separate spiritual principle inside himself that is biased toward good, if what he says is sincere, that is, no *sentiment intérieur* which acts as the site of divine revelation.¹¹¹ But the reader cannot assume that it is sincere, given the paradox of the unreliable witness.¹¹² It is equally likely that Octave suffers from an inability to reflect on his own actions and judge them, or from a more fundamental inability to perceive his thoughts and internal movements. The first

¹¹¹ Condillac explains that even being "[rentré] en [lui]-même" (having "turned inward") as Buffon suggests in the *Histoire naturelle*, he is unable to distinguish two kinds of sensations, and that it rather seems to him that he is composed of a simple substance, but that indeed, from youth to maturity a contradiction between acquired habits and the assent of reason occurs, and that this is a better way to explain the "combats" ("struggles") which Buffon says take place in us between the material and spiritual principles (Condillac 2009, 11-12).

¹¹² In fact, Octave boldly refers to his conscience a few minutes later, in speaking to Armance (Stendal 1975, 98).

seems implausible, since Octave is quite aware of how he may influence others with his actions, and when we the readers are privy to his thoughts, they are remarkably lucid. His *conscience* – he who claimed not to have one – accuses him of lying to himself, when he tries in vain to come up with a pretext to return to Andilly, to Armance (Stendal 1975, 179).

Octave proves that he believes in the veracity of others' experience of their *sens intime*, since he tells Armance, "J'ai longtemps cherché à me justifier auprès de vous, non par de vaines paroles mais par des actions. Je n'en trouve aucune qui soit décisive ; moi aussi, je ne puis avoir recours qu'à votre *sens intime*. Or voici ce qui m'est arrivé. Pendant que je parlerai, voyez dans mes yeux si je mens" ("I have tried for a long time to justify myself in your eyes, not by vain words but by actions. I have not found any to convince you; therefore, even I must appeal to your *sens intime*. I will tell you what happened to me. While I speak, you may discern it in my eyes if I am lying." Stendal 1975, 94, 98). Here, of course, the idea of the inner compass is related back to *la conscience intime du bien et du mal*, and yet it is interesting to note that Octave equates it to one's ability to discern truthfulness and falsity in *others'* speech and actions.

"Qu'est-ce que le *moi* ? Je n'en sais rien" ("What is the *moi*? I have no idea." Stendal 1975, 32).¹¹³ After reading Tracy's *Logique*, Stendhal began to collect notes on individuals with the help of his sister Pauline, who was to inform him regarding women, and his friend Louis Crozet, who did indeed send him many observations (Barel-Moisan 6; Bardèche 18-21; Stendhal 1931). This catalog, along with his personal diary, and various other notes and papers, including his study of the passions in theatrical works and his own method for winning women's affection, *Du caractère des femmes françaises*, formed material for literary *and* social application. In 1804, he explained the steps necessary to fully

¹¹³ It appears that this entry from his diary was published in *Rome, Naples et Florence* (1826). Previous entries attest to the recurrence of these questions in his thoughts. "Page datée de Velletri, 6 février 1817. Stendhal reprendra ses questions d'année en année : "Qu'ai-je été, que suis-je ?... Qu'ai-je donc été ? je ne le saurais..." (*Vie de Henry Brulard*) ..." ("Page dated from Velletri, 6 February 1817. Stendhal would reprise his questions from year to year: "What was I, what am I?... What therefore have I been? I wouldn't know..." (*Life of Henry Brulard*) ..." Stendhal 1975, 32, n. 33).

comprehend the character of a man: “1° ses opinions sur tout; 2° jusqu’à quel point il y a conformé ses actions; 3° les habitudes de cœur qui l’ont empêché de s’y consacrer entièrement” (“First, his opinions about everything; second, to what extent he has conformed his actions to them; third, the habits of the heart that have prevented him from fully realizing them.” Cited in Bardèche 19, who does not cite the specific *Pensée*). For Stendhal, the personal goal was to become “natural” (Elster 93; Stendhal 1981, 157).

Stendhal had adopted the motto *Nosce te ipsum* (“Know thyself”) in 1801, by which he intended to examine his conscience constantly in order to shape his character (Elster 93; Stendhal 1981, 508). Through this process, he realized something about his relationship with Matilde Visconti Dembowska in 1805:

Voici peut-être la raison qui fait que je n’avance pas mes affaires auprès d’elle ; je l’aime tant que, lorsqu’elle me dit quelque-chose, elle me fait tant de plaisir, qu’outre que je n’ai plus de perception et que je suis tout sensation, quand même j’aurais la force de percevoir, je **n’aurais probablement pas la force de l’interrompre pour parler moi-même**. Ce qu’elle me fait m’est trop précieux. Voilà peut-être pourquoi les véritables amants souvent n’ont pas leurs belles.

This is perhaps why I am not making any progress with her; I love her so much that, when she tells me something, she gives me such pleasure, that besides the fact that I no longer perceive anything and I am all sensation, even if I had the strength to perceive, I **probably would not have the strength to interrupt her by speaking myself**. The effect she has on me is too precious. Maybe that is why true lovers often do not possess the object of their affection. (Stendhal 1981, 265, my emphasis)

Stendhal wrote about this relationship in his 1822 treatise *De l’amour*. In addition to Armance’s equally eastern patronym, Zohiloff, her resemblance to “Méthilde” appears to extend to the effect she has on Octave/Beyle. If his name may be taken to indicate any musical symbolism, as hers indicates that she is from A to Z a heroine worthy of any eighteenth-century novel, then we might find him responding to her speech in a way similar to the way Stendhal responded to Méthilde’s: the full scale of emotion may be produced in him. Sensation overrides cognizance when it reaches a certain timbre, to interpret what

Stendhal says with the help of Biran: the harmonica excites sensation to a high degree so that “the more one *feels* the effects of [such instruments], the less one *perceives* them” (Maine de Biran 1929, 63).

The passage above also engages Biran’s distinction between sensation and perception, and the relationship between effort and memory (see Chapter 1). Biran had noted that it is when our vocal chords apply the tension necessary to reproduce a heard pitch that the melody becomes available to the memory, through the same process of muscle determination that records other kinds of sensations. Habit acquired through repetition of these movements leads to mastery. Stendhal’s inability to speak himself may have precluded the tuning of his instrument to Méthilde’s; at least such an interpretation is vaguely suggested here.

Habit, for Octave, leads him to an inexorable need: “[T]el est l’empire d’une longue habitude : Octave n’était parfaitement heureux qu’auprès de sa cousine. Il avait besoin de sa présence” (“Such is the power of a long-established habit: Octave was only perfectly happy near his cousin. He needed her presence.” Stendal 1975, 199). Octave had sworn never to fall in love. By admitting to himself, and to her, that he loved, he perjured himself, which for him represented another dangerous habit. His happiness in love is therefore accompanied by the beginnings of his undoing in the form of “bad” habits.

Armance herself has been considered cold by some critics, but this may only reflect her absolutely reasonable character. The narrator mentions a physical idiosyncrasy which corresponds to her character, imitated mockingly by her detractors:

La seule prise réelle que pût donner à ses ennemies l’expression de la physionomie d’Armance, c’était un regard singulier qu’elle avait quelquefois lorsqu’elle y songeait le moins. Ce regard fixe et profond était celui de l’extrême attention ; il n’avait rien, certes, qui pût choquer la délicatesse la plus sévère ; on n’y voyait ni coquetterie, ni assurance ; mais on ne peut nier qu’il ne fût singulier, et à ce titre, déplacé chez une jeune personne.

The only real defect that the expression of Armance’s physiognomy might have offered to her enemies was an odd look that she had sometimes when she was least aware of it. This steady, deep gaze was one of extreme attention; there was nothing in it, of course, that could offend the most delicate observer; it was not flirtatious or bold; but still one could not deny that it was singular, and therefore out of place in a young person (Stendal 1975, 85).

She often speaks and thinks in the simple future tense, and her resolutions are consonant with her character. "S'il m'oublie, comme il est fort possible," she reckons with regard to Octave, "j'irai finir mes jours dans un couvent ; ce sera un asile fort convenable et fort désiré pour le reste de mon existence" ("If he forgets me, which is quite possible, I will live out the rest of my days in a convent; that will be quite a comfortable and desirable shelter for the remainder of my existence." Stendal 1975, 216). She plays Ophelia to Octave's Hamlet, not at all mad or unfeeling, only caught up in a psychological war which is not her own. She does, in fact, retire to a convent after his death, proving by her action both the depth of her feeling for Octave and her single-mindedness. She displays the same strength of character in her proposal to Octave to break off their hasty marriage: "Je prendrai sur moi toute la bizarrerie du changement. Je dirai au monde que j'ai fait vœu de ne jamais me marier. On blâmera cette idée, elle nuira à l'opinion que quelques amis veulent bien avoir de moi ; que m'importe ? l'opinion après tout n'est importante pour une fille riche qu'autant qu'elle songe à se marier ; or, certainement, jamais je ne me marierai" ("I will assume responsibility for all the strangeness of the change. I will tell everyone that I made a vow never to marry. They will condemn the idea, and it will degrade me in the opinion of some of my friends; what does it matter? Opinion, after all, is only important for a wealthy girl inasmuch as she thinks about marriage; however, I will certainly never marry." Stendal 1975, 237).

It is no wonder that Octave admires her: she represents all the purpose and self-possession which he cannot seem to muster. Her quirky gaze thus corresponds to a high power of introspection, and it is with a clear conscience that Armance judges the actions and motivations of others. Octave's mother presciently describes Armance's eyes: "C'est avec ces yeux-là [...] que deux anges exilés parmi les hommes, et obligés de se cacher sous des formes mortelles, se regarderaient entre eux pour se reconnaître" ("It is with those eyes [...] that two angels, exiled among mortals and obliged to hide themselves in human form, would view and recognize each other." Stendal 1975, 85).

On an emotional level, Octave, like Balzac's protagonist Raphaël de Valentin, practices an extreme kind of *économie de soi*. He does not confide his secrets, he does not make conversation with the duchesse d'Aumale on weighty matters which bore her, nor does he cultivate any real affection except for his mother (Stendal 1975, 56). One would hesitate to deem his sentiment toward Armance *affection*. It more often appears as desire. From the beginning, he approached his relationship with her as one might approach a battle which could be decisive. He feels pleasure, not perplexity, in having lost her esteem when she suspects him of vulgar feelings, since this affirms both her worth and the difficulty he will have to win her back. Like Choderlos de Laclos's characters in *Les liaisons dangereuses*,¹¹⁴ he employs many tactics to both stimulate her love and provoke her jealousy. He even falls victim to his own ruses when he innocently whistles for his hunting warden and she imagines that he is arranging a tryst. In spite of his amorous machinations, he is rarely generous in his affection. It is only when his chances of dying from a gunshot wound and ensuing infection are two to one that he drops his defenses with Armance.

Whereas Armance speaks in the present and the simple future tenses, Octave is haunted by the past conditional tense. In a moment perhaps inspired by Rousseau, he reflects that "s'il eût reçu du ciel un cœur sec, froid, raisonnable, s'il fût né à Genève... il eût pu être fort heureux" ("if heaven had given him a dry, cool-headed, reasonable heart, if he had been born in Geneva... he might have been very happy." Stendal 1975, 72). The narrator comments that "s'il eût été pair à cette époque, on lui eût fait une réputation" ("If he had been a peer at that time, he would have enjoyed quite a reputation." Stendal 1975, 209) because of his air of misanthropy. Octave misses an occasion to discover Armance's love: "[I]l s'en fallut de bien peu qu'en la quittant il n'osât lui prendre la main et la presser contre ses lèvres. S'il se fût permis cette marque d'amour, Armance était si troublée en ce moment qu'elle lui eût

¹¹⁴ This novel is explicitly mentioned later, when the commandeur de Soubirane and the chevalier de Bonnavet conspire to break up Armance and Octave's engagement by forging a false letter from Armance to Méry de Tersan, her best friend, which reveals how Armance has supposedly ceased to love Octave.

laissé voir et peut-être avoué tout ce qu'elle sentait pour lui" ("[I]t very nearly happened that in taking leave from her, he dared to take her hand and press it to his lips. If he had permitted himself this display of love, Armance was in that moment so flustered that she might have revealed and maybe even admitted all that she felt for him." Stendal 1975, 156). When Octave first discovers his love for Armance, then renounces it, the narrator observes that "on ne meurt pas de douleur, ou il fût mort en cet instant" ("one does not die of sorrow, or else he would have died instantly." Stendal 1975, 162). Later, he nearly gives her his letter explaining his oddness, which he had shredded in a moment of frustration, but refrains (Stendal 1975, 253). After their marriage, he imagines what her caresses would have felt like if she truly loved him (Stendal 1975, 252). Of course, he was mistaken about her feelings, so only through his imagination was he able to experience the reality of her ardor. His premature death itself is an expression of the foreclosure of his life. Although his suicide is apparently motivated by a generous impulse toward Armance, it also decides the future for her in a way she could hardly have chosen.

In her study of the *irréel* in Stendhal, Geneviève Mouillaud identifies it as the co-presence of the possible and the impossible, like in grammar, a conditional clause without a condition. This hesitation between what is and what could be is all the space of the novel, she explains, and it excludes dichotomies such as body-soul. Mouillaud finds other words than Madame de Bonnivet's for Octave; instead of an *être rebelle*, he is:

L'être d'exception, celui qui est indifférent aux deux millions qui viennent de lui échoir, qui supporte mal son titre de vicomte, qui rêve d'amitié vraie et de libéralisme pur, est prisonnier de cette société et ses lois. Il est réduit par elle à l'impuissance dans le domaine de l'action et à la solitude. Toutes les impossibilités de sa vie le renvoient à un rêve unique, la rencontre d'un être semblable à lui et cependant autre que lui.

The exceptional being, who is indifferent to the two million francs just showered on him, who can hardly bear his title of viscount, who dreams of true friendship and pure liberalism, is a prisoner of this society and its laws. He is reduced by it to impotency in the realm of action and to solitude. All the impossibilities of his life send him back to a single dream, finding a being similar to himself and yet other than himself (Mouillaud 528).

Rather than describing his sought-after love as a *being*, however, Octave does like Balzac's hero, Raphaël de Valentin, in refers to her as *une belle âme*. While for Octave, this soul certainly stands in as a metonymy for the whole being of his beloved, the circumstances of his physical existence operate the painful separation of the body and the soul. As long as marriage did not disturb the balance of intimacy between Octave and Armance, he could ignore the imbalance of power which he wielded over his own faculties.

“C'est par un cri sauvage que le malheureux que torture le bistouri du chirurgien croit soulager sa douleur” (“It is with a howl that the unfortunate patient under the surgeon's knife believes he can alleviate his suffering.” Stendal 1975, 178). The theme of aural sensation returns in a series of observations that mark the silence surrounding Octave's secret. Night falls over Paris as he contemplates whether to deliver himself to death or to love, and all sounds cease. “Ce parfait silence, en le laissant tout entier à lui-même, lui parut ajouter encore à l'horreur de sa position. L'extrême fatigue lui procurait-elle un instant de demi-repos, le bourdonnement confus de paroles humaines qu'il lui semblait entendre auprès de son oreille, le réveillait en sursaut” (“That perfect silence, leaving him entirely to himself, only seemed to add to the horror of his predicament. No sooner had extreme fatigue provided a moment of half-sleep than the unintelligible buzz of human words that he seemed to hear close to his ear would awake him with a start.” Stendal 1975, 178). Octave cannot indulge in the howl described above; the best he can do, in moments when his meditations are the least oppressive, is to make small talk with his servant.

The reader is invited not simply to make a diagnosis, but to perceive the essential connectedness of body and mind. Octave's difficulty in pursuing coherent action in spite of his unbending devotion to duty causes the reader's difficulty in constructing a coherent reading of the text. The novel poses resignation as the only way for the protagonists to resolve a problem created by the lack of coordination between the mind and the body. This is best formulated by Octave, although he

probably intends it to be understood differently, when he claims to lack a *conscience*. The doctors who attend him agree that he suffers from “une monomanie...*morale*...[qui] devait provenir non point d’une cause physique, mais de l’influence de quelque idée singulière” (“a *moral* obsession [which] must be the result, not of a physical cause, but of the influence of some odd idea.” Stendal 1975, 70). Octave had long ago decided for himself, “J’ai par malheur un caractère singulier, je ne me suis pas créé ainsi; tout ce que j’ai pu faire c’est de me connaître” (“I unfortunately have an odd character, I didn’t create myself this way; all that I have been able to do is to know myself.” Stendal 1975, 55), echoing Stendhal’s motto.

Balzac’s *La Peau de chagrin* (1831)

The narrative of Octave’s unhappy existence thus tends toward the hypothetical or subjunctive (Mouillaud: mode irréal): it is a story of duty, powerlessness and acquaintance with the *mechanical* workings of humanity – *devoir, impuissance, connaissance*. Balzac’s narrative of Raphaël de Valentin’s life takes a detour from the third to the first person in the middle part of *La Peau de chagrin*, in its analysis of the will, the ability to fulfill one’s desires, and knowledge of the kind that confers power – *vouloir, pouvoir, savoir*. While Octave eventually ends his suffering by self-administering a mixture of opium and digitalis just off the shore of Greece (Stendal 1975, 256-257), Raphaël clings to his waning strength in the familiarity of his room to the point of death, reassuring himself at one point that he cannot die unless his body is compromised in some way (Balzac 1996, 281).

Physically, Raphaël resembles Octave with his blond curly hair and his predisposition to pulmonary disease (Stendal 1975, 51; Balzac 1996, 46, 230, 279). He experiences Paris similarly to Octave in the passage above, “seul au milieu du plus affreux désert, un désert pavé, un désert animé, pensant, vivant, où tout vous est bien plus qu’ennemi, indifférent !” (“alone in the middle of the most frightful desert, a paved desert, an animated desert, thinking, living, where everything is worse than inimical: indifferent!” Balzac 1996, 144). Like Octave, he falls for an exotic woman, a Russian named

Fœdora whose name enfolds her sparky attitude (*feu*) and her wealth (*d'or*). Raphaël is unable to reconcile his love for the devoted Pauline with his fantasies: “En présence de mes romanesques fantaisies, qu’était Pauline ?” (“I had my romantic daydreams; Pauline paled in comparison.” Balzac 1996, 155), just as Octave enjoys “sa chère rêverie” (“his cherished daydreaming”) whereas “la vie réelle l’impatiente[ait]...” (“real life bored him.” Stendal 1975, 58). In fact, Pauline, in her resemblance to the *peau de chagrin* – her glossy black hair shines silver – must be understood to be the real-life antidote to the curse of the pelt; even her name indicates this: *peau-line* (Balzac 1996, 156). Octave and Raphaël are also related through their love of science; Octave, with “sa passion désordonnée pour les sciences [...] finira comme le Faust de Goethe” (“his inordinate passion for the sciences [...] will end up like Goethe’s Faust.” Stendal 1975, 55); and Raphaël explains that if it hadn’t been for the July Revolution, “je me faisais prêtre pour aller mener une vie animale au fond de quelque campagne” (“I would have become a priest and gone to lead the life of animal contentment deep in the country somewhere.” Balzac 1996, 97). Why not in America, like Octave thought? Of the three protagonists I examine, Amaury is the only one to make it that far from the center of political, literary and romantic ambitions that Paris was at that time. Raphaël leaves for the country, but his social isolation there forces him back to Paris. His essential difference from the country people and their customs confirms the tenacity of his habit, and the existence of a quasi-physical boundary between social species.

Balzac wrote in his 1842 introduction to the *Comédie humaine*, “There is but one Animal,” which seems to summarize his clear support for Étienne Geoffroy Saint-Hilaire’s unity of structure. A few lines later, Balzac pronounced Saint-Hilaire victorious over Cuvier for this reason. Then he extended the hypothesis into the human realm, positing that environmental differences produce as many varieties of men as there are of animals. Alfred Giard attested, “Comme il est facile de s’en convaincre en lisant l’*Avant-propos de la Comédie humaine*, l’influence de Lamarck sur Balzac s’est exercée surtout par l’intermédiaire d’E. Geoffroy-St-Hilaire, avec lequel Balzac était en relations directes, et qui avait lui-

même une vive admiration, manifestée dans ses écrits, pour l'auteur de la *Philosophie zoologique*" ("As it is easy to realize by reading the author's introduction to the *Human Comedy*, Lamarck's influence over Balzac was primarily mediated through E. Geoffroy-St-Hilaire, with whom Balzac was in direct relation, and who himself harbored a great admiration, evidenced in his writings, for the author of the *Zoological Philosophy*." Lamarck 1907, 7, n. 1).

Giard identifies ideas from Lamarck's *Système analytique des connaissances positives de l'homme* (1820) that he suspects were also adopted by Balzac. He cites Lamarck:

Il me semble que le plus grand service que l'on puisse rendre à l'homme social serait de lui offrir trois règles sous la forme de principes : le premier pour l'aider à rectifier sa pensée en lui faisant distinguer ce qui n'est que préjugé ou prévention, de ce qui est ou peut être pour lui, connaissance solide ; la seconde pour le diriger dans ses relations avec ses semblables, conformément à ses véritables intérêts ; la troisième pour borner utilement les affections que son sentiment intérieur et l'intérêt personnel qui en provient peuvent lui inspirer.

It appears to me that the greatest service one could render to social man would be to offer him three rules in the form of principles: the first to assist him in rectifying his thought by making him distinguish what is only prejudice or popular opinion from what is or may be for him, firm knowledge; the second to direct him in his relationships with his fellow men, in accordance with his true interests; the third to helpfully limit the affections that his inner feeling and the personal interest which is derived from it may inspire in him (Lamarck 1907, 8).

Giard concludes that Balzac was a greater popularizer of Lamarck's ideas than Émile Zola was for Darwin's.

Balzac's sources of inspiration were many, however, and his ambitions even greater. Pierre-Georges Castex summarized Balzac's project in his "Notice des *Études Analytiques*": "...fonder une anthropologie, reconstruire scientifiquement l'homme, étudier ses idées, son langage, ses facultés, écrire une théorie de la pensée humaine qui surpasse les ouvrages de Locke, de Condillac, d'Helvétius, de Cabanis, des Idéologues, tel est bien le premier grand projet de Balzac" ("...to found a science of anthropology, scientifically reconstruct man, study his ideas, his language, his faculties, write a theory of human thought which surpasses the works of Locke, Condillac, Helvétius, Cabanis, the *Idéologues*, this is Balzac's first great project." Balzac 1979, XI, 1716). Claire Barel-Moisan identifies several "nœuds

d'intertextualité" ("intertextual nodes") which link Balzac and Stendhal to the *Idéologues*, especially Cabanis, Destutt de Tracy, and Swedenborg (whose ideas were communicated to French readers in the *Décade* [Picavet 99]) (Barel-Moisan §3). In addition to these readerly influences, Jean-Baptiste Nacquart, a physician and friend of the Balzac family, had also done research in the manner of *idéologie*, publishing articles on analysis and the sensations as the primary elements of psychology (Barel-Moisan §5). Nacquart had notably introduced the phrenology of Gall in France.

Destutt de Tracy's *De l'amour* was translated from Italian after the original French version was lost; this treatise is imitated (in title and subject at least) in Stendhal's *De l'amour* and in Balzac's *Physiologie du mariage* (Barel-Moisan §3). Furthermore, like Stendhal's Lucien Leuwen (which suggests "nouvelles lumières," does it not?), Balzac's Louis Lambert and Raphaël de Valentin, too, produce a treatise on the will in the vein of Tracy's *Traité de la volonté et de ses effets* (Parts IV and V of the *Éléments d'idéologie*, published in 1815). Barel-Moisan connects the dots to Cabanis's *Rapports*, which, she explains, clarifies Balzac's "ideological moment." She concludes:

Que reste-t-il donc de l'Idéologie à l'échelle du vaste système romanesque qu'est *La Comédie humaine* ? La méthode analytique et les éléments d'une science psycho-physiologique se trouvent foncièrement transformés lorsqu'ils entrent dans la logique d'une écriture romanesque. Mais ce qui demeure, c'est peut-être une fidélité plus profonde à un projet réalisé différemment. Ce que les Idéologues voulaient construire par le discursif, *La Comédie humaine* le réalise par un travail de totalisation et de polyphonie, jouant sur tous les registres de la fiction romanesque, sur l'ambiguïté et sur l'ironie, pour tenter de faire naître, à son tour, une nouvelle science de l'homme.

What then remains of *Idéologie* at the level of the vast novelistic system which is *The Human Comedy* ? The analytical method and the elements of a psycho-physiological science are profoundly transformed when they enter the logic of novelistic writing. What remains, however, is perhaps a greater faithfulness to a project realized in a different way. What the *Idéologues* wanted to construct didactically, *The Human Comedy* achieves in a work of totalization and polyphony, employing all the registers of novelistic fiction, including ambiguity and irony, in an attempt to create, in its own way, a new science of man (Barel-Moisan §24).

Balzac wrote in a letter to Charles de Montalembert in September 1831 that "*La Peau de chagrin* est la formule de la vie humaine, abstraction faite des individualités. [...] [T]out y est mythe et figure. Elle est donc le point de départ de mon ouvrage. Après viendront se grouper, de nuance en nuance, les

individualités, les existences particulières” (“*The Magic Skin* is the formula for human life, irrespective of individualities. [...] [E]verything in it is myth and figure. It is therefore the starting point of my work. Afterward, by subtle gradation, individualities and particular existences will be coalesce.” Balzac 1960-1969, I, 568, no. 335; cited in Balzac 1996, 48). That part of the “formula” should include autobiographical material is not surprising, given the introspective approach touted by *Idéologues*. Eugène de Rastignac (who features most prominently in *Le Père Goriot* [1835]) attributes the writing of a “royalist history of the Revolution” to Raphaël, when in fact, as noted above, Balzac himself had just published *Les Chouans* (1829).

Raphaël, like Louis Lambert of one of the other *Études philosophiques*, is in many ways modeled after Balzac’s own experiences. Both the author and his protagonist had a taste for luxury and ran up large debts, lived and studied for a time in an attic studio and worked so hard as to imperil their health. Balzac worked so feverishly on his treatise of the will (written when he was fourteen and subsequently lost) that he fell into a catatonic state (Balzac 1996, 405, 353 n. 10), while Raphaël subsists on little more than bread and milk as a student. Balzac, like Raphaël, was rejected by a certain woman of worldly renown. And like Balzac’s father, who did everything he could to live to a hundred, Raphaël is forced to practice the same “economy of self” in order to postpone his own death. Balzac’s father died in 1829, at the age of 83, and Balzac undertook to write *La Peau de chagrin* that same year. This novel would be his first great success.

The novel begins on an October morning in 1830. A young man bets his last gold coin at the Palais-Royal in Paris. He walks out onto the street with only his hat to his name and makes his way through the Jardin des Tuileries, pauses briefly on the pont Royal over the Seine to contemplate suicide, then continues to the quai Voltaire. Inside a shop, a hundred-year-old antiquarian sells him the pelt of a wild donkey. This powerful talisman, the old man tells him, will fulfill his desires, but will only postpone

his suicide. In fact, as the young man soon discovers, with the *peau de chagrin* in his possession, his every wish draws him closer to his death.

The novel is organized into three parts. In the first part, Raphaël obtains the magic pelt, disbelievingly wishes for a party to surpass all parties, meets his friends in the street outside the antique shop and discovers that his wish has been fulfilled: they walk together to a lavish feast which continues through the night and ends after lunch the next day. At the height of their inebriation, Raphaël's friend Émile asks him why he wanted to commit suicide. The second part of the novel consists in the story of his life, naturally told in the first person, leading up to his rejection by the heartless courtesan Fœdora, and his unlucky bet at the Palais-Royal. The second part closes with Raphaël's discovery that the magic pelt shrinks every time he makes a wish and it is fulfilled. The third part of the novel opens with Raphaël's former professor, the moralist Porriquet, seeking Raphaël's support in a bid to reclaim his teaching chair. This disturbance in Raphaël's strictly regimented existence launches him back into a struggle with the talisman as he progresses from denial, to defiance, to an uneasy acceptance of his fate.

The novel paints science as powerless against the magic pelt. In an attempt to physically alter the horrible talisman, and thus to extend his life, Raphaël visits a naturalist, a chemist, and a physicist at the Muséum National d'Histoire Naturelle, none of whom prevail against the charm. Three of the most talented physicians in Paris and a fourth, a young doctor with a promising future, are likewise unable to diagnose Raphaël's ailment, although it appears that he is dying of lung disease. All of the expert knowledge in France at that time is useless in curing a single ill. Raphaël must overcome a glut of knowledge to reconstitute himself. As he stands transfixed before all the objects in the antique shop, the narrator explains, "...après s'être emparé du monde, après avoir contemplé des pays, des âges, des règnes, le jeune homme revînt à des existences individuelles. Il se personnifia de nouveau, s'empara des détails en repoussant la vie des nations comme trop accablante pour un seul homme" ("...after having taken hold of the world, after contemplating lands, epochs and reigns, the young man returned to the

plane of individual beings. He reindividualized himself, grasping the details while eschewing the lives of nations as too weighty for a single man.” Balzac 1996, 73). The appearance of many real, thinly veiled professors, scientists and medical doctors in the novel allows Balzac to explore many possible solutions for his doomed protagonist. While his problem is quite fantastical – a magic charm fulfills Raphaël’s every wish, but at the expense of his life – the *other* problem represented in the story is less so: the novel digs into human anatomy and the philosophy of mind to discover a principle of life, its source and nature.

One figure in the novel stands out as having conquered the remnants of the past and innovated an infallible system for decoding the universe. While Raphaël lingers in the antique shop, the narrator addresses to the reader exuberant praise of Georges Cuvier, the founder of paleontology. There has been long-standing scholarly debate (centered around Cuvier’s species fixity vs. Geoffroy Saint-Hilaire’s unity of structure) about whether this passage confirms Balzac’s affiliation with the methods and theories of either Cuvier or his rival Geoffroy Saint-Hilaire (Somerset). In fact, the focus on this rivalry obscures the presence of other influences in the fields of *idéologie* and natural philosophy to which Balzac was likely responding, as Barel-Moisán’s study shows.

Balzac clearly admired the natural historian’s method of collecting observations and constructing taxonomies and wished to do the same for his fictional Parisians. But how serious were his hopes that he might, as Raphaël expresses it, “ouvrir une nouvelle route à la science humaine” (“open a new way for human science.” Balzac 1996, 150)? Göran Blix voices one critical stance: “The species-rhetoric that pervades the *Comédie Humaine* should...not be taken too literally. Classification was, for Balzac, a literary method rather than an ideology. Its auxiliary status as a tool is obvious from his awareness of its dangers and limitations.” “Balzac...classified as a matter of course, spontaneously, for sheer pleasure, taking joy in the quintessential gesture of separating humanity into distinct groups,” and “[f]or the author, the social type is an expedient, not a reality” (Blix 191-193). Blix refers to Balzac’s

satirical fable “Guide-Âne” describing the Cuvier-Geoffroy Saint-Hilaire controversy to support his reading of the *Comédie humaine* as “more a repertory of monsters than of neatly distinguishable species, more a cabinet of curiosities than a well-ordered museum of natural history” (Blix 194).

The somewhat famous passage eulogizing Georges Cuvier in *La Peau de chagrin* poses a problem of interpretation for the reader who scratches the surface of the scholarship on Balzac’s sources of inspiration and naturalist tendencies. Blix reads it as praise for Cuvier’s intuitive gaze: “Cuvier was essentially the name of a hermeneutic procedure, a type of intuitive gaze central to Balzac’s creative process as well as to his most gifted heroes. It should be recalled that genius was less a specific gift for Balzac than a form of intellectual capital applicable almost everywhere” (Blix 190).

My reading of this passage includes a comparison with other references to scientists and philosophers in the novel in order to refine the scholarly debate about Balzac’s admiration of Cuvier and to better understand Balzac’s naturalist leanings. I analyze the presence of narrative diversity, irony, and experimentation in the novel in order to show that the passage, while unique in its direct address to the reader, does indeed belong, structurally and thematically, in this novel, that interpretation of this passage should not be limited to the Cuvier-Geoffroy Saint-Hilaire rivalry, and that its insistence on time and language places the natural history of the individual mind at the center of the methodological considerations and experimentation expressed in the novel. Here I quote it sentence by sentence, with the translation interspersed for clarity:

1. **Vous êtes-vous jamais lancé dans l’immensité de l’espace et du temps, en lisant les œuvres géologiques de Cuvier ?**
Have you ever ventured into the immensity of space and time by reading Cuvier’s geological works?
2. **Emporté par son génie, avez-vous plané sur l’abîme des bornes du passé, comme soutenu par la main d’un enchanteur ?**
Captivated by his genius, have you glided over the abyss of the frontiers of the past, as though held aloft by a wizard’s hand?
3. **En découvrant de tranche en tranche, de couche en couche, sous les carrières de Montmartre ou dans les schistes de l’Oural, ces animaux dont les dépouilles fossilisées appartiennent à des**

civilisations antédiluviennes, l'âme est effrayée d'entrevoir des milliards d'années, des millions de peuples que la faible mémoire humaine, que l'indestructible tradition divine ont oubliés et dont la cendre, entassée à la surface de notre globe, y forme les deux pieds de terre qui nous donnent du pain et des fleurs.

From cross-section to cross-section, from layer to layer under the quarries of Montmartre or in the Ural schists, discovering animals whose fossilized remains belong to antediluvian civilizations, the soul shudders at the glimpse of billions of years, millions of peoples that feeble human memory and indestructible divine tradition have forgotten, and the dust of which, gathered on the surface of our globe, forms the two feet of soil which give us bread and flowers.

4. Cuvier n'est-il pas le plus grand poète de notre siècle ?

Isn't Cuvier the greatest poet of our time?

5. Lord Byron a bien reproduit par des mots quelques agitations morales ; mais notre immortel naturaliste a reconstruit des mondes avec des os blanchis, a rebâti comme Cadmus des cités avec des dents, a repeuplé mille forêts de tous les mystères de la zoologie avec quelques fragments de houille, a retrouvé des populations de géants dans le pied d'un mammoth.

Lord Byron may well have reproduced by means of words some movements of the heart, but our immortal naturalist reconstructed entire worlds with some bleached bones, like Cadmus, he rebuilt cities out of teeth, repopulated a thousand forests with myriad zoological mysteries using a few fragments of coal, recalled populations of giants from the foot of a single mammoth.

6. Ces figures se dressent, grandissent et meublent des régions en harmonie avec leurs structures colossales. Il est poète des chiffres, il est sublime en posant un zéro près d'un sept.

These figures arise, grow and inhabit regions proportional to their colossal forms. He is a poet of numbers, he is sublime when he puts a zero next to a seven.

7. Il réveille le néant sans prononcer des paroles artificiellement magiques, il fouille une parcelle de gypse, y aperçoit une empreinte, et vous crie : « Voyez ! » Soudain les marbres s'animalisent, la mort se vivifie, le monde se déroule !

He reawakens the void without mumbling any hocus-pocus, he searches in a piece of gypsum, finds an impression, and says to you, "See!" Suddenly marble becomes flesh, death becomes life, and the world comes to pass!

8. Après d'innombrables dynasties de créatures gigantesques, après des races de poissons et des clans de mollusques, arrive enfin le genre humain, produit dégénéré d'un type grandiose, brisé peut-être par le Créateur.

After innumerable dynasties of enormous creatures, after races of fishes and clans of mollusks, finally humankind appears, the degenerate product of a grand mold, which perhaps the Creator broke.

9. Échauffés par son regard rétrospectif, ces hommes chétifs, nés d'hier, peuvent franchir le chaos, entonner un hymne sans fin et se configurer le passé de l'univers dans une sorte d'Apocalypse rétrograde.

Aroused by his backward glance, these puny men, newborn, can overcome chaos, intone an unending anthem and conceptualize the history of the universe in a kind of retrograde Apocalypse.

- 10. En présence de cette épouvantable résurrection due à la voix d'un seul homme, la miette dont l'usufruit nous est concédé dans cet infini sans nom, commun à toutes les sphères et que nous avons nommé LE TEMPS, cette minute de vie nous fait pitié.**

In the presence of that frightful resurrection conjured by the voice of a single man, the crumb we are given to enjoy in this nameless infinity that is common to all the spheres and which we have called TIME, this minute of life, seems to us pitiful.

- 11. Nous nous demandons, écrasés que nous sommes sous tant d'univers en ruines, à quoi bon nos gloires, nos haines, nos amours ; et si, pour devenir un point intangible dans l'avenir la peine de vivre doit s'accepter ?**

We ask ourselves, crushed as we are under so many universes in ruins, what our glory, our hate, our love are good for; and if, in order to become an intangible point in the future, we should bother to live at all? (Balzac 1996, 77)

Much of the humor and irony in the novel is derived from the problem of language and vocation. In the Cuvier passage, a scientist-poet-magician triad is established. Cuvier's genius is first compared to that of a magician (line 2), but later we learn that he does not dabble in necromancy (line 10); he "revives" animals of past ages "without pronouncing any artificially magic words" (line 7). The recently-deceased Lord Byron receives a salute common in literary works of this period, and with this reference, a parallel is drawn between the nameless young hero of Balzac's novel and the English paragon of Romanticism. Cuvier is, however, a "poet of numbers" (line 6) in spite of the emphasis on his voice. Here a sliver of doubt about the sincerity of the praise is introduced, in the hyperbole of the precision: "il est sublime en posant un zéro près d'un sept" ("he is sublime when he puts a zero next to a seven").

The verbs in the sentence that follows underscore the linguistic magic of Cuvier's art, however. At his command to look and see, even the substantive (noun) *animal* becomes a reflexive verb in the phrase "les marbres s'animalisent" (line 7). This either lends agency to inert minerals or employs the passive voice to emphasize the dependency of the "animalized" marble upon the real agent, the voice. There is an important difference between "animalized" and "animated," since the French verb *animer* implies more than having the form of a living thing, but actually possessing a soul, from the Latin *animus*. The subtle word-play undermines the authority of the voice which activates these visible miracles.

We encounter horror three sentences later, after the introduction of a human observer: “cette épouvantable résurrection due à la voix d’un seul homme” (“that frightful resurrection conjured by the voice of a single man.” Line 10). Although Cuvier’s procedure is far from magical, the result is quite like necromancy, in that it can only be regarded with admiration mixed with horror. Caused by a power either divine or diabolical, the spectacle of dry bones collected once again into bodies with sinews and flesh is awful to witness.

The power of language is subtly made reference to in line 10: “cet infini sans nom, commun à toutes les sphères et que nous avons nommé LE TEMPS” (“this nameless infinity that is common to all the celestial spheres and which we have called TIME”). That which is nameless is, by human pretension, is given a name. It is clear that it is not simply a question of convention; if it were, the last part might read, “que nous appelons LE TEMPS” or “que nous nommons LE TEMPS.” Instead, the verb *nommer* in the compound past makes reference to a discrete hypothetical event in which the chaos of nature succumbs to the *logos* wielded in this case by humans. The power of naming proves, however, to be a great source of humor (and dismay) in the novel, even though in this passage, the *sans nom/nommé* opposition nearly goes unnoticed.

Raphaël, whom the narrator identifies as a poet even before the reader learns his name, does not compose a single poem in the course of the novel. He assumes that there must be other tender souls like his in the world, as he explains to his friend Émile:

Lorsque nous arriverons au degré de science qui nous permettra de faire une histoire naturelle des cœurs, de les nommer, de les classer en genres, en sous-genres, en familles, en crustacées, en fossiles, en sauriens, en microscopiques, en... que sais-je ? alors, mon bon ami, ce sera chose prouvée qu’il en existe de tendres, de délicats, comme des fleurs, et qui doivent se briser comme elles par de légers froissements auxquels certains cœurs minéraux ne sont même pas sensibles.

When we achieve the degree of science which will allow us to compose a natural history of hearts, name them, classify them into genera, sub-genera, families, into crustaceans, fossils, dinosaurs, microscopic organisms, and... whatever else, then, my good friend, there will be

proof that there are tender ones and delicate ones, like flowers, which are also bruised by the slightest strain, to which certain stony hearts are utterly insensitive (Balzac 1996, 127).

In this passage, which closes the first part of the novel, Raphaël praises the traditional realm of natural history: classifying plants, animals, and minerals. In the third part of the novel, his disillusionment with natural history is complete when the naturalist at the Muséum can tell him no more than the origin of the pelt and the habits of the animal that wore it.

Raphaël's disillusionment evolves rapidly as he consults the experts at the Muséum one by one. After speaking with the naturalist, the narrator informs us that Raphaël "remportait de cette visite, sans le savoir, toute la science humaine : une nomenclature !" ("He had gained from his visit, without realizing it, all of human knowledge: a nomenclature!" Balzac 1996, 268). During his second visit, the physicist disparages this tendency to name natural phenomena, saying, "Un nom, est-ce donc une solution ? Voilà pourtant toute la science" ("A name, is it yet a solution? There you have, however, the entirety of science." Balzac 1996, 270). Raphaël is still hopeful enough to think that one realm of science could provide the answers which another could not, and enjoins the physicist, "Parlez-moi de la Mécanique ! [...] N'est-ce pas la plus belle de toutes les sciences ? L'autre [l'histoire naturelle] avec ses onagres, ses classements, ses canards, ses genres et ses bocaux pleins de monstres, est tout au plus bonne à marquer les points dans un billard public" ("Tell me all about physics! Isn't it the most beautiful of all the sciences? The other one [natural history] with its wild asses, its classifications, its ducks, its genera and its jars full of monsters, is only good for counting points in a public billiards hall." Balzac 1996, 275). By the time he consults the chemist, however, Raphaël is already giving in to despair, since he tells him sadly, "Faute de pouvoir inventer des choses, il paraît que vous en êtes réduits à inventer des noms" ("Unable to invent things, it seems you have been reduced to inventing names." Balzac 1996, 277).

These three visits are examples of what I am calling "fictional encounters" with real, historical scientists. These characters *à clef* are painted in comic tones. Even the names are comical: Porriquet,

Planchette, Spieghalter, Japhet, Caméristus, Brisset, Maugredie. Yet they correspond to some influential scientists and medical doctors of the time. One young doctor escapes the narrator's irony. Horace Bianchon appears to have no real-world counterpart; he solely inhabits the Paris of the *Comédie humaine*, where he is friend and doctor to both Raphaël de Valentin and Eugène de Rastignac.

There seem to be roughly five distinct kinds of reference to science and scientists as well as other philosophers and literary figures in Balzac's novel. First, there is **casual mention**, in which a character is developed through references to authors and titles of works read or discoveries made, which are assumed to be tokens of the kind of education received by the character, or of his or her taste or political persuasion. Second, there is **engagement**, in which characters may discuss and react to a particular work or author, and, we may reasonably assume, functions not only as a tool for characterization, but also as a mode of exposition of the stakes of the novel. Third, there are **fictional encounters** such as the ones described above, in which a character has met, listened to, or conversed with a particular real person, sometimes under the thin disguise of a similar name which would lead most nineteenth-century readers to unlock the identity of the fictional character. These encounters create bridges between the stakes of the novel and the state of contemporaneous public discourse related to science and philosophy. Fourth, there is **apostrophe**, as in the case of the Cuvier eulogy, where an extradiegetic reference amounts to a direct address from the narrator to the reader. This kind of reference, as we shall see, requires greater attention and interpretation on the part of the reader than do the fictional encounters, even though the real-world referent is obvious. Fifth, and lastly, there is **dedication**, since the novel itself is dedicated to Félix Savary, a mathematician and astronomer and member of the Académie des Sciences.

The references are like a trail of crumbs for anyone wishing to know something about Balzac's vast number of sources of inspiration. Among them are the usual suspects: Milton, Rabelais, Montaigne, Cervantes, Pascal, Descartes, Spinoza, Newton, Diderot, Rousseau, Kant, Schiller, Napoleon, and Christ.

As for the lesser-known ones, Nadine Satiat reveals that Balzac discussed Borelli's theory of movement with Savary, and that the theme of movement recurs in many of his philosophical novels (Balzac 1996, 55, 331 n. 2). Moreover, a casual mention of one of Antoine Lavoisier's experiments – one which proved that diamonds are made of carbon – since Lavoisier was a proponent of movement as an essential property of matter, permits us to suppose that Balzac was just as interested in physics as he appears to be in natural history and physiology.

Raphaël is convinced that his work on the will engaged and rivaled the works of some of the great minds of his day: Mesmer, Lavater, Gall, and Bichat (Balzac 1996, 150). These *casual mention* references are the only trace we may find of Balzac's own treatise, if we may take them to be exemplary of his ideas. Of course, some references do not indicate anything more than an attempt at comic relief. For instance, as Raphaël stares at the uncanny youthfulness in the eyes of the centenarian, the narrator explains,

...[I]l demeura dans le doute philosophique recommandé par Descartes et fut alors, malgré lui, sous la puissance de ces inexplicables hallucinations dont les mystères sont condamnés par notre fierté ou que notre science impuissante tâche en vain d'analyser.

...[H]e remained in the philosophical doubt recommended by Descartes and, in spite of himself, fell under the power of these inexplicable hallucinations the mysteries of which are dismissed by our pride or which all our feeble science is powerless to analyze (Balzac 1996, 80).

The same goes for Raphaël's adoration of Mozart's *Dom Juan*, or the vague reference to the vanity of science (or appalling lack of vanity of scientists). Raphaël's pauperly existence contrasts greatly with the lavish one of his desired mistress: "Quand j'arrivai dans ma mansarde nue, froide, aussi mal peignée que la perruque d'un naturaliste, j'étais encore environné par les images du luxe de Fœdora" ("When I returned to my bare, cold attic room, [which was] as unkempt as a naturalist's wig, my thoughts still lounged amid visions of Fœdora's luxury." Balzac 1996, 165).

This last reference is, in fact, a preview of the meeting between Raphaël and the frumpy naturalist, Lavrille, later in the novel. This episode is another example of a fictional encounter between

the main character and a real scientist with a strikingly similar name. In this case, “Lavrille” may be understood to be the fictional counterpart for “Latreille,” an insect specialist who succeeded Lamarck in his chair as invertebrate specialist at the Muséum in 1829, the year before Balzac undertook to write *La Peau de chagrin* (Balzac 1996, 367, n. 381). Interestingly enough, the name of the same character in earlier editions of the novel was “Lacrampe.” By reversing four of the letters in the fictional name and removing the resemblance to an insect-like movement (*ramper*), C-R-A-M becomes M-A-R-C, and “Lacrampe” appears as a reference to the older naturalist. On the other hand, the *Imprimerie de Lacrampe*, n° 2 rue Daxiette, was responsible for printing Lesson’s *Compléments de Buffon*, relaying the reference to either Lesson himself or Buffon. Who exactly is “Lavrille,” then? The narrator identifies him as “ce grand pontife de zoologie” (“the great pontiff of zoology”) whose nights were spent in the pursuit of knowledge, and whose “erreurs servaient encore la gloire de la France” (“errors still propped up the glory of France.” Balzac 1996, 263). Lavrille is small and aged, with white hair, well-worn clothes, and of course, a wig in disarray. Perhaps the two sources of inspiration for this character mingled easily in Balzac’s mind, or perhaps in describing the archetypal Naturalist (with a capital N), he leaned upon two particular specimens who very well represented the species. In any case, Lavrille is fascinated by waterfowl reproduction and delivers an impromptu lecture on different breeds, their origins, markings and habits. He ignores common social cues and – as the narrator suggested – pontificates on the two different kinds of *shagreen*, or *chagrin*, the first being derived from a fish, the second from a wild ass long thought to exist only in myth. The naturalist appears to be nearly as chimerical as the *chagrin*.

The two remaining kinds of references, *engagement* and *apostrophe*, pose a greater problem of interpretation for the reader, since they are mediated through the narrative itself, and thus rely on various kinds of relation, contextualization and tone, and all that has been given to know about the characters. In the following example, two separate conversations regarding Pascal show that Raphaël has read *Les Lettres provinciales* and is familiar with Pascal’s famous wager (Pascal 2004, frag. 397, 247-

253), but is unaware of Pascal's scientific achievements, such as his work on atmospheric pressure which led to the invention of the hydraulic press. Pascal's wager determines that it is better to believe that God exists, since if he does, and one does not believe, one is condemned, whereas nothing is lost by believing in a God who does not exist.

At the feast, already quite inebriated, Émile flips a coin to see if hell exists, shouting, "Heads, God wins!" ("Face pour Dieu !" Balzac 1996, 114). Raphaël reaches out and catches the coin, bidding Émile not to look, since chance is so funny... And he goes on to defend the Catholic faith, attributing to it many great works of art, architecture, and science. Émile protests that the Church spilled much blood over the centuries, but alas, since Christ represents the only victory of mind over matter, well then, every thinking man must believe. "You believe?" ("Tu crois ?") Raphaël asks, enigmatically, then he proposes a toast "to the unknown gods" ("Diis ignotis !" Balzac 1996, 115). When Raphaël consults the physicist Planchette in the third part of the novel, Planchette proposes to extend the magic pelt using fluid compression. He illustrates Pascal's principle with an empty flower pot, some clay, hollow twigs, and a glass fly trap. Raphaël is hardly impressed by the demonstration, distracted as he is by his problem, but later, he exclaims, "Quoi ! L'auteur des *Lettres provinciales* a inventé...?" ("What? The author of the *Provincial Letters* invented...?" Balzac 1996, 274). He then promises to erect a statue of Pascal if the hydraulic press can extend his life by enlarging the pelt.

The reader begins to understand, through the engagement with Pascal, how uneven Raphaël's scientific education may be. His difficulty practicing Cartesian skepticism may also be a clue to the unintended credulity of the protagonist, who is at times so squeamish about matters of faith – or gambling. Horace Bianchon, the young doctor who administers a sleeping aid to Raphaël near the end of the novel comments that Raphaël's chances of living or dying are approximately equal, which introduces a small doubt in the mind of the reader as to whether the pelt really is killing Raphaël, or whether his belief in its power alone is sufficient. The episode with Planchette is also revealing in that, while Raphaël

is contemplating the disarray of the scientist's lab and person, and wondering at his single-minded pursuit of knowledge, he reflects on how he, even he, might have lived that way (Balzac 1996, 269). This last reflection, amid the humor, strikes an ironic tone. When the narrator describes Raphaël once again as a man of science and scholarship, who admires Lavrille in spite of his piled-up and frizzy wig, it is in the same sentence as the comment about how a little Miss Know-it-all (*une petite maîtresse*) would find Lavrille's appearance ridiculous.

How are we then to read the apostrophic praise of Cuvier? Although the narrator sometimes addresses a sentence or two to the reader directly, a comment meant to inform the reader about something Raphaël has said, for instance, the narrative voice does not often adopt this distance from the subject, nor this closeness to the reader. The inclusive "nous" which appears near the end of the eulogy does not really include Raphaël. Instead, the invitation to side with the narrator draws a line in the sand and asks the reader where he stands on the witness of the past. Soon after, however, the narrator withdraws the serious question by quipping, "Déracinés du présent, nous sommes comme morts jusqu'à ce que notre valet de chambre entre et vienne nous dire: 'Madame la comtesse a répondu qu'elle attendait monsieur!'" ("Uprooted from the present, we stare out lifelessly until our valet comes back and tells us: 'Madame the Countess replied that she is ready to see you, sir.'" Balzac 1996, 78).

Distraction caused by women, it should be noted, forms a pattern in the novel. There is enough of a parallel between the style of the Cuvier passage and the Lavrille reference to close the interpretive gap between the two. The tone of both passages is consistent with the unrelenting humor throughout the novel. That humor is occasionally turned against the protagonist, and he brings it on himself at times. Raphaël laments his foolishness in trying to win the heart of the beautiful Russian courtesan, saying "Entreprendre la conquête de Fœdora dans l'hiver, un rude hiver, quand je n'avais pas trente francs en ma possession, quand la distance qui nous séparait était si grande!" ("Trying to conquer Fœdora in winter, and such a harsh winter, when I didn't have thirty francs to my name, when the

distance between us was so great!" 165). Surely the author is laughing with us over the Napoleonic joke at Raphaël's expense.

If Raphaël's naïveté about his own aptitudes and the solutions science offers are a source of irony and humor, the impossibility of harmony between three essential human faculties – *savoir*, *pouvoir*, *vouloir* – forms one of the sober questions at the origin of the novel. As we discussed, the power of language to name natural phenomena as a way of knowing the world is questioned, but significant doubt is cast on the meaning of numbers as well. In the Cuvier passage, the pervasiveness of time draws our attention to the direction of the gaze. The human gaze, and particularly that of Cuvier, as Blix noted, penetrates the mysteries of the past. Every reference to time in the first nine lines of the passage evokes the past, including prefixes: re-, ante-, etc. The shift to a meditation on the future occurs in line nine, with man organizing the past into a kind of *retrograde Apocalypse*. This provocative phrase summarizes one experience of time which Balzac described in the 1831 preface to the novel: "Les hommes ont-ils le pouvoir de faire venir l'univers dans leur cerveau, ou leur cerveau est-il un talisman avec lequel ils abolissent les lois du temps et de l'espace? ...La science hésitera longtemps à choisir entre ces deux mystères également inexplicables" ("Do men have the power to summon the universe inside their brains, or is their brain a talisman with which they sweep away the laws of time and space? ...It will be a long time before science opts for one or the other of these two equally inexplicable mysteries." Balzac 1996, 22). This power constitutes what Balzac calls "la seconde vue" (or the sixth sense) of "truly philosophical writers."

This sixth sense appears to be the unique province of those who would, as Raphaël did, study eastern languages, ancient texts, anatomy, physiology and philosophy, those whose knowledge transcends the artificial boundaries of disciplines, and who have mastered their passions, including "la fureur des découvertes, qui, semblable à toutes les passions, nous arrache si puissamment aux choses de ce monde que nous perdons la conscience du moi" ("the fervor of discovery, which, like all

passionate desires, so thoroughly distracts us from earthly contemplations that we lose all sense of self." Balzac 1996, 263). The antiquary from the beginning of the novel freed himself from the wasting power of passion: "En deux mots, j'ai placé ma vie, non dans le cœur qui se brise, non dans les sens qui s'émeussent, mais dans le cerveau qui ne s'use pas et qui survit à tout" ("In brief, I placed my life, not in the heart which can break, not in the senses which grow dull, but in the brain which does not wear down and survives everything." Balzac 1996, 89). Other parts of the body had contended for the honor of being the seat of life in the novel: Brisset, "le chef des Organistes, le successeur des Cabanis et des Bichat, le médecin des esprits positifs et matérialistes, qui voient en l'homme un être fini, uniquement sujet aux lois de sa propre organisation, et dont l'état normal ou les anomalies délétères s'expliquent par des causes évidentes" ("leader of the Organicists, successor to Cabanis and Bichat, doctor to positivist and materialist minds, who see man as a finite being, only subject to the laws of his own organization, and whose normal state and deleterious anomalies can be explained by obvious causes." Balzac 1996, 285); this Brisset (Casimir Broussais) placed it in the "épigastre," the upper-middle portion of the stomach (Balzac 1996, 288). Caméristus (Récamier) insisted, "Non, tout n'est pas là" (No, not everything is there." Balzac 1996, 288-289) The narrator describes him as "Homme d'exaltation et de croyance, le docteur Caméristus, chef des vitalistes, le poétique défenseur des doctrines abstraites de Van Helmont, [qui] voyait dans la vie humaine un principe élevé, secret, un phénomène inexplicable [...] une espèce de flamme intangible..." ("An exuberant and believing man, Doctor Caméristus, leader of the vitalists, poetic defender of Van Helmont's abstract doctrines, who saw in human life a secret, elevated principle, an inexplicable phenomenon [...] a kind of intangible flame." Balzac 1996, 285-286, n. 414).

Indeed, the novel's scientific preoccupations also include the attempts by natural historians, physiologists, moral philosophers and *Ideologues* to understand selfhood. Destutt de Tracy once asserted that *idéologie* would one day be subsumed under the science of animals, zoology. In his work of natural history, *De la nature* (1761-1768), Diderot's successor as editor of the *Encyclopédie*, Jean-

Baptiste Robinet, describes the feeling of existence as consisting essentially of three phenomena: 1) the memory of having existed in the past; 2) the feeling of existing in the present; and 3) the hope of existing in the future. The three-part structure of Balzac's novel seems to correspond to these three, albeit not in the same order. The present tense narrative of Raphaël's discovery of the pelt's power and its future effects is interrupted by his first-person narrative of the past. The "I" in the middle of the novel forms a center around which the more fantastical, humorous, and horrifying events gravitate. In fact, Raphaël's tale *en abîme* seems all the more real, given the uncanny nature of his life after the advent of the pelt. The memory of having existed, and, implicitly, the retelling of that existence in the present, his life story, appear to matter more than the sensual satisfaction of the orgy and his hope of future existence.

The novel as a whole takes the form of an experiment: What do you have left of human life and consciousness if you remove the hope of future existence? The Cuvier passage is loaded with this question. Cuvier's *voice* resurrects legions of long-gone animals. The voice works counter to the gaze, which in this passage is *backward in time*. Man's perch at the end of a long series of animal dynasties allows him to take stock of the enormity of the past. Getting this deep time "into one's gut," as the modern evolutionary scientist Stephen Jay Gould described it, more than simply accepting it on an intellectual level, requires some mental violence (Gould 3). Balzac's description of this perspective is the "retrograde Apocalypse" I referred to earlier. All that can be expected from the future, on the other hand, is a kind of mathematical certainty: "Nous nous demandons, écrasés que nous sommes sous tant d'univers en ruines, à quoi bon nos gloires, nos haines, nos amours ; et si, pour devenir un point intangible dans l'avenir la peine de vivre doit s'accepter?" (line 11). The narrator praising Cuvier includes the reader (and with her, all humankind) in the observation that all will be reduced to an intangible point. It seems that Cuvier's poetry of numbers can only have this effect.

What is the point? A decimal? A soul? The end of a sentence or the end of the magic pelt? The talisman, like its name, is ambiguous. It is alternately rigid, supple, dark, luminous, of fish or mammalian origin. Once it has shrunk a fair bit, it is even mistaken for a piece of algae. Raphaël refers to it as an *antiphrase*, that is, a bit of irony. Considered as a textual object, or an object whose truest form is text, the pelt obeys the logic built into it by resisting every transformation except its inexorable shrinkage. The talisman, the title, the logic of paradox all dictate that the novel, when written, is the end point of the pelt. And the end of the poet?

Balzac's novelistic experimentation in this work is unlike the survey of human types and habits of the *Études de mœurs* cycle of novels (*Le Père Goriot*, *La Cousine Bette*, *Le Cousin Pons*, *Les Chouans*, *Eugénie Grandet*, *Gobseck*, etc.), where classification and taxonomy reign supreme, propped up by mountains of empirical "facts." The hypothesis Balzac may be testing in *La Peau de chagrin* is the one Raphaël produces near the end of the novel: "Pour mourir, [...] il faut que mon organisation, ce mécanisme de chair et d'os animé par ma volonté, et qui fait de moi un individu *homme*, présente une lésion sensible" ("In order for me to die, my body, this machine made of flesh and bone moved by my will, and which makes me an individual, *a man*, must sustain an observable injury." Balzac 1996, 281). In fact, early in the novel, we are oriented toward an experimental reading of it by Émile, who asks Raphaël, not without a little dark humor, "Quelle expérience voulais-tu donc faire en te jetant dans la Seine ?" ("What kind of experiment did you hope to conduct by throwing yourself in the Seine?" Balzac 1996, 126).

Émile's question – effectively, *à quoi bon se suicider* – invites Raphaël to describe his failed experiment with Fœdora. Despite her assertions that she could not be persuaded to fall in love, he persisted in searching out her secret, which, he desperately hypothesizes, must be physical – perhaps hermaphroditism or cancer. Earlier on in their relationship, Raphaël had jokingly declared her to be a "crucial specimen for medical observation," in response to which Fœdora quipped, "Aren't I awfully nice

to offer myself up for science?" ("Ne suis-je pas bien bonne de me laisser mettre ainsi sur un amphithéâtre ?" Balzac 1996, 173). Fœdora is a foil for Raphaël, his antithesis in the sense that while he occasionally notices a burning sensation in his chest (a physical, not a moral symptom), she can have no feeling at all where her heart should be, even though she may weep plausible tears.

While he is shocked to discover that she has no apparent physical flaw, his experience of trying to woo her provided confirmation of another hypothesis, which he developed in his treatise on the will: "Mes études sur notre puissance morale, si peu connue, servaient au moins à me faire rencontrer dans ma passion quelques preuves vivantes de mon système" ("My studies on our moral faculty, which is so little understood, prepared me at least to perceive some living proof of my system in the midst of my passion." Balzac 1996, 169). But as he tells Professor Porriquet later on, his discoveries on the connections between the will and the body will never see the light: "*Exegi monumentum, père Porriquet, j'ai achevé une grande page, et j'ai dit adieu pour toujours à la Science. À peine sais-je où se trouve mon manuscrit*" ("I erected a monument, father Porriquet, I completed an excellent chapter and then I bid Science adieu. I hardly know where my manuscript is now." Balzac 1996, 150, n. 10, 240). Raphaël had desperately tried to destroy or lose the magic skin, but could not, and lost his "œuvre purement physiologique" ("purely physiological study." Balzac 1996, 240) instead.

Does Raphaël's ultimate rejection of science represent the tone of the entire novel? (Some readers place it in the genre of the *fantastique*.) If so, then the praise of Cuvier seems to emanate ironically from Raphaël's naïve adoration of the naturalist. Scholars have been quick to analyze the praise of Cuvier as part of Balzac's broader admiration of natural history and patterning of novelistic empiricism after the work of either Cuvier or Geoffroy Saint-Hilaire. They have missed the importance of Destutt de Tracy's *idéologie* and another kind of natural history – that of the human mind – in their characterizations of Balzac's scientific affiliation and method. This reading of the passage in its context among other references to contemporaneous scientists and philosophers, emphasizing the narrator's

irony, and insisting on Balzac's own differentiation between his social and philosophical cycles, reveals a streak of ambivalence running beneath Balzac's obvious appreciation for the natural sciences. He therefore proposes that science, without a proper understanding of what it means to be a thinking, feeling individual, was a poor substitute for mastery of the self and its desires. The doctor Caméristus is *almost* given the last word, although he is derided by his colleague Brisset, who deems his medicine "absolutiste, monarchique et religieuse" ("absolutist, monarchical and religious." Balzac 1996, 290), and insists on the existence of the soul, while asserting that, anatomically speaking, "aucun homme ne se ressemble" ("no two men are alike." Balzac 1996, 289).

Balzac may never have read Lamarck's works, or Lamarck's absence among the panoply of naturalists he makes reference to, by name or under a fictional guise, could be purely incidental. Lamarck may have inspired one of the minor characters in the novel. While *La Peau de chagrin* appears, on the one hand, to discount the observations and taxonomical efforts of natural history and the "grammar of discovery," it delves wholeheartedly into the questions which the natural philosopher cannot ignore. It asks where the boundaries of mind are established, explores the meaning of sensation and experimentation, and probes the nature of the relationship between time and organic processes. In his characteristic humor,¹¹⁵ Balzac describes Raphaël hidden in the mountains as an "animal sous forme d'une dépouille végétale" ("animal resembling a dead leaf." Balzac 1996, 321). Raphaël cannot shield himself from the influence of his environment by vegetating, however; every breath brings him nearer to death, as the spa doctor tells him: "En respirant l'air vif et pur qui accélère la vie chez les hommes à fibre molle, vous aidez encore à une combustion déjà trop rapide" ("By breathing the lively and pure air that quickens life in men of delicate senses, you are compounding the combustion in you which is already too rapid." Balzac 1996, 298).¹¹⁶ Raphaël, "semblable enfin à ces rochers insensibles aux

¹¹⁵ Balzac delighted in fictional taxonomy, a chance to make up vaguely naturalistic groupings like "coquettifères."

¹¹⁶ Bichat's essays on respiration and asphyxiation may be instructive here, as well as Balzac's research in chemistry for his other philosophical novels, including *La recherche de l'absolu*.

caresses comme à la furie des vagues” (“finally akin to those cliffs as unmoved by caresses as by the fury of the sea.” Balzac 1996, 293), cannot resist his ultimate passion for Pauline that kills him.

Sainte-Beuve’s *Volupté* (1834)

Like the doctor Caméristus, Sainte-Beuve’s Amaury seems to say, “Ici donc, je voudrais un traitement tout moral, un examen approfondi de l’être intime. Allons chercher la cause du mal dans les entrailles de l’âme et non dans les entrailles du corps !” (“Here I want an entirely moral cure, a thorough examination of the intimate being. Let us search for the cause of the illness in the entrails of the soul and not in the entrails of the body!” Balzac 1996, 290). Amaury’s discovery that “l’homme naît et vit dans la pensée” (“man is born and lives in thought.” Sainte-Beuve 1964, II, 224) is formulated as an outright rejection of Lamarck’s view of nature, which offers no promise of life after death. Sainte-Beuve’s engagement with Lamarck’s philosophy is substantial throughout the novel. Amaury attends his classes at the Jardin des Plantes out of an interest in the kinds of “primordial” questions that Lamarck would raise. This takes place as a natural consequence of Amaury’s character and situation, and in this sense, Lamarck’s philosophy is both a motive and a non-motive feature of the plot. It allows for a hypothetical philosophical debate, but it registers on other levels in Sainte-Beuve’s narration, as we shall see in the analysis that follows.

We can situate the action of the novel sometime around 1804, because the capture and trial of Georges Cadoudal, a famous Chouan leader, is noted in the second volume. Before the attempt and failure of the plot against Napoleon the novel’s young protagonist, Amaury, follows his friends, the marquis de Couaën and his wife and children, to Paris, where he divides his time between studies and lectures and visits to Madame de Couaën, for whom he carries a torch. His commentaries on what he reads and hears show that he divides his sympathies between the philosophy of the Enlightenment, Catholic theology, and spiritualism. Sainte-Beuve places Amaury at the société d’Auteuil after the death of Madame Helvétius and has him attend some of Lamarck’s lectures at the Jardin des Plantes. In the

passage which describes Lamarck, he is directly compared to the marquis de Couaën. The description posits both men as conservative, unyielding, and tragic, though by no means unsuccessful:

...[M]ais les hardiesses de l'homme de génie [Lamarck] me faisaient penser. Et puis, dans sa résistance opiniâtre aux systèmes de toutes parts surgissants, aux théories nouvelles de la terre, à cette chimie de Lavoisier qui était une destruction, une révolution aussi, il me rappelait involontairement cette semblable obstination imposante de M. de Couaën dans une autre voie ; quand il dénonçait avec amertume la prétendue conspiration générale des savants en vogue contre lui et contre ses travaux, je le voyais vaincu, étouffé, malheureux comme notre ami ; il avait eu du moins le temps de se faire illustre.

...[B]ut the bold assertions of this exceptional man caused me to think. And furthermore, in his stubborn resistance to systems springing up everywhere, to new theories of the earth, to Lavoisier's chemistry, which was both destructive and revolutionary, he reminded me of Monsieur de Couaën's similarly imposing tenacity, in another form. When he bitterly denounced the supposed general conspiracy of prominent scientists against him and his work, he appeared as defeated, stifled, and unfortunate as our friend Couaën. But at least he had had the time to gain recognition (Sainte-Beuve 1964, I, 197).

The fictional encounter between the young protagonist, Amaury, and the aged Lamarck, in the context of his lectures at the Muséum National d'Histoire Naturelle, hints at the reality of some of the problems of reception that Lamarck faced, as well as the limits of his sphere of influence. It also describes the embarrassment of the younger generation unsure of how to proceed amid the changing political regimes, and alternately admiring or wary of such Enlightenment principles as appear in Stendhal's and Balzac's novels.

Like these authors, the author of *Volupté* had, in his own fashion, become an *Idéologue*: he had studied Locke, Condillac, Malebranche, Bonnet, Cabanis and Tracy, and "after that it is merely a question of observing oneself" (Lehmann 18 cites Guyot 107, n. 589). Sainte-Beuve also dreamed of founding a natural history of minds. He began the slow work of the taxonomist by collecting literary portraits of the great thinkers of the past, which helped him to build his reputation as a literary critic. Pierre-Claude-François Daunou, professor at the Collège de France, introduced the young Sainte-Beuve

to the Athénée, where he heard Lamarck speak (Lehmann 16).¹¹⁷ In 1822, Sainte-Beuve read Cabanis's *Rapports*, Locke's *Human Understanding*, Bacon's *Novum Organon*, Condillac's *Traité des sensations*, Tracy's *Éléments d'idéologie*, Hobbes, and Charles Bonnet. Lamarck is one of the few to be given a cameo from among the many names and ideas that influenced him in his youth. Bichat, Adam Smith, Malebranche, Cabanis, Destutt de Tracy, Garat and Chénier also figure in the text, although only briefly. Descriptions of some members of the société d'Auteuil figure in his novel: Cabanis and André Chénier were "éloquent," and Garat ("poussait un peu au brillant" ("bordered on brilliant." Sainte-Beuve 1964, I, 198-199). These and other religious and philosophical figures (such as Louis-Claude Saint-Martin) are not given as vivid a description as Lamarck's.

One might hypothesize that Lamarck's recent death – only five years before the novel's appearance – and the death of Cuvier only two years prior, opened the doors to critical review and commentary on the two naturalists. Perhaps evidence of the campaign to discredit Lamarck during his life and Cuvier's attempt to tarnish his memory was surfacing that begged for justice to be done on Lamarck's behalf. In any case, the passage about Lamarck is more than a kind word addressed to the memory of a defamed man, and it is more than a rudimentary literary portrait of the kind Sainte-Beuve would later develop and apply to many great thinkers of the past. This cameo probably represents one of Sainte-Beuve's earliest attempts at literary portraiture, a genre which he came to define and refine much later (and which came to define *him*, incidentally). By elucidating the use that Sainte-Beuve makes of this cameo and of Lamarck's theories, his project for a natural classification of literary production becomes clearer. One question I would like to address in this analysis is whether or not, in this novel, Sainte-Beuve establishes the limits of Lamarck's possible influence on the literature of the period, or if instead he opens the door for interpreting the literature of the period through Lamarck's theories.

¹¹⁷ Not only Lamarck, but Cuvier, Geoffroy Saint-Hilaire, Jean-Baptiste Say, Benjamin Constant, Magendie, Blainville; he met Cabanis's daughter and Destutt de Tracy, too (Lehmann 16).

How does Sainte-Beuve treat Lamarck in *Volupté*? In the passages I cite from the novel, Sainte-Beuve characterizes Lamarck as a romantic hero through direct comparison with one of the main characters, the marquis de Couaën. Or, conversely, Lamarck's portrait serves to better develop the character of the marquis de Couaën (inspired by Victor Hugo). The human dimension of change over time is symbolized in the character of the marquis, who is likened to a cliff giant, petrified, forbidding, superannuated. In this way, Sainte-Beuve seems to be borrowing the terms of a Neptunian history of the earth from Lamarck, inscribing his own doubt about human potential into a history of inquiry which includes Lamarck and the other *Ideologues*. The author refers to Lamarck again when, in a critical moment, the protagonist opts for a *Weltanschauung* which is opposed to Lamarck's. Amaury's difficulty in establishing his empire over his own thoughts, emotions and actions is a kind of case study of the physical underpinnings of human (ir)rationality. Amaury's rejection of Lamarck and of the natural sciences in general, his adoption of Saint-Martin's mysticism, and his taking of the cloth and emigration to America represent, in a rambling romantic way, the kind of renunciation and death experienced by the protagonists of the other two novels. I propose that some Lamarckian concepts about the nature of life and the natural world may be found in a diffuse manner throughout the text. Most importantly, perhaps, Sainte-Beuve exposes conflict between Lamarck's natural world and the one in which human efforts, including literary efforts, and especially the novel, are possible.

The "imposing tenacity" and ultimately, sorrow, of Lamarck – and of the marquis – is given color and shape in Amaury's great allegorical image ("grande image allégorique") of Couaën and his wife: they are described as a wilderness landscape, a lake dominated by a high, forbidding cliff ("un haut et immuable rocher." Sainte-Beuve 1964, I, 166-168). Amaury imagines himself navigating the lake in the shadow of the cliff, "studying its strange and severe façades, wondering what the giant had been like and what it could have become if it hadn't been petrified." In this petrified giant image of the marquis, there is the sense of grandeur and of failure, a living, moving past and an immobile future. This is the

sort of thing one expects of the romantic period, but the intervention of Lamarck's voice from the materialist past seems to accomplish more than just the characterization of both men as tragic heroes. To explain what I mean, I will briefly summarize the kind of "petrification" of living organisms that one finds in Lamarck's thought.

The opposing forces in the lamarckian concept of the life cycle (life, decay and death), are fluid motion, which vivifies the organs, allows impressions to reach the sensory corpus, and maintains the turgidity and flexibility of the members, and the gradual stiffening of the members caused by byproducts of the process of ingestion, digestion, and excretion. Through nutrition, which is necessary for the maintenance and growth of the organism, a kind of sedimentation of "hard" matter occurs, in spite of regular elimination. The fluid channels become congested, the members become increasingly rigid, and eventually all motion ceases, which constitutes the death of the animal.

The enlightenment naturalists' findings about geological nature provided some of the vocabulary and conceptual rhetoric for the Revolution, as Mary Ashburn Miller has demonstrated in *A Natural History of Revolution*. I would argue that the another natural narrative, Lamarck's deep time, uniform history of the earth, and unbroken development of life forms is a concept equally terrifying to those who attempt to reconcile the human fact to the great oblivion which is the universe. The expressions Sainte-Beuve deploys in describing Lamarck's view of nature and the development of life include "a long, blind waiting" ("une longue patience aveugle"), "gnawing/senseless need" ("un besoin sourd"), and "habit alone" ("la seule habitude"). And yet, to reiterate, Amaury is attracted to Lamarck and his teaching:

Je fréquentais plusieurs fois par *décade*, au Jardin des Plantes, le cours d'histoire naturelle de M. de Lamarck ; cet enseignement, dont je ne me dissimulais d'ailleurs ni les paradoxes hypothétiques, ni la contradiction avec d'autres systèmes plus avancés, avait pour moi un attrait puissant par les graves questions primordiales qu'il soulevait toujours, par le ton passionné et presque douloureux qui s'y mêlait à la science. M. de Lamarck était dès lors comme le dernier représentant de cette grande école de physiciens et observateurs généraux, qui avait régné

depuis Thalès et Démocrite jusqu'à Buffon ; il se montrait mortellement opposé aux chimistes, aux expérimentateurs et analystes en petit, ainsi qu'il les désignait. Sa haine, son hostilité philosophique contre le Déluge, la Création génésiaque et tout ce qui rappelait la théorie chrétienne, n'était pas moindre. Sa conception des choses avait beaucoup de simplicité, de nudité, et beaucoup de tristesse. Il construisait le monde avec le moins d'éléments, le moins de crises, et le plus de durée possible. Selon lui, les choses se faisaient d'elles-mêmes, toutes seules, par continuité, moyennant des laps de temps suffisants, et sans passage ni transformation instantanée à travers des crises, des cataclysmes ou commotions générales, des centres, nœuds ou organes disposés à dessein pour les aider et les redoubler. Une longue patience aveugle, c'était son génie de l'univers. La forme actuelle de la terre, à l'entendre, dépendait uniquement de la dégradation lente des eaux pluviales, des oscillations quotidiennes et du déplacement successif des mers ; il n'admettait aucun grand remuement d'entrailles dans cette Cybèle, ni le renouvellement de sa face par quelque astre passager.

Several times a *décade* [ten-day period], I attended M. de Lamarck's natural history course in the Jardin des Plantes. His teaching, although I could ignore neither its hypothetical paradoxes nor its inconsistency with other, more advanced systems, was powerfully attractive to me because of the important, fundamental questions that it raised, and the passionate and almost sorrowful tone which accompanied his science. M. de Lamarck was the last representative of that great line of physical scientists and general observers which had reigned from Thales and Democritus to Buffon; he was mortally opposed to chemists, to experimenters and analysts *en petit*, as he called them. His hatred was no less hot, his philosophical hostility no less marked toward the deluge, creation according to the book of Genesis, and anything smacking of Christian natural theology. His understanding of things was very simple, stark, and sad. His world consisted of the fewest elements and crises and the greatest duration possible. According to him, things came about on their own, alone, in a continuous fashion, through sufficient expanses of time, without experiencing or instantly transforming as a result of crises, cataclysmes, or general upheaval, their centers, cortices, or organs effectively disposed to help and prosper them. His cosmos was characterized by blind and patient waiting. The current shape of the earth, he said, was formed solely through erosion by rainwater, daily tides and gradual displacement of the seas; he subscribed neither to any great movement in the bowels of this Cybil, nor to the renewal of her surface by some passing celestial body (Sainte-Beuve 1964, I, 196-197).

To summarize, then, the comparison between the marquis and Lamarck, in *Volupté* they share a kind of creative obstinacy, a belief in the ability of man to transcend, to some extent, inorganic nature, and they are both doomed to failure, and, as we have seen, a sort of fossilization or petrification. They are monumental, and fixed. Amaury remembers Lamarck's words when he reads Saint-Martin, the spiritualist, and is moved by the revelation that man may experience birth into and life in the universe of

the mind. “J’y voyais exactement le contraire du monde désolant de Lamarck, dont la base était muette et morte” (“It was exactly the opposite of Lamarck’s pitiful world, which was fundamentally silent and dead.” Sainte-Beuve 1964, I, 224.) It is a world which proceeds from a thought, a word, a universe imbued with “quelque pensée d’harmonie, de beauté, de tristesse, d’attendrissement, d’austérité ou d’admiration” (“a thought of harmony, beauty, sorrow, tenderness, austerity or awe.” Sainte-Beuve 1869, II, 160).

Amaury pities those great men whose lives are spent in high pursuits but who actively fend off spiritual thoughts. If Lamarck’s materialist bent is unpalatable to Amaury, his personality is, on the contrary, appealing. The author of this miniature literary portrait must have found it so. It is rather fitting that one of his first sketches should be of Lamarck, since he would later adopt the method of the naturalist in his project to determine the “great families of minds.” Perhaps Sainte-Beuve sensed on some level that Lamarck left behind an incomplete body of work. Lamarck, of course, did not aspire to literary analysis, nor did Sainte-Beuve ever yield to a temptation to create a system. He warned against creating systems, as did Amaury in *Volupté*,¹¹⁸ and yet in his 1862 portrait of Chateaubriand, he calls for the development of a “science du moraliste” parallel to the science of the naturalist, and which “would accomplish for literature what Jussieu did for botany and Cuvier did for comparative anatomy” (Sainte-Beuve 1990, 65).

The odd title of the novel reminds the reader less of the moments of almost-pleasure that Amaury experiences than of another concept with a similar name, *volonté*, one of the great problems of *idéologie*. Knowledge and action are embraced in this paronomasia and are related to each other and to the awareness of self through the sense of touch. Moral judgments, like judgments about the nature of

¹¹⁸ “Je ne me construisais donc pas de système. D’ailleurs les faits de science et de certitude secondaire, les vérités d’observation et de détail ne me paraissaient jamais pouvoir être incompatibles avec les données supérieures ; je croyais beaucoup plus de choses conciliables entre elles qu’on ne se le figure d’ordinaire...” (“Therefore I didn’t make for myself a system. In any case, the facts of science and secondary certitude, truths of observation and of detail never seemed to me to be incompatible with higher givens; I believed many more things reconcilable among themselves than one normally imagines....” Sainte-Beuve 1964, II, 134).

the external world, are mediated through the attraction or repulsion produced by an object on the sensible subject. The subject himself has no understanding of his own existence except through the exercise of his will over the physical objects in his surroundings which resist his will (recalling Tracy). Nor could he have any *ideas*, unless they are supported, causally, by something outside or beyond him, in the very atmosphere around him, as Amaury decides (against Bichat, notably, as discussed in the last chapter): one must not “fermer les canaux supérieurs de l’esprit à ces influences aimables qui le veulent nourrir” (“close the greater channels of the mind to the friendly influences which tend to nourish it”), but remain open to “les ondulations de cette vraie atmosphère qui nous baigne” (“the movements of the true atmosphere around us”) (Sainte-Beuve 1964, II, 225).

Further confusion between *volupté* and *volonté* exists in the two materialist hypotheses Amaury considers regarding *volupté*: 1) that it is independent of the rest of behavior; or 2) that it is part of animal nature, activated in fatigue or excitement (Sainte-Beuve 1964, I, 191). Amaury associates it with youthful melancholy as “une sorte de langueur rêveuse, attendrie, énervée” (“a kind of dreamy languor, tender, enervated”), or again as “une disposition malade qui couvait alors dans la jeunesse et qui n’avait pas été rendue encore à ce degré” (“an ill disposition which lay dormant in youth and which had not yet been realized to this degree”) (Sainte-Beuve 1964, II, 224). Amaury analyzes human nature as the potential to fall prey to two vices, that is, two extremes regarding *volupté*: too much sensual delight leads to humiliation, its absence leads to hubris (Sainte-Beuve 1964, I, 188). Certain pleasures (marked by the plural, “les voluptés”) harden the heart – such as anger – and dissipate genius – as decadence does (Sainte-Beuve 1964, II, 111; I, 192). The final result is the abdication of the most precious treasure, the will.

Amaury explains this abdication which, like Lamarck’s synthesis of the physical and moral facts of existence, bridges the gulf between sensuality and will. He laments that having associated love with physical pleasure even once, one sacrifices freedom to habit and thereafter lives a markedly reduced

existence. He had been deliberately wandering in the seedier parts of Paris, had determined that this was his moment to “fall,” and finally, out of sheer fatigue, gave up on trying to find a prostitute who met the least of his expectations. He later reflects:

Je tuais, comme à volonté, mon remords, et voilà que j'étais dans l'amour subtil. Facilité abusive ! versatilité mortelle à toute foi en nous et au véritable Amour ! L'âme humaine, sujette à cette fatale habitude, au lieu d'être un foyer persistant et vivant, devient bientôt comme une machine ingénieuse qui s'électrise contrairement en un rien de temps et au gré des circonstances diverses. Le centre, à force de voyager d'un pôle à l'autre, n'existe plus nulle part ; la volonté n'a plus d'appui. Nôtre personne morale se réduit à n'être qu'un composé délié de courants et de fluides, un amas mobile et tournoyant, une scène commode à mille jeux ; espèce de nature, je ne dis pas hypocrite, mais toujours à demi sincère et toujours vaine.

I put to death, repeatedly, my remorse, and there I was in a deceptive love. Excessive ease! Fickleness which kills in us all faith and true Love! The human soul, subject to this fatal habit, instead of being a stable living shelter, quickly comes to resemble an amazing machine which turns on randomly and in no time at all at the bidding of diverse circumstances. The center, from being forced to move between one end and the other no longer exists anywhere; there is no longer any support for the will. Our moral being is reduced to existing as a scattered composite of currents and fluids, a mobile and undulating mass, a stage for any and all plays; a species of nature, I wouldn't say hypocritical, but always half sincere and always futile (*Volupté*, 6th ed., 126).

In this passage, the causal reversal that Sainte-Beuve uses is the same as Lamarck's: instead of proceeding from the physical to the moral facts, as Cabanis did, he proposes that the moral being is responsible for changes in the physical being, changes which ultimately affect the moral being as well. Yet there is a criticism of Lamarck's materialist model in that the “species of nature” composed of currents and fluids is in fact *denatured* man.

To Amaury, at least in principle, the damage seems irreversible and perhaps *avoidable*. Indeed, in the first few pages of the novel, Amaury diagnoses his young friend's troubles:

La volupté [...] s'est convertie par degrés en habitude ; mais sa fatigue monotone n'ôte rien à son empire. Vous savez à l'avance ce qu'elle vaut, ce qu'elle vous garde, à chaque fois, de mécomptes amers et de regrets ; mais qu'y faire ? elle a rompu son lien qui la refoulait aux parties inférieures et inconnues ; elle a saisi votre chair, elle flotte dans votre sang... [...] C'est là votre mal. Le premier entraînement a fait place à l'habitude, et l'habitude, après quelque durée, et quand aucune violence analogue à l'âge ne la motive plus, s'appelle un vice. Vous sentez la

penne, et lentement vous y glissez. Hâtez-vous de vous relever, mon ami, il le faut, et vous le pouvez en le voulant.

Sensual delight [...] converted itself by degrees into habit; but its droning weariness does not diminish its empire. You know in advance what it is worth, what it reserves for you, each time, in bitter disappointments and regrets, but what can you do? It severed the tie that kept it contained in the underlying unknown parts, it seized your flesh, it circulates in your blood... [...] That is what ails you. The first concession made way for habit, and habit, after some time, which no violence proportional to age motivates anymore, is called a vice. You sense the downslope, and you slide slowly toward it. Quickly climb back up, my friend, you must, and you can by so willing (*Volupté*, 6th ed., 4-5).

The picture of the maturity of the languid disposition described above is akin to a disease, a physical transposition of moral monstrosity. The origin of the disease is best described as genetic, evolving from a helpful instinct into a pathological obsession. The paradox consists in the conjunction between sensing the danger and moving toward it. Is this the necessary end of a series of contingencies, biologically and philosophically speaking?

If for Lamarck the end of life (both in the particular and in the general) is organic, mundane, predictable and inevitable, the beginning or origin of life is not. The subtle dualism in Lamarck's apparently solid material monism exists in his reticence (or inability) to thoroughly assimilate the living organism, indeed, the phenomenon of life itself, into the material order. The living organism is subject to the same laws of nature as inanimate nature, but as Sainte-Beuve describes it, life for Lamarck is "like a strange and singularly industrious accident":

...Car M. de Lamarck séparait la vie d'avec la nature. La nature, à ses yeux, c'était la pierre et la cendre, le granit de la tombe, la mort ! La vie n'y intervenait que comme un accident étrange et singulièrement industriel, une lutte prolongée, avec plus ou moins de succès et d'équilibre çà et là, mais toujours finalement vaincue ; l'immobilité froide était régnante après comme devant.

...Indeed, M. de Lamarck distinguished between life and nature. Nature to him was stone and ash, the granite sepulcher, death! Life was a strange and singularly industrious accident, a prolonged struggle, more or less successful and stable here and there, but always vanquished in the end; cold rigidity reigned before and after it (Sainte-Beuve 1964, I, 197).

This passage offers both hope and despair: Life succeeds against non-living nature, but only for a while. Here is the possibility of continuity between the materialist past and the industrious future, but for the individual, and particularly for the romantic hero, it is difficult to reconcile oneself to future immobility. What is more disconcerting, and ultimately unacceptable to Amaury (and perhaps to Sainte-Beuve as well) is not the apparent contradictions in Lamarck's theory, but his universe in which man is not the measure of all things, a universe lacking in purpose and reflection, that is, in thought. Man stands out among the unconscious animals, and life stands out against an insensitive natural world. Humankind occupies a lonely place.

We might read Amaury's petrified cliff giant image as a description not only of the outmoded and doomed worldviews of both the marquis and Lamarck, but also an allegory of the Lamarckian growth and decay process. The cliff¹¹⁹ may in the first sense be taken to represent the monumental historic past which indirectly influences the future, through the streams which spring from it. In the second sense, the living man is eventually "petrified" through the activity of life itself. This touches on the theme of aging, especially aging before one's time, which haunts the novel, and it provides an unusual mold for the romantic hero.¹²⁰ The young hero is overshadowed by the aged or aging hero.

The narrator (an older Amaury) cautions the young man in love to whom he is addressing the story of his life in a letter, "L'âge pour vous va venir; votre rire aimant sera moins gracieux, votre front se dépouillera davantage, ses cheveux, à elle, blanchiront, chaque fin d'année y laissera sa neige. Réfugiez-vous d'avance où rien ne vieillit !" ("Old age will come for you; your affectionate laughter will be less kindly, your forehead will grow bald, her own hair will whiten, each year's end will leave more snow. Take refuge before it is too late where nothing grows old!" Sainte-Beuve 1964, I, 109-110).

¹¹⁹ A similar landscape appears in *La Peau de chagrin* as well. Raphaël de Valentin achieves an almost restful state near a lake sheltered by rocky cliffs at Mont-Dore; it is in this setting that he begins to experience a vegetative existence (Balzac 1996, 293, 307, 313).

¹²⁰ Compare with Amanda Goldstein's reading of Shelley's *Triumph of Life*, in *Sweet Science*, chapter 4.

Had Sainte-Beuve by this point outgrown his appreciation for Lamarck? Or are we to assume that Lamarck only mattered for his fiction? No, for two reasons. The first is that, again, Lamarck's portrait in *Volupté* is the first of Sainte-Beuve's experiments in literary portraiture. It is reasonable to suppose that this firstborn of his literary work in this genre may have enticed him to produce more. In one of the *pensées* which he included at the end of the third volume of his *Portraits littéraires*, he wrote: "J'ai commencé franchement et crûment par le XVIIIe siècle le plus avancé, par Tracy, Daunou, Lamarck et la physiologie : là est mon fond véritable" ("I started squarely and rashly with the very late eighteenth-century thinkers, with Tracy, Daunou, Lamarck and physiology: That is really the core of my thought." Sainte-Beuve 1862-1864, III, 545). His sympathies lay with Tracy, Fauriel, and Cabanis, and he defended Condillac's followers from charges of hedonism (Picavet 492-493). Picavet remarks that Sainte-Beuve came full circle: "En 1865, [Sainte-Beuve] écrit à M. Duruy que le spiritualisme pur est la doctrine la plus opposée à ses tendances" ("In 1865, [Sainte-Beuve] wrote to Mr. Duruy that pure spiritualism is the doctrine the most contrary to his tendencies." Picavet 493). Lamarck's version of nature stands in opposition to that of Cuvier, Chateaubriand, and William Paley, to mention a few (as Ludmilla Jordanova has pointed out). Amaury's rejection of Lamarck's worldview possibly marks the limits of Lamarck's literary influence, but at the same time, it may represent the beginning of Sainte-Beuve's project of literary classification, and also, in some way, define the urgent human need for such a project.

Conclusions

One would expect the reflection on aging from a novel written as a memoir-letter to a friend from the pen of an older Amaury. By the end of the novel, Amaury is on a boat within sight of New York, in 1820-something. He would be in his forties. One expects that he would, in the course of the narrative, comment (from the older and wiser perspective) on the impetuosity and naïveté of youth, but we more often find instead, embedded in the text, reflections attributed to the *young* Amaury about feeling

untimely old, marked by “un sentiment profond d’épuisement et d’arrêt” (“a deep feeling of exhaustion and inertia.” Sainte-Beuve 1964, II, 113). The chronological disruption may not be axiomatic, but it is at least noteworthy. Significantly, one occurrence of this in the novel happens on a December day at the Jardin des Plantes, where Amaury and Madame de Couaën have gone, with her children, to observe the animals kept there (Sainte-Beuve 1964, I, 138). The theme of the old youth occurs in both of the other novels. Raphaël notes the youthfulness in the centenarian’s eyes and is himself returned to the fresh appearance of early childhood in opiate-induced sleep, he is referred to as “ce jeune cadavre,” “un faux jeune homme” or “un jeune vieillard” (Balzac 1996, 43). In the second paragraph of *Armance*, Octave is described as “misanthrope avant l’âge” (“misanthropic before his time.” Stendal 1975, 50) and the scene is set for the novel by a seasonal anachronism: “On jouissait des derniers beaux jours d’automne qui à Paris, est le printemps” (“It was a lovely Indian summer which in Paris, is spring.” Stendal 1975, 53). Balzac described “men of science” similarly in *La Recherche de l’Absolu*: “Plus intempestifs que distraits, ils ne sont jamais en harmonie avec ce qui les entoure” (“More poorly timed than distracted, they are never in sync with what is around them.” Balzac 1839, 116).

The three novels I examined here track several transitions. The first is personal and individual: each novelist experienced *Idéologie* as a youth, and each in his own way emerged from this influence by grappling with its limits. Stendhal, the oldest of the three, was particularly concerned with the problem of utility, and the mechanics of social consciousness as well as conscience. Balzac examined the interface between mind and body, until he was sure that he had exposed the most fundamental mystery of human existence, the will. Sainte-Beuve appears to have rejected for a time the materialist strain of *idéologie* but continued to practice self-observation of habit and sensation and decided that self-knowledge is the way to remain free from the tyranny of habit. The second transition is methodological. There is growing concern for the best way to understand human society, whether from the individual to the group, or the group to the individual. Models adapted from natural history (inheritance, influence of

climate and habit) find their way into biographical and historical approaches in literature. The third transition is toward a romantic aesthetic, a kind of reinterpretation of Enlightenment humanism, a new turn in *idéologie*. Amaury discovers that “L’homme naît et vit dans les pensées” (“Man is born and lives in thought.” Sainte-Beuve 224). In fact, if we are to judge by what Raphaël tells Fœdora in *La Peau de chagrin*, an entire world exists apart from the one shared by all sentient beings: *ideas* are “des êtres organisés, complets qui viv[ent] dans un monde invisible” (“complete organized beings that live in an invisible world.” Balzac 1996, 163).

The history of consciousness as developed through a longitudinal sample of uses of the term *sentiment intérieur* necessarily involves not only Locke, but Malebranche, Descartes, Spinoza, and a host of other philosophers and scientists, as well as novelists, historians, and theologians. As I have shown, references to a philosophical concept of the *sentiment intérieur* appear in all three novels. In *Armance*, Octave refers to “une règle antérieure à toute expérience” (“a rule prior to all experience.” Stendhal 1975, 198),¹²¹ which *Armance* derides as bad philosophy;¹²² in *La Peau de chagrin*, Raphaël de Valentin is

¹²¹ The Kantian resonance is duly noted. Tracy’s critique of Kant’s philosophy, read 7 floréal an X (27 April 1802) at the Institut national pointed out several ways in which it represents the opposite of *idéologie*: “Or, [Kant] considère la sensibilité comme passive, par opposition à l’entendement qui serait actif, ce qui est le contraire de la vérité. Il parle des objets sensibles comme des choses extérieures à nous, tout en répétant que la sensibilité fournit à l’entendement toute la matière de ses conceptions, sans expliquer qu’il y a des impressions qui viennent de nos organes intérieurs et des fonctions vitales, comme des impressions venant des objets extérieurs ; qu’il y a des souvenirs ou perceptions d’impressions passées. [...] La raison est dite la faculté de conclure du général au particulier, ce qui serait, en supposant qu’une telle faculté pût exister, l’inverse de la raison, puisque c’est toujours des idées particulières que nous nous élevons aux idées générales. Toute cette analyse est donc imparfaite et ne peut conduire à rien de solide. [...] On présente l’espace et le temps comme des formes dont notre cognition revêt les phénomènes et non comme des attributs des choses en elles-mêmes ; tandis que notre cognition ne revêt ni les phénomènes ni les choses d’aucune *forme*, n’impose des *lois* à rien, mais observe les choses, remarque les phénomènes qu’elles présentent et reconnaît les lois qu’ils suivent. Voilà à quels résultats on aboutit, en s’appuyant sur des principes abstraits, et non sur des faits, et en croyant que les idées générales nous donnent les moyens de juger des idées particulières !” (“Now, Kant considers sensibility to be passive, in contrast to understanding, which he considers active, which is the opposite of the truth. He speaks of sensible objects as of things outside us, while repeating that sensibility furnishes the understanding with all of the material for its conceptions, without explaining that there are impressions that arise from our interior organs and vital functions, even as there are impressions arising from exterior objects; that there are memories or perceptions of past impressions. [...] Reason is called the faculty of concluding from the general to the particular, which would be, supposing that such a faculty could in fact exist, the opposite of reason, because it is always from particular ideas that we raise ourselves to general ideas. All of this analysis is therefore imperfect and cannot lead to anything solid. [...] He presents space and time as forms with which our cognition clothes phenomena, and not as attributes

overwhelmed by the incommensurability of the past and can muster “aucune perception claire” (Balzac 1996, 79), while attempting to practice Cartesian doubt; finally, in *Volupté*, Amaury’s “more serious diversions” include, among others, reading Malebranche’s *Entretiens métaphysiques* (Sainte-Beuve 1964 I, 57-58).¹²³

If the primacy and anteriority of the *sentiment intérieur* are questioned, along with its authority in matters of faith, the *sentiment intérieur* as that power which coordinates the senses, the passions, and the higher faculties remains a viable hypothesis, including the *sentiment intérieur* as the potential for conscious awareness. If Octave somehow lacks this coordination, or has suppressed it somehow, Raphaël de Valentin and Amaury acknowledge it and struggle to establish control over it. While Octave is both reason and instinct, he is unable to connect either of these to his sensitive and sensual existence. He declares to have learned from the philosophy of the eighteenth century to trust the conclusions he draws from the “rapport des organes” (“interconnectedness of the organs.” Stendal 1975, 55). He is blindsided by his love for Armance, in the kind of irony that Stendhal registered in himself in *La Vie de Henry Brulard*: “l’œil ne se voit pas lui-même” (“the eye does not see itself.” Stendhal 1973, 154), and which appears in *Armance* in Octave’s unrealized mirror fantasy (Stendal 1975, 67). Malebranche formulated the dilemma: “rien n’est plus sûr que le sentiment intérieur pour prouver qu’une chose est: mais il ne sert à rien pour connaître ce que c’est” (“nothing is surer than the inner feeling to prove that something exists, but it is useless for cognizing what it is.” C. G. Davies 16). Stendhal’s Octave retraces two ancient inscriptions discussed by Cabanis in the second and third memoirs of his *Rapports du*

of those things in themselves; whereas our cognition dresses neither the phenomena nor things with any *form*, imposing *laws* on nothing, but always observes things, noticing phenomena that they present and recognizing the laws that they follow. These are the results one gets from leaning on abstract principles, and not on the facts, and believing that general ideas give us the means to judge particular ideas!” Destutt de Tracy 1801, 544-606).

¹²² As does one of the *convives* at the feast in *La Peau de chagrin*: “Kant, monsieur. Encore un ballon lancé pour amuser les niais ! Le matérialisme et le spiritualisme sont deux jolies raquettes avec lesquelles des charlatans en robe font aller le même volant...” (“Kant, sir. Another ball tossed in the air to amuse the simple! Materialism and spiritualism are two pretty racquets with which robed charlatans keep the same shuttlecock in the air....” Balzac 1996, 111).

¹²³ Also Bacon, Bichat, Adam Smith.

physique et du moral de l'homme, the first, “Je suis ce qui est, ce qui a été, ce qui sera, et nul n’a connu ma nature” (“I am what is, was, and will be, and no one has discovered my nature”), is an avowal of ignorance of first causes, and the second, “Connais-toi toi-même” (“Know thyself”), is, as Cabanis describes it, “l’indication formelle et précise du but que doivent se tracer la philosophe rationnelle et la philosophe morale” (“the precise formal indication of the common object of both rational and moral philosophy.” Cabanis 133).

Raphaël is capable of extremes as well, oscillating between belief and doubt, delighting in both pleasures of the intellect and of the senses. Around him, his friends Émile and Nathan debate the testimony of the inner feeling: “...[T]aisez-vous, sceptique.” “Les sceptiques sont les hommes les plus consciencieux.” “Ils n’ont pas de conscience.” “Que dites-vous ? ils en ont au moins deux” (“[B]e quiet, skeptic.” “Skeptics are the most conscientious of men.” “They don’t have a conscience.” “What? they have at least two.” Balzac 1996, 110.) Raphaël’s own studies amount to little else than a recognition of the principles at work in his own body: “Mes études sur notre puissance morale, si peu connue, servaient au moins à me faire rencontrer dans ma passion quelques preuves vivantes de mon système” (“My studies of our moral power, so little understood, were at least useful for establishing in the midst of my passion some living proofs of my system.” Balzac 1996, 169). That is, his *philosophical* system. Raphaël attests, “Je juge au lieu de sentir” (“I judge rather than feel.” Balzac 1996, 129). Love reveals his “double nature” in the end: “Rien dans les langages humains, aucune traduction de la pensée faite à l’aide des couleurs, des marbres, des mots ou des sons, ne saurait rendre le nerf, la vérité, le fini, la soudaineté du sentiment dans l’âme ! Oui ! qui dit art, dit mensonge. L’amour passe par des transformations infinies avant de se mêler pour toujours à notre vie et de la teindre à jamais de sa couleur de flamme” (“No human language, no translation of thought into color, marble, words or sounds could render the nerve, the truth, the completeness, the spontaneity of the feeling in the soul! Yes! Art lies! Love transforms itself in infinite ways before blending into our lives for good and coloring it

forever after with the hue of its flame.” Balzac 1996, 166-167). Even after completing the revolution in his thought about the influence of the moral upon the physical, Raphaël is trapped in indecision. In a paroxysm of power and knowledge, he realizes he lacks will.

Amaury discovers the insidious penchant for vice which consists in habitual indulgence, ultimately rendering human action involuntary and bestial, or in other words, instinctual. Pascal had spoken to the salutary effect of self-knowledge: “Il faut se connaître soi-même. Quand cela ne servirait pas à trouver le vrai, cela au moins sert à régler sa vie, et il n’y a rien de plus juste” (“One must know oneself. Even if this is no help in finding truth, at least it helps to regulate one’s life, and there is nothing else more right and meet.” Pascal 2004, 92, frag. 68). Amaury’s departure for America at the end of the novel is significant in that he does what Octave could not, that is, escape geographically, and his ordination as a priest indicates that he completed the conversion which Raphaël could not. He escapes death, too, apparently by sacrificing (not actually, but virtually and through the unfolding of the narration) the object(s) of his desire; both his love of the marquise and his failed emulation of the marquis were obstacles to his education until her death.

Despite the great differences between *Volupté* and *La Peau de chagrin*, in terms of genre, tone, and aims, not to mention aesthetics, the same message is conveyed: non-human nature threatens human life with the weightiness of its ancient and sizeable existence. Each novel approaches this problem in a different way. Amaury rejects Lamarck’s “blind, deaf, and dumb” version of the natural world even as he is drawn to Lamarck, the tragic persona. Raphaël, in uncovering and representing the failure of science, also shows its human and sympathetic face in the novel. One may grow old in the pursuit of knowledge, yet nothing else can instruct us in the use of power, and therefore, nothing is more worth seeking, except perhaps the will to refrain from using it (power, that is): “Il pensa tout à coup que la possession du pouvoir, quelque immense qu’il pût être, ne donnait pas la science de s’en servir. Le sceptre est un jouet pour un enfant, une hache pour Richelieu, et pour Napoléon un levier

pour faire pencher le monde. Le pouvoir nous laisse tels que nous sommes et ne grandit que les grands. Raphaël avait pu tout faire, il n'avait rien fait" ("Suddenly, he thought how the possession of power, as great as it might be, did not confer the knowledge of how to use it. A scepter is a toy for a child, an axe for Richelieu, and for Napoleon, a lever to tip the world. Power leaves us as we are and only greatens the great. Raphaël had been able to do everything, and he did nothing." Balzac 1996, 306-307, 160).

Where, between *savoir* and *pouvoir*, does the writing of the novel take place? This reflexive thought is everywhere in Stendhal's diaries and in Balzac's fiction. Stendhal wrote on Chaper's copy of *La Chartreuse de Parme*, "Aimes-tu mieux avoir eu trois femmes ou avoir fait ce roman?" ("Do you prefer having had three women or having written this novel?" Stendal 1975, 41). Rhetorical question! Bardèche remarks that the *Idéologue* and the historian worked side by side in *Armance*, and that the resulting combination was a novelist, a fact which probably surprised Stendhal (Bardèche 157). Philarète Chasles, in his introduction to Balzac's *Romans et contes philosophiques*, described the malady that affected society at large and each of its members in turn during the "most analytic period of the modern era" (Chasles x) as a kind of galvanized cadaver wilting everything it seizes, and finally "killing the joy of the life of the mind" (Chasles xi). What Balzac did in *La Peau de chagrin*, according to Chasles, is paint "la désorganisation produite par la pensée" ("the disorganization caused by thought." Chasles xiii). For Balzac, Bichat himself represented such "disorganization." as Satiat notes, "Marie-François [Xavier] Bichat, chirurgien physiologique, fondateur de la biologie [ou de l'histologie] (1771-1802), donna de la vie cette définition restée célèbre: 'La vie est l'ensemble des fonctions qui résistent à la mort.' Il mourut très jeune des suites de travaux excessifs, et cette mort prématurée fit de lui une figure emblématique pour les romantiques. Le médecin de Balzac, le docteur Nacquart, lui répéta souvent que s'il ne se ménageait pas, il mourrait comme Bichat" ("Marie-François [Xavier] Bichat, physiological surgeon, founder of biology [or histology] (1771-1802), gave a definition of life which has become classic: 'Life is the sum of functions which resist death.' He died very young from having worked too hard, and his

premature death made him a kind of emblematic figure for the Romantics. Balzac's physician, doctor Nacquart, often told him that if he didn't spare himself a little, he would die like Bichat." Balzac 1996, 113, 349, n. 157). (There are other theories on Bichat's cause of death.) The dilemma for the novelist seems to be posed in *La Peau de chagrin*:

Tes deux systèmes peuvent entrer dans une seule phrase et se réduisent à une pensée. La vie simple et mécanique conduit à quelque sagesse insensée en étouffant notre intelligence par le travail ; tandis que la vie passée dans le vide des abstractions ou dans les abîmes du monde moral mène à quelque folle sagesse. En un mot, tuer les sentiments pour vivre vieux, ou mourir jeune en acceptant le martyre des passions, voilà notre arrêt.

Your two systems can be expressed in a single sentence and form a single thought. A simple, mechanical life leads to senseless wisdom by stifling our intelligence with labor, whereas a life spent in the void of abstractions or in the abysses of the moral world leads to wise folly. In short, douse all feeling in order to live long, or die young, accepting the martyrdom of the passions, this is our fate (Balzac 1996, 125-126).

This is how the inner thoughts and the physical characteristics of the novelist become part of the "realist" novel. As Yvon Bélaival expressed it, "Le roman de métaphysique se transpose dans la métaphysique du roman, émaillé de petits détails qui font vrai. On peint l'original, le 'caractère'" ("The metaphysical novel is transposed into the metaphysics of the novel, dotted with little details which seem true. One paints the original, the 'character.'" Bélaival 256).

I used a comparison of styles of reference in Balzac's *La Peau de chagrin* in order to better situate the Cuvier passage in the context of the novel. This proved to be difficult, but it did illuminate the asymmetric orientation toward science from the beginning to the end of the novel, and points to the problematic interpretation of history and man's place in it. This is, effectively, what Sainte-Beuve's reference to Lamarck does. The style of reference in each case highlights a narrative regime which is particular to each author: Balzac's narrator often takes an ironic stance toward the protagonist and the other characters in the world he inhabits, while Sainte-Beuve's narrative voice only differs from the protagonist's as a function of the time which has elapsed between the events described and the narrative present. Still, it is worth asking whether the effects of the reference to science are the same in

both novels. Earlier, I raised the question of authenticity versus hyperbole, but this is, of course, a question which must be tried on the basis of textual evidence alone.

In Sainte-Beuve's novel, the Lamarck cameo functions, as I pointed out, as a kind of narrative doubling of the marquis de Couaën and encourages the association of the two by virtue of their age, experience, and vision of the world. It also functions as a counterpoint to Amaury's vision of reality; he is able to articulate his view by reference to Lamarck's in the *negative*. And so it goes for the other two protagonists. Octave de Malivert stubbornly pursues his ideal in the form of an unreactive, abstemious, impersonal philosophy of utility, but falls victim to a Laclosian, Old Regime plot twist in the form of a forged letter and is subsequently driven to suicide, never living out his Saint-Simonian fantasy. Raphaël de Valentin's own aspirations as a scientist and philosopher are frustrated by a similarly improbable bit of plot, the pelt, and the last part of his story is marked by progressive renunciation: of science, of love, of action, of consciousness itself, since he desires to prolong his life in sleep. In a way, his refusal to die, to become part of the catalog of history which he glimpses both in the antiquarian's treasures and in the sweeping view of the paleontologist's record (Cuvier's ranks of fossil animals), is a rejection of Cuvier's science.

Amaury repudiates *idéologie*, and with it all that represents the past order, through his rejection of Lamarck's philosophy. Unlike the fascination with Condillac's statue that appears in Stendhal's and Balzac's fiction,¹²⁴ Sainte-Beuve's cliff giant represents a fully monolithic yet also composite history. Fluid motions have carved it from the hardened sediment of life. It is as though, in Sainte-Beuve's novel, a certain Romanticism came of age which was as of yet incompletely developed in Stendhal's and Balzac's earlier novels. This romantic vision had to shed the weight of past philosophies, fear of superstitions and systems, the stain of debauchery, and the more personal attachments to the

¹²⁴ Bardèche points out the character development in *Armance*, in which the protagonist is constantly transforming in front of our eyes according to the current stimulus: "C'est toujours la statue de Condillac" ("He is still Condillac's statue." Bardèche 153). If only Pauline were made of marble, thinks Raphaël, a "new Pygmalion" (Balzac 1996, 153, n. 229), then perhaps he could escape his desire for her.

philosophy of the past – relationships with mentors, protectors, professors, philosophers and objects of discipleship – in order to become fully fledged, or, perhaps, to assert control over the making – and telling – of history.

The grammar of science, which came under revision while Lamarck was in his prime, reflects two conflicting views of nature: the panoramic anthropocentric view which is characteristic of Buffon's works and the reflexive restricted (or selective) view which is characteristic of Cuvier's works. Between the two, however, a humble outlook of informed doubt exists which tentatively bridged the gap between sensory and subjective experience less by actually connecting the two than by taking the measure of the distance between them. In this perspective, life and the life of the mind exist as a potential which is ultimately dependent upon everything "outside" it, an "industrious accident." This is the space of the Lamarckian moment.

This is why, as has sometimes been noted, many of Lamarck's readers have overemphasized a single aspect of Lamarck's thought: the role of habit, the influence of the environment, or the power of the will. One philosopher from the early twentieth century saw it this way:

Although his conception of the nervous system is in certain respects schematical and uncertain, although he does not borrow sufficiently from the studies of Bichaton the autonomy of the great sympathetic [nerve] as regards the nervous system, Lamarck does not content himself with emphasizing, as do Cabanis, Tracy and Stendhal, the primordial character of emotion, whose organic origin he determines. He also reveals the dominion of mind over sensibility at a certain stage of organization. Thus does he fill up a gap left by the Ideologists, the contemporary French and American schools, William James and Ribot, when they regard the action of the physical upon the moral as the exclusive object of all positive investigation and regard as inconceivable the action of the moral upon the physical (Lenoir 225).

I concluded Chapter 2 with the suggestion that the paradox represented by the *sentiment intérieur* leads to other paradoxes of the human condition. Buffon indicated what they might be by quoting Pascal:

"Toute notre dignité consiste donc en la pensée" ("All our dignity consists in thought." Pascal 2004, 161, frag. 186). Rousseau added, "Tout animal a des idées puisqu'il a des sens, il combine même ses idées jusqu'à un certain point, et l'homme ne diffère à cet égard de la Bête que du plus au moins [...] Ce n'est

donc pas tant l'entendement qui fait parmi les animaux la distinction spécifique de l'homme, que sa *qualité d'agent libre*" ("Every animal has ideas because it has senses, it even combines its ideas to a certain extent, and in this regard, man only differs from beast as from the highest to lowest degree [...]) Therefore it is not so much the understanding which constitutes man's specific distinction among the animals, as *his quality of free agent*"; "la nature seule fait tout dans les opérations de la bête, au lieu que l'homme concourt aux siennes, en qualité d'agent libre" ("nature alone produces all the animal operations, whereas man concurs in his, in his quality as free agent") (Rousseau 1992, 182-183).

As Balzac shows, Georges Cuvier represented this mastery of the material realm in his nascent science of paleontology, which had a great popular following. Claudine Cohen demonstrated the impact it had on literature in her study of the post-revolutionary and post-Empire imagination. Abbé Jacques Delille composed a long didactic poem for which Cuvier agreed to write the scientific annotations, *Les Trois règnes de la nature* (1809); Pierre Boitard imagined *Paris avant l'histoire*; and Louis Bouilhet transposed the history of the earth in poetry in *Les fossiles* (1852-1854) (Cohen 185). Rivalry between the former friends grew while Geoffroy Saint-Hilaire accompanied Napoleon's campaign in Egypt and lasted even after Cuvier's death in 1832 because Cuvier's ideology outlived him (Bourdier 318). When Geoffroy Saint-Hilaire, who had contributed to the public taste for grandiose animals of the past, challenged Cuvier over the proper methodological approach to comparative anatomy, the obstacle that Cuvier posed to the reception of Lamarck's theories was removed. Geoffroy Saint-Hilaire recommended Lamarck's *Philosophie zoologique* to young readers in 1824 (Bourdier 321). The highly publicized debate may have inspired authors from Chateaubriand and Balzac to Flaubert and Baudelaire, Taine and Zola (Lloyd 190). In fact, by degrees of connection one proceeds from Lamarck and Geoffroy Saint-Hilaire to George Sand, whom Geoffroy Saint-Hilaire asked to ply her talent for fiction in support of his ideas. However, as Sainte-Beuve's novel reveals, Lamarck's open disdain for Christian dogmas may also have been repellent to more pious members of Amaury's generation. Madame de Couaën is one of these;

she does not believe that the surface of the earth was formed through the erosive force of rain and the displacement of the seas. With time, Lamarck's ideas were also recovered by some who had initially resisted them, particularly by Auguste Comte (see general introduction). This would be the beginning of a period favorable to Lamarck's views, and which rallied them to serve positivist science and the growing French nationalism.

Lamarck provided a physical explanation of how a living being was once able to shed light on nature which had been captured from nature itself, how humankind is in some sense living on borrowed light. Free energy in the environment was channeled through living tissues, causing the fluid energy to accelerate, pool, undulate and overflow until it left traces and produced thought where there had been none before. Because man is "entirely subject to the laws of nature," he can have no unmediated knowledge of himself, but rather, the more he knows about nature, the more he will understand himself. Goethe and Biran confirmed this in their own way: B elaval interprets Goethe, "Un homme ne se connaît jamais par la m editation, mais toujours par l'action" ("A man never knows himself through meditation, but always through action." B elaval 255); Merleau-Ponty reads Biran, "Telle est la voie que dessinait la conception biranienne de l'identit e de la pens ee et de la motricit e voulante: quoique nous soyons conscience et libert e, nous avons   les devenir,   les r ev eler,   nous faire conscience et libert e. Il faut donc accepter de nous penser comme une antith ese vivante" ("Such is the path that the Biranian concept of the identity of thought with motor determination traced: although we are consciousness and freedom, we have to become them, reveal them, make ourselves consciousness and freedom. We must accept thinking of ourselves as a living antithesis." Merleau-Ponty 64). This is the way in which Lamarck's natural history was decidedly relevant in his time, although his contemporaries – colleagues, students, friends – perhaps tended to see it only as a description of the walls of the cell to a freed fellow prisoner.

Conclusion: Literary Theory and Biology – Un futur acheminement parallèle ?

“Nous sommes singulièrement tristes depuis que nous sommes si singulièrement libres.”

Honoré de Balzac, *Lettres sur Paris*, October 1830.

Lamarck’s theory of animal life combines the insistence upon the primacy of sensation, the materialist foundation for the mind, its states and functions, and the observable gradation, or emergence, of consciousness among animal species. My work has been to situate Lamarck in a history of literature and philosophy which considers special rhetorical and conceptual problems in the genre of natural history and which helps to explain both the silence and the enthusiasm with which his ideas were met by subsequent generations of scientists and writers. This perspective sheds light on the end of natural history in the early nineteenth century as it had been practiced up until then. It clarifies the points upon which Lamarck’s thought, and *Idéologie* more broadly, was pivotal between two eras, and invites us to read early romantic novels with a fresh take on the inner world of the protagonists, the aging hero, then the naturalist-hero, and the issues facing a generation of writers who had been influenced by the *Idéologues*. The *mal du siècle* appears as a phenomenon experienced by the youth but translated through the experience of more mature persons.

Michel Foucault wrote in 1966, “Avant la fin du XVIII^e siècle, l’homme n’existait pas. [...] C’est une toute récente créature que la démiurgie du savoir a fabriquée de ses mains, il y a moins de deux cents ans : mais il a si vite vieilli, qu’on a imaginé facilement qu’il avait attendu dans l’ombre pendant des millénaires le moment de l’illumination où il serait enfin connu” (“Before the end of the eighteenth century, man did not exist. [...] He is a very recent creature, formed in the hands of the demiurge of knowledge, less than two hundred years ago: but he grew old so quickly, that it was easy to imagine that he had been waiting in the shadows for several millennia for the moment of illumination when he would finally be made known.” Foucault 319). The paradox that developed over the period I have studied seems best illustrated by Raphaël de Valentin, at the end of *La Peau de chagrin*: “Un rose vif colorait ses

joues blanches. Son front gracieux comme celui d'une jeune fille exprimait le génie. La vie était en fleurs sur ce visage tranquille et reposé. Vous eussiez dit d'un jeune enfant endormi sous la protection de sa mère" ("His pale cheeks blushed pink. His serene forehead like that of a young girl expressed his intelligence. Life blossomed in his quiet and restful face. You would have thought it was that of a young child asleep, cradled by his mother." Balzac 1996, 322); but in his dream, "Peut-être était-il centenaire..." ("Maybe he was a hundred years old...." Balzac 1996, 323).

Raphaël's peaceful sleep challenges an earlier observation in the novel that sleep is, for the *savant*, full of riddles (Balzac 1996, 163). D'Alembert's fitful sleep in Diderot's *Le rêve de d'Alembert* (1769) reveals many riddles, but so does Doctor Bordeu, to the point where Mademoiselle de Lespinasse exclaims, not without sarcasm, "Je puis donc assurer à présent à toute la terre qu'il n'y a aucune différence entre un médecin qui veille et un philosophe qui rêve" ("I can now declare to everyone everywhere that there is no difference between a waking doctor and a dreaming philosopher." Diderot 1961, 293). For a time, perhaps, this was true. The enchantment of analysis, of the ability to understand the elements of human experience and thereby purify thought, guide the passions, and heal the body was powerful. As Bélaival remarked, we often talk about the age of Voltaire, Rousseau, and the *Encyclopédie*, but it would be more fitting, in France, to talk about the age of Condillac (Bélaival 252).

Bélaival stresses that the immobility of meditation (the paralysis of the body asleep?) was part of the problem of application for philosophy as it emerged from the seventeenth century: "A partir des idées acquises, un rationalisme sceptique; à partir du "sens" – inné peut-être – un dogmatisme du sentiment. Une des plus graves erreurs à commettre sur le 18e siècle serait d'arrêter la lecture de Hume aux premiers livres du *Treatise* ou de l'*Inquiry*, celle de Kant à l'*Analytique* de la *Critique de la raison pure*. Ce serait s'arrêter au seul problème de la connaissance, qui n'était pour eux que l'introduction à leur vrai problème : celui de l'*action*" ("From acquired ideas to a skeptical rationalism; from the "sense" – innate perhaps – to a dogmatic sensationalism. One of the most serious errors one can make about

the 18th century would be to read Hume only as far as the first books of the *Treatise* or of the *Inquiry*, or Kant only as far as the *Analytic* of the *Critique of Pure Reason*. This would mean stopping at the problem of knowledge, which was for them only the introduction to their true problem: that of *action*.” BÉLVAL 254). The same could be said of the *Idéologues* and their disciples.

For Lamarck, making the leap from sensation to action meant comprehending the existence of the simplest animal (“animalcule”) and thereby the physical basis for the first idea, at the opposite extreme of animal organization. The “experiments” of the novelists and their protagonists take shape according to similar principles – observation of diversity, analysis, classification, self-reflection – and also probe the limit between being and non-being. Raphaël in life came the closest to non-being when he returned to an early stage of existence in sleep that resembles that of an infant whose every need is met. Stendhal wrote in his diary (1805) about a near accident involving a carriage like the one Octave avoided; he almost regretted not having been killed, so great was his yearning to be elsewhere and otherwise with the woman he loved: “Je voudrais être anéanti jusqu’à demain midi, où je dois la revoir” (“I would like to be annihilated until tomorrow noon, when I shall see her again.” Stendal 1975, 65, 281, n. 6). It seems that Rousseau haunted these experiments. In his *Rêveries du promeneur solitaire*, Rousseau describes being knocked off his feet by a running dog, and recovering consciousness gradually: “Je naissais dans cet instant à la vie...” (“I was being born in that moment into life....” Rousseau 1994, 24-27). Octave wished to have been born in Geneva, like the *promeneur solitaire*. Raphaël thinks of the *lac de Biemme* as one of the most purely pleasurable visions he had had, and wonders to himself if he was lodged in the *very house* where Rousseau had been. Balzac and Stendhal may have wondered, with Rousseau, whether “l’état de réflexion est un état contre nature” (“the state of reflection is against nature”), and whether “l’homme qui médite est un animal dépravé” (“the man who thinks is a depraved animal.” Rousseau 1992, 180). Lamarck, whose thought overlaps with Rousseau’s in several ways, was

disappointed that Rousseau had condemned the sciences and “wrote them off in too absolute a manner” (Lamarck 1820, 62).

Ferdinand Brunetière wrote of Balzac that he was one of the writers who “had set in motion, in the conception that we form for ourselves of the world, the deepest and most thorough revolution,” and to Sainte-Beuve, Balzac, Victor Hugo, Auguste Comte, he hesitated to assign honor among the scientists, saying that one day the honor would go to Geoffroy Saint-Hilaire, Cuvier, Claude Bernard or Louis Pasteur, but that without a doubt, Charles Darwin, or for the French, Lamarck must be named (Brunetière 309-310). Giard points out that the writers Brunetière listed, with the exception of Hugo, recognized their debt to Lamarck (Lamarck 1907, 6, n. 2). We have to ask whether Cuvier was not thinking of *Balzac’s* novel when he described Lamarck’s system of natural philosophy as an enchanted castle emanating from a talisman.¹²⁵ “Les hommes ont-ils le pouvoir de faire venir l’univers dans leur cerveau, ou leur cerveau est-il un talisman avec lequel ils abolissent les lois du temps et de l’espace? ...La science hésitera longtemps à choisir entre ces deux mystères également inexplicables” (“Do men have the power to summon the universe inside their brains, or is their brain a talisman with which they sweep away the laws of time and space? ...It will be a long time before science opts for one or the other of these equally inexplicable mysteries.” Balzac 1996, 22).

Cuvier probably represented more to Balzac than a kind of philosophical gaze which resurrects the past, more than the voice of an accomplished orator who enchanted his audiences; he combined these virtues with worldly success, the kind for which Raphaël hungered. “J’étais la proie d’une excessive ambition,” he explains, for “la conquête du pouvoir ou d’une grande renommée” (“I was prey to an excessive ambition...the conquest of power or of great renown.” Balzac 1996, 138-139).

¹²⁵ The timing is close, unless Cuvier made changes to the *éloge* after the date when it was supposed to have been read: 26 July 1831. *La Peau de chagrin* appeared in July 1831 and was quite famous by 1 August 1831. As I indicated, the *éloge* was not given as planned, and Cuvier was asked to revise it, but he did not accede to the request. It was read more than a year later. If Balzac’s and Cuvier’s manuscripts and ideas were not known to the other, then perhaps there is a third source for the talisman, anterior to both, upon which both of them drew, and which need not be textual. I would be grateful for any assistance in identifying it.

Attributing these feelings to the novelist has led some literary critics to psychoanalyze the novel (Marthe Robert, for example). Certainly, even before Freud, passages such as those I have quoted in the preceding chapters seem to hint at the existence of the unilluminated part of human moral experience which may be able to be expressed in fiction. Lehmann finds Sainte-Beuve's cliff and lake allegory to be distasteful and charged with Freudian frustration (Lehmann 213). Raphaël's forgetful sleep suggests that wish fulfillment happens in the novel as it does in the repose of the conscious mind. "N'avons-nous pas tous, plus ou moins, pris nos désirs pour des réalités?" Raphaël says to Émile ("Haven't we all, more or less, mistaken our desires for reality?" Balzac 1996, 142).

Likewise, other understandings of literary creation have emphasized influences from outside the text and made claims about how literature informs us about nature. Sainte-Beuve's position on the continuity of the work with the physical and moral person of the author, or "beuvisme," has been avoided by many critics in recent decades. He formulated it this way: "La littérature, la production littéraire, n'est point pour moi distincte ou du moins séparable du reste de l'homme et de l'organisation; je puis goûter une œuvre, mais il m'est différent de la juger indépendamment de la connaissance de l'homme même; et je dirais volontiers: *tel arbre, tel fruit*. L'étude littéraire me mène ainsi tout naturellement à l'étude morale" ("Literature, literary production, to me, is not distinct or at least separable from the rest of the man and his organization; I can enjoy a work, but it is different for me to judge it independently of an acquaintance with the man himself; and I would insist: *the good tree produces good fruit*. The study of literature thus brings me quite naturally to the study of moral character." Sainte-Beuve 1990, 71). Challenges to the opposite position, the disciplined absence in literary criticism of ethical judgments which produces a disconnect between aesthetic and moral claims with regards to writing and reading, are now being made in what some scholars are calling *un tournant éthique* ("an ethical turn") (Rouxel et Langlade).

Research in philosophy and cognitive science on psycho-physical causality (Baertschi's, for instance) is asking a parallel question as to how it is that human agency is (apparently) composed of two orders of experience that mutually influence each other. Similarly, neuroscientists and literary scholars are probing what parts of the brain are active when we read fiction, and which mental functions are implicated in pleasurable aesthetic experiences of fiction. Scholars in philosophy of science are debating the epistemological consequences of thought experiments, with interesting results (Frigg and Hunter). It is possible, from the literary cognitivist's perspective, that thought experiments, properly defined, mobilize cognitive resources like Tamar Gendler's "tacit knowledge," Ernst Mach's "instinctive knowledge," or as David Gooding says, "an experimenter's embodied familiarity with the world" (D. Davies 55). As for the kinds of knowledge or understanding of the real world for which literary fiction has been represented as a source, there may be four; to summarize Davies, they are: 1) *factual information* about the world; 2) *understanding of general principles* operative in the real world; 3) *categorical understanding* – conceptual frameworks in the manner of Nelson Goodman's "worldmaking" which provides us with new classifications like "Quixotic," "Catch 22," and "Kafkaesque." 4) *affective knowledge* – or what it would be like to be in a certain set of circumstances – which "bears upon our ability to comprehend, and respond appropriately to, morally complex situations that we encounter in the actual world" (D. Davies 57).

These approaches seek to bridge the gap between world and mind which intuitively seems to have widened as the world grows proverbially smaller and more facts about it become available. In 1859, Louis de Bonald wrote, "On aperçoit depuis quelque temps des symptômes de mésintelligence entre la république des sciences et celle des lettres. [...] Les sciences accusent les lettres d'être jalouses de leurs progrès. Les lettres reprochent aux sciences de la hauteur et une ambition démesurée" ("For some time now we have been noting the symptoms of mutual suspicion between the republic of sciences and the republic of letters. [...] The sciences accuse the letters of being jealous of their

progress. The letters reproach the sciences for their supposed haughtiness and exorbitant ambition.” (Bonald 1071). Natural history was pulled in both directions. The tension is apparent in Lamarck’s science and in the early nineteenth-century novel. When I suggested that the authors and protagonists experiment in some way, the novelists through the placement of a self-reflective specimen of humanity in challenging circumstances and the protagonists through the testing of their philosophies in action, I meant that the novels read like an elaborate thought experiment – on thought. What do we, as readers, learn, if anything, in the reading?

I mentioned how my approach to the novels aligns with that of Pavel’s in that the novel is understood to be constructing a hypothesis about how the world works. All novels contain, in this sense, both idealist and realist elements. Bévalal appears to support this view: “Le philosophe, l’écrivain, l’artiste, le compositeur, etc., à une même époque expriment tous le même monde, chacun selon les modalités de sa nation, de son milieu, de son intelligence” (“The philosopher, writer, artist, composer, etc. of the same period all express the same world, each one according to the modalities of nation, social position, and intelligence.” Bévalal 255). This is half of Lamarck’s view of nature. Lamarck, who Blainville said pushed the explanation of monadism to the last degree (Blainville 39), did not recognize the existence of philosophy as independent of the natural sciences, and believed that “chaque véritable science est une philosophie de la nature” (“every true science is a philosophy of nature.” Szyfman 110).

Proceeding from this view of nature is what is sometimes perceived as a “reductive” or “materialist” view of humankind:

Le lamarckisme, on ne l'a peut-être pas assez dit, permet de replacer dans la trajectoire de l'évolution les activités fabricatrices de l'homme ou des animaux ; si on admet que le vivant structure ses organes selon une finalité, on comprend mieux qu'il puisse bâtir d'instinct un nid ou tailler un outil, créations où la finalité est difficilement contestable. Le lamarckisme est peut-être moins périmé qu'on ne le pense et nul ne peut prédire ce que sera l'évolution future de la science de l'évolution.

Lamarckism, it has perhaps not been stressed often enough, allows for the constructive activities of humans and animals to be reintegrated into the trajectory of evolution; if one admits that the

living being structures its organs in a non-random way, one better understands how it might instinctively build a nest or whittle a tool, activities that seem undeniably goal-oriented. Lamarckism is perhaps less outdated than one might think, and no one can predict what the future evolution of the science of evolution will be” (Bourdier 325).

This is part of the promise that Lamarck’s theory extends to science, recalling Francis Dov Por’s description of thermodynamic cosmic evolution, which “demystifies” Lamarck’s “pouvoir de la nature” (“power of nature”) (see my introduction). Selective pressure exists for systems that are more complex and command more energy (animals with faster metabolisms) (Dov Por 374). Dov Por’s two examples of animals requiring the most energy flow are the songbirds and the Neolithic *Homo sapiens* (probably, since this cannot be fully confirmed) (Dov Por 375): the same organisms who, as Bourdier said, make nests and tools.

The promise of Lamarck’s theory for humanism, as I see it, is the way in which Lamarck reveals the undifferentiated (and therefore undisciplined) mind to the expert as to the novice (in terms of natural history) as both a gift and a responsibility. This is the essence of his definition of humankind. Furthermore, his conception of life at its most basic level is characterized by material properties (“plasticity”) that support more than simple contact between an organism and its *milieux: response*, as I concluded in Chapter 2. Alfred Tauber uses similar language in confirming that epigenetics “demonstrates dynamical, *dialectical* processes” (Tauber 387, my emphasis). The critic will say that this is only a figure of speech, that, once again, we humans are constructing the world according to our desires, and this same critic may quote Henry David Thoreau on top of Mount Ktaadn crying, “Contact! Contact! *Who* are we? *where* are we?” (Thoreau 668). What is most moving about this passage now is not the question, “*Who* are we?” but the context for it. The question is preceded by an invitation: “Think of our life in nature – daily to be shown matter, to come in contact with it – rocks, trees, wind on our cheeks! the *solid* earth! the *actual* world! the *common sense!*”

Asking whether these novels of paradox do in fact contain what may usefully be termed Lamarckian moments, or, what is more, if Lamarck's literary heritage consists in a vision of consummation – life is surrounded and penetrated by non-living nature, yet somehow retains and magnifies nature – I am proposing the existence of a Lamarckian sublime. In its effects, it resembles other versions of the sublime. Yvette Conry's study of Lamarck's use of the phrase "la marche de la nature" approaches the same conclusion that I reached with the *sentiment intérieur* from the opposite and complimentary point of view.

...[L]a perduration à travers des cultures différenciées et des savoirs remaniés, s'agissant au moins de la représentation d'une marche de la nature, nous semble tenir, d'une part, à **l'inscription mortelle** de tout vivant, faisant que le plus rationnel subit, de par sa corporéité même et dans son affectivité viscérale, l'angoisse de **son irrésistible négation**, et, d'autre part, à **une volonté de puissance**, mode complémentaire du précédent dans la mesure où un sentiment d'infériorité véhicule nécessairement l'évocation d'un risque et l'anxiété d'une menace.

...[T]he resilience, across various cultures and reorganized bodies of knowledge, at least in representation of a progress of nature, seems to derive from, on the one hand, the **death call** of every living thing, so that the most rational of them suffers, because of his bodily existence and his visceral affectivity, the anguish of his **irresistible negation**, and, on the other hand, a **will to power**, the mode complementary to the first insofar as a feeling of inferiority necessarily carries the reminder of a risk and the anxiety of a threat." Conry 149, my emphasis).

The near universality of this representation seems to me to make it a good candidate for the sublime.

Conry points to a peculiar passage in Lamarck's description of the plant kingdom in the *Flore française* as being the first of Lamarck's many appeals to "la marche de la nature." My reader will remember that it was Lamarck's reflection on the ability of plants (having no nervous systems like those found in animals) to form themselves in such a way as to receive needed nutrients which resolved for him the problem of how animals without nervous systems could maintain the organic movements which constitute life: "excitations from the outside" (Lamarck 1809, I, xv-xvi, see Chapter 2). Lamarck describes how "[l]a chaîne admirablement graduée que les plantes paraissent former conduit à placer chaque être dans un point où il recevrait et renverrait la lumière de toutes parts" ("[t]he marvelously graduated chain that the plants seem to form leads to placing each individual in a location where it could receive

and reflect light coming from every direction.” Lamarck 1779, li). This is or could be the utopian vision that accompanies Lamarck’s view of nature. Not that it does not have a “dark” side (as all utopias do); not only do plants have to withstand the same climatic assaults as animals, but they also occupy the first rung on the food chain. Furthermore, they must compete for limited resources with other plants, including members of their own species. But nature provides for them a time in which their finely adapted parts are bathed in the light that sustains them and solicits their growth.

If, as Giard suggests, there are times favorable to Lamarck’s natural philosophy, I vaguely hope one of those times is now. I agree with Gillispie when he concludes his chapter on Science and the Enlightenment thus: “[D]eep interests have been bound up with the romantic view of nature, deep interests and deep feelings, and [...] it is the wrong view for science” (Gillispie 1960, 201). For science, yes, it is the wrong view, but for scientists? Gillispie commented on his book years later, saying, “If I were re-writing the book today, though I might be able to compose a subtler book, it would not be a different one thematically. It still seems to me that science has exacted a price, and the price is that anthropomorphic considerations of goal, purpose, suitability, and wish be eliminated from its formulations and statements” (Gillispie 2007, 410). The crisis of (earthly) nature, in that it is being *qualitatively* diminished, is both the cause and the effect of our costly freedom and our self-imposed loneliness, to reprise Balzac in a new way. We need a way to reconnect duty and love to action. We need to halt the progress of pleasure toward becoming habit. Attention must provide a way to memory, and memory a way to reflection. In this way, Rousseau’s “*faculté de la perfectibilité*” (“faculty of perfectibility”), by becoming aware of itself in Lamarck’s theory, might no longer make of humankind “tyrant over himself and over nature” (“le tyran de lui-même et de la nature.” Rousseau 1992, 180).

James Secord defends the value of natural history in the face of its “precipitous loss of status within the sciences, among students, and among science policy-makers” (Secord 449). Disciplinary boundaries erected in the nineteenth-century, and conscious efforts to create specialized, respected,

paid professions by policing these boundaries (as Cuvier did), have relegated what is left of natural history to amateur scientists and museum displays. Legitimizing new disciplines often meant imitating the style of disciplines higher up on the pecking order (i.e., Physics) (Secord 450). As Raphaël exclaims, “Parlez-moi de la mécanique ! N’est-ce pas la plus belle de toutes les sciences ?” (“Tell me about physics! Isn’t it the most beautiful of all the sciences?” Balzac 1996, 275). “Defining natural history always involves acts of exclusion and inclusion, what is real knowledge and what is merely popular,” Secord writes, and in spite of public fascination with the diversity of life, spurred by media coverage of the environmental crisis, there is little money or respect for classification research (Secord 449, 454). Why does this matter? Fewer and fewer of us know what we are looking at when something in front of us moves; this despite excellent screen resolution, not to mention electron microscopes, extensive databases and scientific literature, Wi-fi, Google and Amazon (the brain and the body of American existence today), optical recognition software, meta learning... Part of the problem, Secord claims, is the paucity of narratives used to engage the public with nature; the ones employed in nature documentaries typically fall into two genres, detective fiction and the western (Secord 456). Viewer passivity is endemic to the problem as well. Our contact has to come through more than just our eyes and ears; every part of our being has to be disposed to receive the gift of our sensitive consciousness. We need more trained voices, style, and imagination guided by reason.

Appendix: Lamarck's definition of man. Entry "HOMME" in the Déterville *Dictionnaire*, 2nd edition, Volume 15, Paris, 1817. pp. 270-276. From Site Lamarck: lamarck.cnrs.fr. Original pagination.

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HOMME. Être intelligent, qui communique à ses semblables sa pensée par la parole, et qui est le plus étonnant et le plus admirable de ceux qui appartiennent à notre planète. Dominateur à la surface du globe qu'il habite, dominateur même des individus de son espèce, leur ami sous certains rapports, et leur ennemi sous d'autres ; il offre, dans ses qualités et l'étendue de ses facultés, les contrastes les plus opposés, les extrêmes les plus remarquables. Effectivement, cet être, en quelque sorte incompréhensible, présente en lui, soit le *maximum* des meilleures qualités, soit celui des plus mauvaises ; car il donne des exemples de bonté, de bienfaisance, de générosité, etc., tels qu'aucun autre être n'en sauroit fournir de pareils ; et il en donne aussi de dureté, de méchanceté, de cruauté et de barbarie même, tels encore que les animaux les plus féroces ne sauroient les égaler. Relativement à ses penchans, tantôt la raison prévalant chez lui, il montre les inclinations les plus nobles, un amour constant pour la vérité, pour les connoissances positives de tout genre, pour le bien sous tous les rapports, pour les convenances, pour la justice, l'honneur, la vraie gloire, etc. ; et tantôt se livrant à l'égoïsme (1), il offre, soit des inclinations viles et basses, soit une tendance continuelle à tromper, à dominer, à opprimer, à jouir du mal qu'il occasionne, des méchancetés qu'il exerce, et même de ses cruautés. Enfin, quant à l'étendue de ses facultés d'intelligence, il présente, dans chaque pays civilisé, parmi les individus de son espèce, une disparité considérable entre le plus brut ou le plus grossier,

(1) L'homme, par son égoïsme trop peu clairvoyant pour ses propres intérêts, par son penchant à jouir de tout ce qui est à sa disposition, en un mot, par son insouciance pour l'avenir et pour ses semblables, semble travailler à l'anéantissement de ses moyens de conservation et à la destruction même de sa propre espèce. En détruisant partout les grands végétaux qui protégeoient le sol, pour des objets qui satisfont son avidité du moment, il amène rapidement à la stérilité ce sol qu'il habite, donne lieu au tarissement des sources, en écarte les animaux

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le plus pauvre en idées et en connoissances, le plus borné dans son esprit et son jugement, et qui se trouve presque au-dessous de l'animal, et le plus spirituel, le plus riche en idées et en connoissances diverses, en un mot, celui dont le jugement est le plus solide, ou dont le génie, élevé et profond, atteint jusqu'à la sublimité ! Comme ceux qui n'appartiennent ni à l'un ni à l'autre de ces deux points extrêmes, remplissent nécessairement les degrés intermédiaires, c'est donc une chose réelle et incontestable, ainsi que je l'ai dit dans mes ouvrages, que l'existence d'une *échelle* graduée, entre les individus qui composent l'espèce humaine, échelle d'une étendue énorme, et qui offre successivement des supériorités très-marquées dans le nombre des idées acquises, la variété des connoissances, et la rectitude de jugement de ces individus. V. l'article INTELLIGENCE, où je dirai encore un mot sur cet objet.

D'après ce que je viens d'exposer à l'égard de l'*homme*, et que l'on pourra apprécier en examinant ses actions et consultant son histoire, cet être est réellement le plus étonnant et le plus inconcevable de ceux qui existent sur le globe. On pourroit même ajouter qu'il est de tous les êtres qu'il a pu observer, celui qu'il connoît le moins ; et qu'il ne parviendra jamais à se connoître véritablement que lorsque la nature elle-même lui sera mieux connue.

Ce que j'aperçois ici de plus positif, c'est que, sous le rapport de son être physique, l'*homme* est entièrement assujéti aux lois de la nature ; qu'il agit toujours conformément à ces lois et par elles, en sorte que, dans des circonstances parfaitement semblables, ses actions se ressemblent constamment ; qu'il fait partie des corps vivans, et que, conséquemment, il se trouve soumis aux lois qui les régissent, qu'il tient aux animaux par l'organisation, et qu'à cet égard il offre, dans l'ensemble des parties de la sienne, le terme des perfectionnemens que la nature est parvenue à donner à l'organisation animale ; qu'en effet, la sienne est la plus compliquée de toutes les organisations existantes, celle même dont les organes particuliers les plus importans sont aussi les plus

qui y trouvoient leur subsistance ; et fait que de grandes parties du globe, autrefois très-fertiles et très-peuplées à tous égards, sont maintenant nues, stériles, inhabitables, désertes. En négligeant toujours les conseils de l'expérience, pour s'abandonner à ses passions, il est perpétuellement en guerre avec ses semblables, les détruit de toutes parts et sous tous prétextes ; en sorte qu'on voit des populations, autrefois fort grandes, s'appauvrir de plus en plus. On diroit qu'il est destiné à s'exterminer lui-même après avoir rendu le globe inhabitable.

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composés, celle, en un mot, qui permet la plus grande extension aux facultés les plus éminentes.

Ici, encore, ce que je vois de très-positif à l'égard de l'*homme*, c'est que, relativement aux sources de ses actions, il en possède réellement deux qui sont très-différentes, savoir : 1° l'*intelligence* qui lui donne la faculté de penser, amène souvent la volonté d'agir, et dont les actes, dans l'état sain, sont toujours à sa disposition ; 2° l'*instinct* qui l'entraîne et le fait souvent agir à son insu, et dont les actes, conséquemment, ne sont point à sa disposition, quoiqu'il puisse parvenir à les modifier ou, en quelque sorte, à les comprimer : j'ajouterai que toutes ses facultés quelconques sont dépendantes de son organisation, qu'elles sont toutes le produit de fonctions qu'exécutent ceux de ses organes particuliers qui y donnent lieu, et que l'intégrité de ces facultés résulte nécessairement de celle des organes dont il s'agit.

Telles sont les premières bases d'après lesquelles je crois que devront partir ceux qui se croiront en état d'entreprendre de tracer l'histoire naturelle de l'*homme*. Déterminons maintenant la nature des trois considérations essentielles qu'il faudra avoir en vue, et même épuiser, pour se procurer les matériaux de cette histoire. Les considérations dont il s'agit embrassent : 1° ce qui concerne l'*intelligence de l'homme* ; 2° ce qui est relatif à ses *penchans* naturels ; 3° ce qui regarde les *sentimens* qu'il se forme.

Relativement à son *intelligence*, il n'apporte, en naissant, que la possibilité, que les moyens d'en acquérir les facultés, et de leur donner une étendue presque sans limite. Comme dans les animaux intelligens, les idées qu'il obtient de ses sensations remarquées s'impriment dans son organe, y sont conservées, et se trouvent à sa disposition pendant la veille ; mais ce qui semble lui être propre, c'est de pouvoir acquérir la faculté de combiner ensemble plusieurs de ces idées premières, d'en obtenir des idées complexes de différens degrés, par conséquent de penser, raisonner, inventer même, et ainsi d'avoir plus ou moins d'*imagination*. Nous traiterons succinctement de ces sujets aux articles IDÉE, INTELLIGENCE, IMAGINATION, JUGEMENT.

Quant à ses *penchans*, il apporte en naissant celui qui est la souche de tous les autres ; il les tient donc de la nature, c'est-à-dire, de la même source que ceux auxquels les animaux intelligens et sensibles sont

assujettis. Mais dans l'état social, les siens deviennent bien plus nombreux, bien plus composés, au point que leur analyse rencontre, dans ses détails, des difficultés énormes.

J'ai montré, dans l'*Histoire des animaux sans vertèbres* (vol.

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1, page 277), que l'*homme* tient de la nature, des penchans qui se développent plus ou moins chez lui, selon que les circonstances y sont plus ou moins favorables, et que sa raison ou le degré de rectitude de son jugement ne se trouve point capable de les maîtriser, les modifier ou diriger. Ces penchans, qui sont dans son essence, prennent tous leur source dans celui à la *conservation de son être*, et produisent en lui les quatre suivans :

1° Une tendance constante vers le *bien-être* qui, d'une part, le porte à satisfaire à tous les genres de besoins physiques et moraux, à multiplier ces besoins et les désirs eux-mêmes, et, de l'autre part, l'excite à fuir la souffrance et toutes les sortes d'incommodités, etc. ;

2° L'*amour de soi-même* ou l'intérêt personnel dont l'excès constitue l'égoïsme, et d'où naissent la cupidité, l'avarice, l'envie, l'amour-propre, etc. ;

3° Un penchant à *dominer* ; penchant qui peut acquérir une énergie extrême, fait saisir tous les moyens, employer toutes les formes ; qui s'exerce par le pouvoir, par les richesses, les dignités, les distinctions de tout genre, et qui donne lieu à toutes les ambitions, toutes les tyrannies, l'intolérance, etc., etc. ;

4° Une *répugnance pour sa destruction* ; répugnance qui le porte à se soustraire, dans sa pensée, aux lois immutables de la nature.

Ces penchans, qui en amènent une multitude d'autres subordonnés, se sont toujours montrés les mêmes et se trouveront toujours tels dans l'*homme* de tous les pays et de tous les temps, parce qu'ils lui sont donnés par la nature. Mais, en même temps, elle l'a rendu susceptible d'acquérir, dans un degré quelconque, ce qu'il nomme la *raison*, qui n'est elle-même que le plus haut degré de rectitude de son *jugement* ; or, celui-ci peut lui donner des moyens pour arrêter le développement de ceux de ses penchans qui lui seroient nuisibles. Cependant, comme tout est mesuré par les lois de la nature, l'homme ne peut employer le degré de raison qu'il possède, que lorsqu'il est supérieur à celui du penchant qu'il lui importe de retenir : ce fait est constant.

L'étude approfondie des penchans que je viens de citer ; celle de leurs divisions et sous-divisions nombreuses que je n'ai pas dû détailler ; enfin, celle des circonstances qui favorisent leurs développemens, constituent les seconds objets à considérer pour arriver à la connoissance de l'*homme*, et reconnoître la source de ses actions. Une troisième et dernière sorte de considérations me reste à indiquer ; c'est celle qui concerne les *sentimens* que l'homme se forme intérieurement,

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qu'il conserve ou change selon les circonstances relatives à son intérêt personnel, et qui ont une grande influence sur ses actions.

En effet, les *sentimens* que l'homme éprouve, et qui ont tant d'influence sur les actes de sa vie ; qu'il n'apporte point en naissant, et qui même ne se forment qu'un peu tard en lui ; facultés qu'enfin il partage avec beaucoup d'animaux intelligens ; ces *sentimens*, dis-je, doivent être pris en considération

en même temps que les penchans et les facultés d'intelligence qu'il possède. Ils varient, dans leur nature, d'un homme à un autre, presque autant que les facultés intellectuelles ; mais ils ne sont point, comme celles-ci, susceptibles de varier en degrés qui leur soient propres ; car le plus ou moins de véhémence que l'on observe dans tel des sentimens d'un individu, est dû à l'influence de certain penchant développé qui exalte plus ou moins ce sentiment. Voyons maintenant quelle est la source des sentimens de l'homme, et ce qu'ils sont eux-mêmes.

Presque de tout temps, l'on a distingué les *sentimens* des *pensées* ; on a attribué les sentimens au cœur, et les pensées à l'*esprit*. La première de ces attributions est une erreur ; car le cœur n'est qu'un organe utile à la circulation ; et au lieu d'être la cause productrice des *sentimens*, il en reçoit lui-même des influences diverses qui modifient son action : ce qui a occasioné l'erreur dont il s'agit.

Je distingue les *sentimens* qu'un individu intelligent est susceptible d'éprouver, de son sentiment intérieur. Celui-ci, permanent et le même pendant la vie de cet individu, constitue en lui l'*instinct*, lequel est une puissance et non un effet produit.

Les *sentimens*, au contraire, sont des actes du *sentiment intérieur* d'un individu. Ils peuvent être régis ou dirigés par le degré de raison de ce même individu ; mais trop souvent ils ne le sont que par ceux de ses penchans qui se sont développés. On voit de là, qu'à la suite des émotions que le *sentiment intérieur* peut éprouver de la part de quelque besoin senti, ses actes doivent être distingués en deux sortes :

1° ceux qui font exécuter à l'individu des mouvemens ou des actions ;

2° ceux qui produisent en lui tel ou tel *sentiment*.

Or, par *sentiment*, j'entends parler de telle ou telle de ces impressions intérieures et obscures que l'homme peut ressentir, et dont les unes, dirigées seulement par quelque penchant développé, donnent lieu à la haine, la jalousie, la dureté, la malveillance ou la méchanceté, à la colère dont la fureur est l'excès, à la cruauté, aux inclinations basses, au mépris de l'honneur, de toute loyauté, de la raison, de

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la vérité même, etc., etc. ; tandis que les autres, régies par une raison forte et éclairée, produisent la bonté, la bienfaisance, la tolérance, la délicatesse dans les actions, l'amour de la justice, en un mot, toutes les inclinations nobles et généreuses.

Les distinctions que je viens de présenter, relativement à la source et à la nature des *sentimens* de l'homme, doivent être ajoutées aux considérations essentielles exposées ci-dessus. Toutes ensemble constituent le peu que j'avois à dire à ce sujet ; et je crois qu'il sera toujours nécessaire de ne point s'écarter des bases que j'ai posées dans cet article, si l'on a en vue la vérité.

Je terminerai cet article succinct par la considération de l'état où se trouve actuellement l'homme dans tout pays civilisé, et par celle des causes qui me paroissent avoir amené cet état.

Plus l'homme s'éloigne de la nature, plus il compromet son *être physique*, sa tranquillité, sa santé, sa liberté et son bonheur. La société, qui lui est si avantageuse sous certains points de vue, lui devient insensiblement très-nuisible sous mille autres : elle l'éloigne de plus en plus de la vie simple ; le porte à multiplier à l'infini ses besoins, développe ses penchans, en leur fournissant des occasions de se diviser et sous-diviser en ramifications sans terme ; exalte en lui, tantôt telle passion, tantôt telle autre, et

même plusieurs à la fois, selon les circonstances de sa situation ; enfin, multipliant ses intérêts, ainsi que les chocs que ceux-ci ont sans cesse à subir, elle l'expose continuellement à mille tourmens d'esprit dont l'influence sur sa destinée est, comme nous allons voir, des plus puissantes.

Si, effectivement, l'on examine ce qui est résulté, pour l'homme, de cet ordre de choses que la société constitue, on verra

1° Que la société qui, primitivement, a pu consister dans l'engagement d'un nombre quelconque d'individus à se garantir mutuellement d'agressions étrangères, a dû bientôt amener la civilisation ; car, dès que cette société fut formée et agrandie, l'institution de la propriété devint indispensable, et dès lors des lois et un gouvernement furent nécessaires ;

2° Que la civilisation étant établie dans un pays, a peu à peu amené, parmi les hommes qui l'habitent, une immense disparité dans leur situation, leurs moyens et leur état d'intelligence ;

3° Que cette énorme disparité, fournissant à ceux qui eurent plus de moyens, une grande facilité pour dominer les autres, et s'emparer du pouvoir, ceux qui y parvinrent

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l'accrurent graduellement, perfectionnèrent de plus en plus l'art de le maintenir, et surent retenir la multitude dans un état d'infériorité, en lui inspirant adroitement des préventions et des prestiges qui la tiennent enchaînée ;

4° Que l'état de gêne des individus qui composent la multitude dont je viens de parler, bornant les jouissances de ces individus, tandis que leurs intérêts et leurs besoins accrus leur en faisoient désirer de plus grandes, portèrent peu à peu la plupart à fuir leurs habitations presque isolées, à quitter les campagnes, et à se cumuler en nombre en quelque sorte immense dans de grandes villes ;

5° Que là, les uns étant resserrés en général dans des lieux malsains, ne respirant qu'un air vicié, irrégulièrement et mal nourris, se livrant à toutes sortes d'excès lorsqu'ils en trouvent l'occasion, tandis que les autres sont ou occupés d'industries diverses, ou plongés dans la mollesse et dans l'oisiveté ; les individus de tout étage que comprennent ces grandes populations réunies, en proie à tous les maux qu'entraînent les vices qui s'introduisent parmi eux, agités, tourmentés par des passions diverses, voient, sans le remarquer, leur santé s'altérer, leur sang se vicier de mille manières, quantité de désordres divers se former dans leur organisation, enfin, le germe d'un nombre considérable et toujours croissant de maladies différentes, et en quelque sorte endémiques, se transmettre et se perpétuer chez eux par la génération.

Que d'objets je passe ici sous silence, et qui eussent singulièrement grossi ce tableau de l'homme en civilisation, si je les eusse cités ! Je dirai seulement que quelques changemens que la civilisation ait fait éprouver à l'homme, quelque grandes que soient les améliorations qu'il en a retirées, et qui ne sont toujours que le propre d'un petit nombre, on le retrouve continuellement partout ce que la nature l'a fait, ayant les mêmes penchans, susceptible des mêmes passions, abusant ou opprimant ses semblables, se tourmentant lui-même : en sorte que ce n'est guère que dans certaines situations, moyennes entre la misère et la richesse ou les grandeurs, qu'on en voit jouir des douceurs d'une vie paisible et heureuse.

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----- 1877-1885. *Dissertation envoyée par l'auteur, en Italien, à l'Académie de Bologne [Saggio intorno ai cambiamenti]*. *Œuvres complètes de Voltaire*, ed. Louis Moland, Paris: Garnier, vol. 23.

----- 1953 [1733]. *Le temple du goût*. Paris: Giard.

----- 1956. *Lettres philosophiques*, ed. Raymond Naves. Paris: Garnier.

----- 1964 [1764]. *Dictionnaire philosophique*, ed. René Pomeau. Paris: Flammarion.

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CURRICULUM VITAE

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EDUCATION

- 2018 Ph.D. in French with a concentration in French Literature, October 2018, Indiana University – Bloomington.
Dissertation Title: *The Evolving Definition of Man: Lamarck's Natural Philosophy and Literary Legacy.*
Committee: Dr. Guillaume Ansart (chair), Dr. Hall Bjørnstad, Dr. Oana Panaïté, Dr. Sander Gliboff.
- 2009 MA French Literature, Indiana University – Bloomington.
- 2003 BA Biology, Minor in French, Franklin & Marshall College, Lancaster, Pennsylvania.

RESEARCH INTERESTS

Enlightenment literature; history and philosophy of science; French natural history and imagination; sensory stimuli and the 19th-century novel; humanness in literature; digital humanities; poetry and rhetorical figures.

AWARDS AND FELLOWSHIPS

- 2014-2015 Graduate Dissertation Fellowship, Center for 18th-Century Studies, IU
- 2010 Grace P. Young Graduate Award, IU Department of French and Italian
- 2007-2009 Charlotte F. Gerrard Fellowship for Graduate Studies, IU Dept. of French and Italian
- 2003 Phi Beta Kappa National Honor Society, Franklin & Marshall College

LANGUAGES

French (fluent); Old French, German, Italian, Haitian Creole (reading proficiency).

PUBLICATIONS

- "The *Sansculottides*: Learning Revolutionary-Era French Culture through Celebration and Hugo's *Quatrevingt-treize*" *Teaching Representations of the French Revolution*, edited by Julia Douthwaite, Catriona Seth, and Antoinette Sol. Publication pending.

TEACHING AND ADMINISTRATIVE EXPERIENCE

* Indicates courses for which I created the syllabus and all course materials.

Adjunct Instructor of French

Messiah College Humanities Division (2015-2016)

Dickinson College Department of French and Francophone Studies (2015-2016)

- FREN-101 Fundamentals of French I (Spring 2016) (Messiah College)*
- FREN-102 Elementary French (Spring 2016) (Dickinson College)*
- FREN-102 Fundamentals of French II (Fall 2015) (Messiah College)*
- FREN-201 (Formerly FREN-116) Intermediate French (Fall 2015) (Dickinson College)

Visiting Lecturer of French and F150 Course Supervisor

Indiana University Department of French and Italian (2012-2014)

New Associate Instructor orientation; AI observation and mentoring; creating course materials and syllabus; 3/2 teaching course load; implementing MyFrenchLab

- F150 Second-Semester French Language and Culture
- F300 Reading and Expression
 - Not Quite Human, Fall 2013*
 - Les femmes et la création du savoir sous l’Ancien Régime, Spring 2014*

Lectrice d’anglais

Université Charles-de-Gaulle Lille 3, Villeneuve-d’Ascq, France (2011-2012)

- Phonetics Lab
- Written Expression*
- Oral Comprehension and Expression*
- Oral Comprehension and Expression for non-majors (UFR Arts et Culture)*
- Oral Comprehension for non-majors (UFR Angellier)*
- Classroom English for future teachers (Éducation précoce des langues, EPL)*
- Tandem (Guided one-on-one partnering of French and English native speakers) (co-taught with Kathleen O’Connor)

Student Coordinator and Literature Instructor

IU Honors Program in Foreign Languages, Saumur, France (2011)

Acting liaison between program director, on-site coordinator, host families, team members, parents and students; creating course packet and teaching three levels; organizing student activities during 6-week immersion program

- Cours de littérature : Littérature et Histoire en Pays de Loire*

Associate Instructor

Indiana University Department of French and Italian (2009-2011)

- F250 Second-Year French II, Language and Culture
- F491 Elementary French for Graduate Reading Proficiency*

Lecturer of French

Penn State Altoona Arts and Humanities Division (2005-2007)

- FR296 Independent Study: Hugo et *Les Misérables**
- FR201 Oral Communication and Reading Comprehension*
- FR139 France and the French Speaking World
- FR003 Intermediate French III
- FR002 Elementary French II
- FR001 Elementary French I

CONFERENCE PRESENTATIONS AND PANELS

- 2019 “Animal, Vegetable, Mineral: Thinking with the Non-Human in Old Regime French Literature” (seminar co-chair). Northeastern Modern Language Association Conference, Washington D.C.
- 2019 “Motherhood in the Academy” (roundtable co-chair). Northeastern Modern Language Association Conference, Washington, D.C.
- 2016 “Lamarck’s Applied Imagination: The Meeting of Poetry and Natural History in Revolutionary France. American Society for Eighteenth-Century Studies Annual Meeting, Pittsburgh, PA.
- 2013 “Lamarck’s Literary Heritage,” Kentucky Foreign Language Conference, Lexington, KY.
- 2010 “Homeric Heroes in Laclos’s *Dangerous Liaisons*,” Society for the Interdisciplinary Study of Social Imagery, Colorado Springs, CO.
- 2009 “Flaubert’s Stupid Drum and Slackened Strings,” IU Germanic Studies

Graduate Student Conference, Bloomington, IN.

PROFESSIONAL DEVELOPMENT

- “As Unkempt as a Naturalist’s Wig: Humor, Horror, and Natural History in Balzac’s *La Peau de chagrin*. Student-Faculty Forum presenter, 1 April 2015.
- “The Mark of Lamarck.” IU Center for Eighteenth-Century Studies Pechakucha Night presenter, September 2014.
- Advance College Program (ACP) French Teacher Training. Presenter and co-planner, June 2014.
- “Finding *ton meilleur look*: Everyday French Fashion.” Co-presenter at the IU World Language Festival, April 2014.
- “Language Teaching Technologies.” Presenter at ACP French Teacher Workshop, April 2014.
- “Flip Your Language Class.” Workshop hosted by the Center for Language Technology & Instructional Enrichment (CeLTIE, or CeLT) and the Center for Innovative Teaching and Learning (CITL) at IU, November 2013.
- “Le français bouge en classe.” Conference on teaching Francophone texts in parallel with hexagonal classics sponsored by the University of Notre Dame, October 2013.
- “Teaching Naked: How Moving Technology out of Your Classroom Will Improve Student Learning.” Presented by José Antonio Bowen, hosted by Scholarship on Teaching and Learning (SOTL) at IU, September 2013.
- “Dress to Profess,” and “Teaching Reading.” Presenter and co-planner at new associate instructor orientation, IU Department of French and Italian, August 2013.
- Instructor Observation Report for ACP at Edgewood High School, May 2013.
- “Evaluating Oral Performance.” Presenter at ACP Teacher Training Workshop, April 2013.
- “Treating Vocabulary.” Presenter and co-planner at new AI orientation, IU FRIT, August 2012.
- “New Approaches to Grammar in Foreign Language Instruction.” Conference sponsored by the Russian and East European Institute at IU, June 2012.
- “Engaging Students with eTextbooks: Leveraging Digital Course Materials to Support Effective Pedagogy.” Presented by Simone C. O. Conceição. Webinar sponsored by Wiley Faculty Network, February 2012.
- “Building Vocabulary Using an Oncourse Forum.” Presenter at the IU World Language Share Fair, “The “6th C”: Cybertwist on Foreign and Second Language Acquisition, April 2010.
- Improv and Language Learning Workshop. Sponsored by the IU Department of Germanic Studies, April 2010.
- Dartmouth Summer French Culture Institute. “Religion.” June-July 2009.
- Language Teaching Technology (SLST-T556) (IU). Spring 2009.
- French Club Co-Coordinator, 2008-2009.
- CIC Quebec Summer Intensive Foreign Language Program at the Université Laval, Québec, QC. Assistant to the on-site director, June-July 2008.
- Methods of College French Teaching (FRIT-F573) (IU). Spring 2008.
- The Penn State Course in College Teaching. Certificate (PSU, State College, PA). April 2007.
- Faculty Advisor to the French Club, Penn State Altoona, 2005-2007.

PROFESSIONAL SERVICE AND LEADERSHIP

- French Interpreter, Church World Service, Lancaster, PA, as needed, 2015-2017.
- Volunteer ESL Instructor, Church World Service, Lancaster, PA, Spring 2015.
- Circle Group Leader, Center of Excellence for Women in Technology, Spring 2014.
- “Le Carnaval à Dunkerque.” Presentation at the French Club/Circolo Italiano Mardi Gras celebration, March 2014.
- “Le Sport en France.” Presentation for the French Club, April 2013.
- FRIT Website Development Committee, 2010-2011.

- Graduate and Professional Student Organization Travel Funds Committee, 2010.
- Videoconference Lessons (2) for French 3 and AP French at Lanesville High School, December 2009.
- French and Italian Department Hospitality: Café Euro, 2008-2009.

PROFESSIONAL AFFILIATIONS

Modern Language Association (MLA) Commons: erinamyers
Northeastern Modern Language Association (NeMLA)
American Society for Eighteenth-Century Studies (ASECS)
Center for Eighteenth-Century Studies (IU)
American Association of Teachers of French (AATF)