

A PHYSIOLOGY OF THE IMAGINATION

A PHYSIOLOGY OF THE IMAGINATION:
ANATOMICAL FACULTIES AND PHILOSOPHICAL DESIGNS

By

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ABSTRACT

This study charts the eighteenth-century phenomenon that is the faculty of imagination. I follow its disciplinary conversion from neurology to philosophy, and, ultimately, to literary criticism; the physiological and philosophical conjunctions that originate with an internalist reconstruction of Thomas Willis' *Anatomy of the Brain*, carry over into the imaginative principals of temporality in *A Treatise of Human Nature*, and provide narrative unity and sensory parameters to an understudied literary criticism of attention. This project identifies the key concepts within psychophysiology to be imagination, original sensations, habitual ideas, cross-faculty interdependence, an involuntary system of sensible impressions, and associative modes of attention that collectively form the coherent elements of its tradition. The *Anatomy* provides the anatomical schematics for the faculties and nervous physiology, and positions the imagination to be the preeminent faculty that responds to sensation and links faculty processes. It also rejects the seventeenth-century division between rational and sensitive souls; cerebral complexity demonstrates cognitive capacity as either rational or sensitive. The corpuscular generation of animal spirits contextualizes materialism before the 1700s. Willis suggests the involuntary and voluntary systems, though united, have distinct functions, a discovery that explains Willis' two localizations for memory as natural and rational. Applying Willis' physiology as a framework to navigate the *Treatise's* eighteenth-century terminology, the *Treatise* achieves a textual synthesis between imagination and the passions. This physiological reading of the *Treatise's* theory of association establishes the sustainable limits in cognitive attentions. It finds the imagination to be an associative compulsion and a comparative act that perpetually reconstructs ideas. Finally, Hume's physiological method grounds the aesthetics of Alexander Gerard and Lord Kames. The latter take Hume's attention, association, and faculty interdependence, as a model for the reader's ability to successfully sustain attention upon narrations. They show that narrative conjunctions depend on the strength that sensations forge lasting associations. These studies may have different applications in view, but their core ideas demonstrate a coherent and pervasive methodology.

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A Physiology of the Imagination: Anatomical Faculties and Philosophical Designs

Introduction and Project Retrospective

Prior to the dominant critical standard that arose early in the twentieth century, there was a long-standing alternative to language-framed aesthetics: a physiology of cognition that substantiated a literal aesthetics of sensation. The history of these ideas is little studied. This work is a reconstruction of these ideas. It integrates the primary methods of inquiry *in the physiological tradition* of neurology, philosophy, and aesthetics during the long eighteenth century. The results of this inquiry may surprise. There are many very familiar literary, aesthetic, and philosophic thinkers from the seventeenth to the nineteenth century that use foreign, obsolete, or, now, simply forgotten intellectual paradigms. A reanimation of anatomical frameworks will provide a new methodology to reconsider eighteenth-century literary and philosophical concepts that are as common as the *imagination* and the *passions*. It will present a set of criteria through which to read eighteenth-century cultural frameworks. Aside from the general problems of history and its context, there are significant disciplinary challenges to this proposal. This study covers a history that ranges from the origins of modern clinical neuroscience to the foundations of eighteenth-century empirical models of association and, finally, to an aesthetic synthesis that converges these two fields.

The exacting nature of this investigation presents a considerable challenge, not the least for the reader. Modernity's separation of academic disciplines may make the

navigation of this project, at times, difficult. The anatomical particulars of seventeenth- and eighteenth-century neurology challenge, on occasion, even historians of neurology and may ask much of the general reader. There is a fundamental need, however, to realign the origins of eighteenth-century faculty usage with its anatomical principles of association in order to understand the essential foundations to empiricism and aesthetic theories of reading. In the eighteenth-century, medical theory and philosophy were complementary inquiries. For an author little known outside neurologists, neuroscientists, or specialist historians, Thomas Willis presents a cerebral physiology that is inseparable from faculty function. The anatomy of the brain determines its intellectual processes. For those who study Willis, there is a predilection to study his last text, the *Souls of Brutes*, but this work greatly simplifies the complexity of his faculties. Without understanding intersections of the later text with the earlier *Anatomy of the Brain*, critical readings misrepresent Willis' considerable cognitive and physiological differentiations.¹ To appreciate the foundation of empirical philosophy in Locke and Hume,² Willis' *Anatomy of the Brain* becomes central in reassessing physicality in eighteenth-century philosophy, medicine, and aesthetics. It is, or ought to be, an essential work, and without its place in the wider scholarly discourse, the eighteenth century is missing a crucial component of its intellectual constitution.

¹ The *Souls of Brutes* was, comparatively, simple, following scholastic divisions between the rational and sensitive. Willis' "two souls" would influence and receive its share of mockery from Jonathan Swift's *Battle of the Books* and Alexander Pope's *Essay on Man*.

² George Berkeley stands decidedly against material physiology, and his alignment with the experimental science and sensation places him in a questionable and paradoxical relationship with what has become the tradition of empiricism.

In the British context, the nascent outline of Locke and Hume's association, the importance of the *imagination as a faculty*, the role of habit in intellectual formation, the natural and rational distinctions in memory, and the empirical foundation for eighteenth-century, specifically British, not Continental, passions and nerve theory, all take their initial expression from Willis' landmark text of neurology, the *Anatomy of the Brain*. If the tradition of psychophysiology, 1660-1880, is to find recovery outside of the experimental sciences, then an attempt must be made to reestablish the neurological paradigms that came to directly impact philosophy, aesthetics, nervous sensibilities, and reading practices. Current philosophical historians do not generally integrate the eighteenth-century context of physiology into philosophy,³ but the inclusion of an anatomical materialism was common for British empiricists, and it is necessary, even if occasionally bordering on laborious, to critically reformulate the intellectual nuances of the period.

This study seeks, as far as possible, a reanimation of a historical tradition that included Willis, Hume, Alexander Gerard, and Henry Homes, Lord Kames. The thinkers who (aside from Hume) do not have the critical influence they once did for well over a century following each of their discipline-defining works. Between Willis and these aesthetic theorists stands Hume, now often considered a central figure in eighteenth century and one of English's greatest philosophers. During the eighteenth century,

³ For a noteworthy and helpful exception, see Ann Jessie Van Sant, *Eighteenth-Century Sensibility and the Novel: the Senses in Social Context* (Cambridge: Cambridge University Press, 1993). For a reading of continental physiology in British sensibility, see R.F. Brissenden, *Virtue in Distress: Studies in the Novel of Sentiment from Richardson to Sade* (London: Macmillan Press, 1974), 11-55.

however, Hume was primarily seen as a historian and essayist. He rose to prominence in the twentieth century because of the challenges he brought to epistemology. Hume's recovery from history and present fame, not surprisingly, reinstated his work within a historically foreign but then (and still) relevant twentieth-century intellectual climate. His scepticism presented a challenge to idealist and analytical Philosophy to make normative claims and have constant conjunctions. The scholarly emphasis on Hume's first book of the *Treatise of Human Nature* bears witness to Hume's recontextualized history, and it is more than just philosophy's emphasis on analytical engagements instead of an interest in history. The virtual dismissal of Hume's second book should give pause. The problem of historical reconstruction that implicitly accompanies every critical engagement is that the many components of a text may now seem, at best, foreign, and, at worst, irrelevant. Hume's reliance upon seventeenth- and eighteenth-century physiology and psychology are, I hold, pertinent to his philosophy. If Hume's physiology and theory of sensations are to have merit, their exclusion from most analyses of the *Treatise* obscures an intricate facet of his epistemology. Contemporary British and North American historical approaches to philosophy rely on first principles and will often employ methodological designs that do not complement the historical research of this study, but their arguments on the *Treatise* are instrumental at every stage of this work. It is doubtful, however, that this project will have relevance in historical readings of philosophy – it works with a different set of intellectual paradigms.

Many modern philosophical historians initially situate a determinative parameter for their inquiries and this requires a pre-established first principle from which follows a

succession of judgments. Every hypothesis creates a methodological apparatus by which to achieve a proof. Contemporary disciplinary practices *need* a standardized method of inquiry. Methodological practices substantiate disciplinary modes of inquiry, and these methods are essential for a discipline to retain its system of meaning within the modern university structure. Presently, critical inquiries have separate disciplinary capacities; even the aesthetics of English and the aesthetics of Philosophy have counter agendas and methods. Contemporary practices notwithstanding, the conceptual commonalities in *eighteenth-century* neurology, philosophy, and aesthetics had an interdependent premise and would often share a common underlying empirical methodology. My model of inquiry lies in an engagement with a multiple set of concepts from within these disciplines that collectively suggest an overarching framework. Through an overview of Willis' cerebral physiology from *Anatomy*, Locke's *Essay* (4th edition), and Hume's *Treatise* I find a context of experimental anatomy to inform their theories of cognition. Although Hume's philosophical lineage usually aligns with George Berkeley and René Descartes (and often Newton and Malebranche), I posit an intellectual history that still relies on Locke, but looks to justify an inclusion of Willis, Locke's professor at Oxford. With the addition of Willis' physiology, a reformulation of Hume's core philosophical principles and the general thrust of his philosophy find alternative historical parameters. From the integration of physiology into the *Treatise's* principal concepts, a flexible methodology emerges that helps contextualize two of his Scottish compatriots' aesthetic works, Alexander Gerard's *Essay on Taste* and Henry Homes, Lord Kames' *Elements of Criticism*.

Project Background and Impetus to Method of Inquiry:

The research behind this study relies upon an amalgamation of several specific disciplinary inquiries and cross-period specializations. Two works in particular provide the scaffolding: G.S. Rousseau's *Enlightenment Crossings* and Nicholas Dames' *Wave-Theories and Affective Physiologies*.⁴ Rousseau's initial, but undetailed, hypothesis on the importance of Willis' imagination as a physiological concept complemented my philosophical research on the possibility of Hume's imagination as an alternative to contemporary and Romantic standards of imagination.⁵ J.P. Wright provided a strong theoretical foundation to Willis' *Souls of Brutes* as an influence on Locke, but he did not look, as I intended, at Willis' specific text on the brain's anatomy that outlined

⁴ G.S. Rousseau, "Towards a Social Anthropology of the Imagination," 1969, *Enlightenment Crossings: Pre- and Post-Modern Discourses, Anthropological* (Manchester: Manchester University Press, 1991), 1-25; G.S. Rousseau, "Nerves, Spirits, Fibres: Towards an Anthropology of Sensibility," 1973, *Enlightenment Crossings: Pre- and Post-Modern Discourses, Anthropological* (Manchester: Manchester University Press, 1991), 122-141; Nicholas Dames, "Wave-Theories and Affective Physiologies: The Cognitive Strain in Victorian Novel Theories," *Victorian Studies* 46, no. 2 (2004): 206-216.

⁵ Two other works were instrumental for developing an eighteenth-century context for the imagination: Jennifer Ford's contextualization of Coleridge in late eighteenth-century dream theory and physiology, see *Coleridge on Dreaming: Romanticism, Dreams, and the Medical Imagination* (Cambridge: Cambridge University Press, 1998); and John Whale's eighteenth-century political contextualization of variable usages of the imagination, see *Imagination under Pressure, 1789-1832: Aesthetics, Politics, and Utility* (Cambridge: Cambridge University Press, 2000).

imagination and association in the context of physiology.⁶ Dames, a Victorianist, brought attention to the end of the physiological reading tradition during the nineteenth century, which, in broad outline, presented the possibility for reconsidering literary analysis.⁷ Although his study neither reconstructed the associative concept of duration nor defined the temporality of duration, as it would inform cognition's attention, his outline on duration and inattention, and the effect of habit upon attention were instrumental to my theoretical outline. Some of his broad concepts eventually intersected with this project's attempt to supply the details of a physiological and philosophical framework necessary to constitute eighteenth- and nineteenth-century reading theories. This project investigates the faculty processes for seventeenth- and eighteenth-century British theories reliant upon

⁶ For Wright's connection between Locke and Willis, see "Locke, Willis, and Seventeenth-Century Epicurean Soul," *Atoms, Pneuma, and Tranquility: Epicurean and Stoic Themes in European Thought*, Ed. Margaret J. Olser (Cambridge: Cambridge University Press, 1991), 239-58. Although Wright knew of the connection between Willis and Locke, he would ascribe brain function, animal spirits, and a number of Willisian physiological principles to Nicolas Malebranche. See J.P. Wright, *The Sceptical Realism of David Hume* (Manchester: Manchester University Press, 1983).

⁷ See, in particular, the chapter, "Distraction's Negative Liberty," *The Physiology of the Novel* (Oxford: Oxford University Press, 2007), 73-122. Several other works also deserve mention in the context of physiology and literary engagement for the formation of this study: the opening pages of D.A. Miller, "Cage aux folles: Sensation and Gender in Wilkie Collin's *The Woman in White*," *The Making of the Modern Body: Sexuality and Society in the Nineteenth Century*, Ed. Catherine Gallagher and Thomas Laqueur (Berkeley: University of California Press, 1987), 107-112; the state of distracted attention in eighteenth-century French painting from Michael Fried, *Absorption and Theatricality: Painting and Beholder in the Age of Diderot* (Berkeley: University of California Press, 1980); and the eighteenth-century medical explanations of Thomas Trotter's forgetfulness in Peter Melville Logan, *Nerves and Narratives: A Cultural History of Hysteria in 19th-Century British Prose* (Berkeley: University of California Press, 1997), 15-44.

physiology, sensation, imagination, and the passions.⁸ The reconstruction of Willis' brain and nervous system, however, has the explicit design to explain associative forms of cognition. In broad outline, then, the cross-fertilization of Dames and Rousseau offered an alternative set of physiological parameters that suggested but did not *detail* the conceptual dynamics of psycho-physiology. Robert Martensen's work on Willis influence on Locke and Rick Rylance's study in Victorian psychology were also instrumental to retracing the principal figures of the psychophysiological tradition.⁹ Their research, at the two respective ends of the tradition, provided a theoretical apparatus to sketch the commonalities among philosophy, physiology, and rhetoric. After the chapters on Willis were already complete, Adrian Johns' "The Physiology of Reading" served as an intermediary between Martensen and Rylance's medical research.¹⁰ In an attempt to illustrate a timeline for the debate between abstract reasoning and a philosophical physiology, I realigned their common methodologies and emphasized the physiology of imagination emergence as the dominant faculty in associative models of philosophy during the eighteenth and nineteenth century. The aesthetic and philosophical history that

⁸ Several works were instrumental in navigating the complexities of Willis' anatomy. See: John D. Spillane, *The Doctrine of the Nerves: Chapters in the History of Neurology* (Oxford: Oxford University Press, 1981), 1-100; Stanley Finger, *Minds Behind the Brain: A History of the Pioneers and Their Discoveries* (Oxford: Oxford University Press, 2000); Edwin Clarke and Charles Donald O'Malley, *The Human Brain and Spinal Cord: a Historical Study Illustrated by Writings from Antiquity to the Twentieth Century*, 2nd rev. ed. (San Francisco: Norman Publishing, 1996).

⁹ Robert L. Martensen, *The Brain takes Shape: An Early History* (Oxford: Oxford University Press, 2004); Rick Rylance, *Victorian Psychology and British Culture, 1850-1880* (Oxford: Oxford University Press, 2000).

¹⁰ Adrian Johns, "The Physiology of Reading," *Books and Sciences in History*, ed. Marina Frasca-Spada and Nick Jardine (Cambridge: Cambridge University Press, 2000), 291-316. Johns speaks to Mill's individualism within social utility.

emerges, however, is largely unrecognized within the context of early twentieth-century critical discourses. The details of this study and a critical justification of eighteenth-century faculty processes attempt to counter this difficulty.

Foundations of Neurology, the First Stage:

This study seeks Willis' conceptual foundation in corpuscular physiology. Willis' theory has a number of now obtuse elements: animal spirits, ferment, imaginative-syntheses, and empirical associations as physiological processes. The *Anatomy of the Brain* provides, however, a physiological system for empirical association, habitual activities, automatic impulses, and nervous reactions. This study's anatomical analysis of Willis' cognitive faculties illustrates central tenets within the history of eighteenth-century medicine. Foremost, imagination, as a faculty, is *definitively* distinct from *phantasy/fancy* in its anatomical placement and its intellectual function. Imagination works in reciprocation with memory. Memory and natural memory are distinct faculties, and belong to the voluntary and involuntary system, respectively. Ideas have specific locations and require physical pathways in the brain to access them. Habitual movements of animal spirits are a fundamental context for Locke and Hume's associative processes because Willis' animal spirits carve out neural pathways to help increase the transmission of ideas. These habitual associative pathways are pivotal in rearticulating the faculties within sensation. The *Anatomy's* physiology of the faculties provides a context for Hume's *Treatise* to be read in a distinctly Willisian model of the brain.

From Neurology to Philosophy, the Second Stage:

Willis' neurological theories are not simply applied ideas in Hume's empirical philosophy. Hume's *Treatise* is a philosophical conversion and, often, a theoretical justification of the material faculties and the nervous system. Hume rearticulates basic cerebral physiology into a philosophy that critiques the previous conventions of scholasticism, abstraction, and immaterialism. Before explaining the *Treatise's* complex faculty processes and temporal theory, I present a unified philosophical foundation for the *Treatise* to see it as a comprehensive system. The impressions and ideas provide a new dynamic relationship that helps position the functional interdependence of cognitive processes and suggests an alternative eighteenth-century context to interpret belief, clarifying the rationale for belief's placement within the passions. Hume's neglected theory of probability as a means to question the sentiments of custom allows for a synthesis of the infamous critical dichotomy of naturalism and scepticism that largely polarizes current philosophical criticism on Hume. Although broad in scope, the purpose of positing a textual cohesion for the *Treatise* is to offset the subdivision of his philosophy into separate critical positions. This counter model of Hume is contingent upon the co-substantiation of imagination and physiology.

After providing Hume with a working overall premise for Book I, I address the correlation between imagination and association in detail. I theorize on Hume's alternative interpretation of time and provide an explanation for attention's (consciousness') duration, which I contrast with classical accounts of time and

Parmenides' temporality. This alternative interpretation of durative-time and attention under the rubric of imagination illuminates Hume's hypotheses on succession and sequence. From a repositioned theory of duration, attentive engagements in the process of association illustrate the structural formation of ideas. The last section reintroduces Willis' physiological framework into Hume's use of animal spirits, the reflex impulse, and the imagination's reliance upon the passions – elements that will clarify the aesthetics of Gerard and Kames. I leave Hume by reformulating attention and carelessness outside of scepticism, which complements the earlier critical directive to see Hume's philosophy as a functional unity. Hume's theory of attention explains the ability to focus, the act of habitual association, and the unavoidable loss of coherence that can interrupt associative trains.

From Philosophy to a General Aesthetic Methodology, the Third Stage:

Willis' physiology and Hume's imagination merge with the aesthetic methods of Kames and Gerard. The corpuscular models of Willis and Hume ground the aesthetics of attention, mind-wandering and the *reflex* sense of imagination. Taste tempers sentiments by gradually resisting the affects from immediate impressions. Willis and Hume influence aesthetic engagements in Gerard's *An Essay on Taste* and in Kames' *Elements of Criticism*. Although Gerard and Kames use Hume's three associative delineations of cause and effect, resemblance, and contiguity, they emphasize the success of narrative connectivity through the sublime. The usage of this classical version of the sublime

elevates pleasure through the experience of continuity from following an associative train. The pleasurable aggrandizement of the self stimulates cognitive attention and helps maintain associative relations within narrations and descriptions. The sublimity of reading determines connectivity and modifies the pace of reading. Following the interpretation of the *Treatise*, the temporality of duration and a heightened state of attention establish a critical foundation to contextualize Gerard and Kames' theory of narrative progression, literary readability, and metaphor's associative success. In this, arguably, Scottish aesthetic movement, the habit of attentive reading, as a critical practice, cultivates the standards of taste.

Part One. Thomas Willis' Anatomy of Cognition

I The Physiological Background to the Faculty of Imagination:

In many respects, and despite G.S. Rousseau's initial observation in "Towards a Social Anthropology of the Imagination,"¹¹ Thomas Willis' *Anatomy of the Brain* (1664) is still a neglected instigator to eighteenth-century Britain's materialist strain of cognitive philosophy. After almost forty years, G.S. Rousseau's recent position that Willis (1621-1675) and George Cheyne (1671-1743) supply a foundation for the Scottish philosophical line of empiricism¹² – David Hume (1711-1766), Lord Kames (1696-1782), and Adam Smith (1723-1790) – remains an intriguing but intangible assertion.¹³ Although Willis finds little place in the history of philosophy, contemporary circles of neuroscience and

¹¹ G.S. Rousseau, 1970, *Enlightenment Crossings: Pre- and Post-Modern Discourses: Anthropological* (Manchester: Manchester University Press, 1991).

¹² G.S. Rousseau, "Temperament and the Long Shadow of Nerves in the Eighteenth Century." *Brain, Mind and Medicine: Essays in Eighteenth-Century Neuroscience*, ed. Harry Whitaker, C.U.M. Smith, and Stanley Finger (New York: Springer, 2007), 365.

¹³ Several critics note the general neglect of Willis' influence upon the subsequent empirical tradition: Robert G. Frank observes the untapped potential of this research in "Thomas Willis and His Circle: Brain and Mind in Seventeenth-Century Medicine," *The Languages of Psyche: Mind and Body in Enlightenment Thought*, ed. G.S. Rousseau (Berkeley: University of California Press, 1990), 142; and Robert Martensen suggests a few of Willis' (largely unrecognized) influences upon John Locke. Robert Martensen, *The Brain Takes Shape: An Early History* (Oxford: Oxford University Press, 2004), 191-92. Bradley C. Lega outlines Willis' influence upon Locke. "An Essay Concerning Human Understanding: How the *Cerebri Anatome* of Thomas Willis Influenced John Locke," *Neurosurgery* 58, no. 3 (2006): 573-4. Kenneth Dewhurst also notes, it is common knowledge in the critical field that Locke attended and transcribed Willis' lectures while at Oxford. Kenneth Dewhurst, *Willis's Oxford Lectures, 1661-1664*, ed. and trans. Kenneth Dewhurst (Oxford: Stanford Publications, 1980), 9.

neurology embrace him as an important founder. Willis does more than coin *neurologie*; he justifies faculty localization by an extrapolation of the brain's anatomical structures, and his largely neglected physiological processes explain the interrelationship between the brain's cognitive-imagination and the involuntary *medullary* processes essential to the central nervous system. His theory of imagination is the primary faculty of cognition. The structure of its working processes in acts of cognition and its seamless assimilation of physiological acts remain underdeveloped.¹⁴ Willis' *Anatomy of the Brain* is not a narrow definition of anatomy: it establishes a faculty paradigm for both eighteenth-century philosophical and physiological frameworks.

This study charts *Anatomy of the Brain*'s cognitive faculties, and will provide a model that allows a re-articulation of the faculty processes in the subsequent

¹⁴ Although A.N. Williams and M.J. Eadie are, in many respects, two fine representatives of Willisian research, their focus is from the perspective of the contemporary physician that emphasizes the practice of medicine and pathology of disease. See A.N. Williams, "Thomas Willis's Practice of Paediatric Neurology and Neurodisability," *Journal of the History of the Neurosciences* 12, no. 4 (2003): 350-67, "Thomas Willis' Understanding of Cerebrovascular Disorders," *Journal of Stroke and Cerebrovascular Diseases* 12, no. 6 (2003): 280-84; "Too Good to be True? Thomas Willis – Neonatal Convulsions, Childhood Stroke and Infanticide in Seventeenth Century England," *Seizure* 10 (2001): 471-83; and M.J. Eadie, "A Pathology of the Animal Spirits – the Clinical neurology of Thomas Willis (1621-1675): Part I – Background, and Disorders of Intrinsically normal Animal Spirits," *Journal of Clinical Neuroscience* 10, no. 1 (2003): 14-29; "A Pathology of the Animal Spirits – the Clinical neurology of Thomas Willis (1621-1675): Part II – Disorders of Intrinsically Abnormal Animal Spirits," *Journal of Clinical Neuroscience* 10, no. 2 (2003): 146-157. Several recent authors deserve recognition for explaining Willis' physiological reflex processes from *The Souls of Brutes*: M.R. Bennett and P.M.S. Hacker, "The Motor System in Neuroscience: A History and Analysis of Conceptual Developments," *Progress in Neurobiology* 67, no. 1 (May 2002) 1-52; Zoltán Molnár, "Thomas Willis (1621-1675), the Founder of Clinical Neuroscience," *Nature Reviews: Neuroscience* 5, (April 2004) 329-35; and François Clarac, "Some Historical Reflections on the Neural Control of Locomotion," *Brain Research Reviews* 57, no. 1 (January 2008): 13-21.

constructions of later eighteenth-century empirical theories of physiology and philosophy. It establishes a new precedence for one's physiological reception, synthesis, and adaptation of impressions. It could provide a British cornerstone to, for example, Hume's neglected inclusion of physiology: "all our perceptions are dependent on our organs, and the disposition of our nerves and animal spirits" (1.4.2.45).¹⁵ *The Anatomy of the Brain* provides an interactive model between the impressions of stimuli and the physiological appropriation into involuntary-reflex or voluntary-cognizant experiences, which will become crucial for the formation of *imaginative* processes in Locke's experiential principles and Hume's premise for the passions.

Before an exploration of Willis' *Anatomy* proper, it is necessary to explain the materialist constraints of the imagination as the primary cognitive faculty during the seventeenth and eighteenth century. This will help contextualize faculty models that incorporate or *exclude* the physiology of the brain. A brief historical survey of the *imagination* as a faculty during the Enlightenment arises from a need to clarify the historical context of the term, and it will give exposure to several unrecognized discrepancies within current medical and philosophical fields that are presently undermining the clarity of contemporary historical research from properly reconstructing the brain's faculty processes. The faculty of *imagination* often finds conflation with the more whimsical *phantasy*,¹⁶ and this is especially true within contemporary retrospectives

¹⁵ David Hume, *A Treatise of Human Nature*, 1739-40, eds. David Fate Norton and Mary J. Norton (Oxford: Oxford University Press, 2000), 1.4.2.45.

¹⁶ Jamie C. Kessler, "Restraining the Passions: Hydropneumatics and Hierarchy in the Philosophy of Thomas Willis," *The Soft Underbelly of Reason: The Passions in the Seventeenth Century*, ed. Stephen Gaukroger (London: Routledge, 1998), 153.

of philosophy. Willis' *Anatomy* explicitly defines phantasy to be a sub-formation of the imaginative faculty. In the *Anatomy*, phantasy lingers between the *fornix* and hind part of the hemispheres (i.e., occipital lobes) (Willis 1664, 61). It is an after effect of thought, or the remainder of the initial idea from the imaginative act. Willis' involuntary system prominently consists of the "medullary substance called the *Callous Body*" (Willis 1664, 61), and phantasy remains in this general vicinity as subtle and rarified animal spirit form and an expenditure of the previous thinking process.¹⁷ With the exception of Robert Martensen (2004),¹⁸ who recognizes the central importance of the hemispheres to initiate and direct cognition (88), historical reconstructions of Willis' faculties place the imagination within the corpus callosum or the corpus striatum (i.e., Willis' more general *callous body*).¹⁹ These localizations point to an unnoticed variance between Willis' *Anatomy of the Brain* and his later, less rigorous but more popular, *Souls of Brutes*. In the former, the *physical* and *very material* hemispheres of the brain define the "rational soul," and the "Functions [that] do chiefly and more immediately belong to the substance of this" are "the Imagination, Memory, and Appetite" (Willis, 1664, 58). This discrepancy in anatomical locations of the imagination occurs, on the one hand, because

¹⁷ See Thomas Willis, *The Anatomy of the Brain* (1664, 61) and *Willis's Oxford Lectures* (1661-1664, 103).

¹⁸ See Robert Martensen, *The Brain Takes Shape: An Early History* (Oxford: Oxford University Press, 2004).

¹⁹ See François Clarac, "Some Historical Reflections on the Neural Control of Locomotion." *Brain Research Reviews* 57, no. 1 (April 2008): 13-21; M.J. Eadie "A Pathology of the Animal Spirits – the Clinical neurology of Thomas Willis (1621-1675): Part I – Background, and Disorders of Intrinsically normal Animal Spirits," *Journal of Clinical Neuroscience* 10, no. 1 (2003a): 15; Zoltán Molnár, "Thomas Willis (1621-1675), the Founder of Clinical Neuroscience," *Nature Reviews: Neuroscience* 5 (April 2004): 329-35.

of the confused conflation of the imagination with phantasy (that latter subsisted near the medullary and not the cortical fibres of the brain); on the other hand, these works provide two distinct anatomical accounts in order to distinguish the rational soul *from* the sensitive – the Enlightenment’s medical respective equivalent for the involuntary and voluntary systems. These anatomical variations perpetuate the confusion over the exact location of the imagination in particular, and, consequently, the general physiological processes in the remaining faculties. Without recognition of the imagination’s location within the hemispheres and the separate faculty of phantasy as a residual act of cognition, Willis and the subsequent history of his influence on faculty-localization suffer several misinterpretations.

To a certain point, this is understandable. Willis shifts anatomical locations for the faculties in the *Anatomy* and *The Souls of Brutes* – a move that does not inspire clarity; the latter work is a retraction and, in many ways, a subversion of the former. In *The Souls of Brutes*, the division of the rational from the sensitive acts as a theological apology to many heretical and material positions found in the earlier work. In the *Anatomy*, Willis is a strict anti-Cartesian and denies the pineal gland as the seat of the soul (Willis, 1664, 79). The *Anatomy* provides a number of very different constructions. Imagination and other cognitive acts generally occur in and from the material constraints of brain – this excludes the previous localizations of the ventricles, the streaked bodies, and the nates and testes.²⁰ The animal spirits are physical and derive their origin from the cerebellum

²⁰ This position opposes a recent reading of Willis that premises him as dualist because of an almost exclusive reliance upon the *Souls of Brutes*. See M.R. Bennett and

and the hemispheres proper. All thought is material. Unlike Cartesian models,²¹ the brain, not the blood, generates animal spirits. The rational soul is the brain, which also incorporates and belongs to the sensitive; there is not the standard binary division between the two souls to which Willis in the *Souls of Brutes* (for convenience, at least) subscribes. The striatum neither houses nor provides the commands of the faculties, nor does it create animal spirits, nor does it influence the involuntary system beyond transmitting the processes from the two central organs of Willis' brain. *The Soul of Brutes* localizes the imagination in the corpus callosum that shares an affinity with the *Anatomy's* cortical substance of the callous body, the uppermost fibres joining the two hemispheres, but the imagination is not limited to this stringent anatomical point in the *Anatomy*.²²

Beyond the need to recognize these fundamental differences between *The Souls of Brutes* and *The Anatomy of the Brain* in order to clarify an alternative, more material, position within the history of medicine, it is necessary to turn to Willis' *Anatomy* to understand, as the title says, the brain's anatomy. The full title of his later work, *The Two*

P.M.S. Hacker, "The Motor System in Neuroscience: A History and Analysis of Conceptual Developments," *Progress in Neurobiology* 67, no. 1 (May 2002): 17-8.

²¹ John Yolton, *Thinking Matter: Materialism in Eighteenth-Century Britain* (Oxford: Basil Blackwell, 1983), 161.

²² G.S. Rousseau locates the origin of one soul uniting the sensitive and rational to be later than Willis and of an eighteenth-century origin. This observation is accurate for the *Souls of Brutes* but not for the *Anatomy*. See G.S. Rousseau, "As nervous physiology gained ground, Willis' bipartite soul narrowed into one: rational soul dropping out in favor of the corporeal *anima*, which appealed to increasingly secular and socially conscious people in the vanguard of contemporary life inquiring about their identities." "Temperament and the Long Shadow of Nerves in the Eighteenth Century," *Brain, Mind, and Medicine: Essays in Eighteenth-Century Neuroscience*, eds. Harry Whitaker, C.U.M. Smith, and Stanley Finger (New York: Springer), 362.

Discourses concerning the Souls of Brutes, which is that of the Vital and Sensitive of Man, also indicates that this secondary study is an examination of the sensitive and follows the traditional seventeenth-century account of the corporeal soul. The anatomical processes of the faculties have a more substantial exegetical analysis in the earlier text; the argument of the sensitive should not, as it historically has, replace Willis' account of the rational soul; at the very least, the earlier *Anatomy* should temper and inform the later generalist work on sensitive physiology. Although the *Anatomy of the Brain* is Willis' most rigorous work on cognition and the brain, his early little known work "On Fermentation" (1659) clarifies his subsequent context for animal spirits and provides the rationality of Willis' fermentation in physiological processes. "On Fermentation" outlines the future arc of Willis' intellectual career – a design to which he stringently followed. After the *Anatomy*, Willis' second work, *Cerebral Pathology*, turns to clinical practices derived from the still nascent and controversial anatomical observation (1667), and his third major work provides a generalist account of animal physiology in *Two Discourses on the Souls of Brutes* (1672).²³

Although this study does not focus upon language, seventeenth-century anatomical schools demonstrate their faculty allegiances according to the terminology used for the primary faculty. As a general rule, cognitive paradigms either use

²³ Thomas Willis, "Of Fermentation, or the Inorganic Motion of Natural Bodies: A Medical-Philosophical Discourse of Fermentation or, Of the Intestine Motion of Particles in Every Body," *The remaining medical works of that famous and renowned physician Dr. Thomas Willis of Christ-Church in Oxford, and Sidley Professor of Natural Philosophy in that Famous University: Viz I. Of fermentation, II. Of feavours, III. Of urines, IV. Of the ascension of the bloud, V. Of musculary motion, VI. Of the anatomy of the brain, VII. Of the description and uses of the nerves, VIII. Of convulsive diseases*, trans. S. Pordage (London, 1681), 1-3.

imagination or reference *reason* to characterize, respectively, their identification with a materialist physiology, on one side, or the immaterialist-dualist philosophy, on the other. In opposition to the immaterialist philosophies, material versions of the mind did not conform to abstract faculties or absolute categories that were capable of neat functional separations; the fluid inter-dynamism of the faculties allowed for inter-dependence. For materialists, cognition is not only multifaceted but also capable of conceptual unity.

Another trend within the history of medicine is to take the imagination to be synonymous with the understanding²⁴ – often further generalizing higher cognitive acts with the volition of the “(free)will.”²⁵ This may speak to the voluntary component or volitional response (from the faculty of appetite) described within Willis’ anatomical location for the faculty of the imagination, but it does not satisfy the ability of the imagination to influence the nervous structure. It highlights the tendency within contemporary models of the “Will” that, in turn, subscribe to medieval or Cartesian

²⁴ Locke’s derivative work initiated a shift in cognitive usage from the imagination to the understanding, which does not contribute to the clarity surrounding the cognitive categories. These faculty terms had cultural relevance for both sides of the philosophical debate between the representative figures of Common Sense School and the unofficial practitioners of empiricism. Within the evolution of cognition’s historical context, “common sense” and “imagination” were originally interchangeable terms in Thomas Hobbes, Francis Hutcheson, and David Hume. This conflation changes under the direction of Thomas Reid and James Beattie, and both sides would influence, for example, Thomas Paine’s categorization of the faculties.

²⁵ Robert G. Frank Jr, “Thomas Willis and His Circle: Brain and Mind in Seventeenth-Century Medicine.” *The Languages of Psyche: Mind and Body in Enlightenment Thought*, ed. G.S. Rousseau (Berkeley: University of California Press, 1990), 137.

constructions of desire.²⁶ Yet, the veritable war between the hostile camps of materialist and immaterialist positions have to be kept in mind when reconstructing faculty processes and anatomical models. As an antithetic Cartesian model, Willis belongs to a materialist tradition of imagination that includes the philosophers Pierre Gassendi (1592-1655) and Thomas Hobbes (1588-1679) before him, as well as David Hume after him. Willis uses the *faculty* of the *imagination* to explain the processes between appetite, memory, sense, and action (which, I will demonstrate, are Willis' seventeenth- and eighteenth-century interrelated functions of imagination).

Although Willis was arguably the leading medical authority on the brain for nearly a century and his fame spread to the Continent, still further documentation is necessary to chart the conventional use of the faculty of imagination in Britain. Thomas Hobbes, for example, provides a very interactive, prior version of cognition's nature – cognition is not uniquely a separable category (or an expression of one faculty). One form of cognition is not distinguishable from “the sum of his natural faculties and powers” (Hobbes 1640, 21); the mind works, for Hobbes, by intermeshing the faculties. There are two basic “powers” of the mind: “cognitive or imaginative or conceptive; and motive” (Hobbes 1640, 22). Hobbes' fluidity of terms between “cognition or imagination” emphasizes a function of thought rather than a prioritizing terminology; a faculty performs with general abilities and it is not foremost for the progression of knowledge to limit unnecessarily its capabilities through the reductive constraints of

²⁶ See the infinite will of *Meditations on First Philosophy*. René Descartes, *Meditations on First Philosophy*, 1641, trans. Donald A. Cress, 3rd ed. (Indianapolis: Hackett Press Company, 1993).

language. Other thinkers would become more stringent with their use of terms and functions surrounding the imagination and fancy. Hume's *Human Nature* (1739-40) follows Hobbes up to a point, but he seems to actually rely more upon a Willisian anatomical model, since Hume consistently speaks of the imagination as the leading faculty directing the derivative faculties of memory and fancy.

Ephraim Chambers' *Cyclopaedia: or, an universal dictionary of the arts and sciences* (1728)²⁷ provides a final historical example as evidence for, and the need to recognize, the imagination as a generally synonymous term for the faculty of cognition. He defines its meaning in what is arguably the imagination's most widely accepted form and usage between, at least, the time of its publication and reprints (1728-88), and justifies the ubiquity of the term within Enlightenment culture. Chambers refers to Willis directly (with his references deriving from the *Anatomy*) to establish the *imagination's* localization in the centre of the Brain:

Imagination, a power of faculty of the soul, whereby it conceives and forms, ideas of things, by means of impressions made on the fibres of the brain, by sensation. [And to further confirm Willis' influence] This power depends on the memory. Ideas enter into the mind by the sense; the memory retains them; and the *imagination* compounds them. ... The organs of our senses are composed of fibrillae, or little fibres, which, at one end, terminate in the outward parts of the body and skin, and at the other in the middle of the brain. (Chambers 1728, [n.p.])

Although Chambers provides a curtailed version of Willis' physiological impressions and their possible registration within memory, the entry shows that the imagination is a physiologically grounded faculty; and it gives one of Willis' theories as the standard

²⁷ Ephraim Chambers, "Imagination," Vol. 2, *Cyclopaedia, or Universal Dictionary of Arts and Science*, ed. Abraham Rees, 2 vols. (London, 1728), [n.p.]

explanation for cognitive localization. The *Cyclopeadia* speaks to the imagination's *compounded* processes with the other faculties – a physiological basis originating from Willis' *Anatomy*, but with a philosophical origin from Thomas Hobbes' cognitive model. It may also demonstrate the problem of Willis' possible dualism and the subsequent interpretations, both modern and contemporary, of his imagination from *The Souls of Brutes*. Chambers' entry is part of the standard account of Willis' interrelationship with fibrous elements of Cartesianism; however, this is not the complete story like the concept of dualism itself, eighteenth-century accounts of brain anatomy show a fissure. The division in Willis' own *corpus* actually moderates and promotes both a materialist position and an immaterialist safeguard within cognition.

Although Willis' potential influence upon what would eventually become British empiricism is on the historical periphery to the immediate discussion of substantiating the prevalent use of the imagination as a primary faculty of cognition in the *Anatomy*, this early elaboration of imagination as a faculty adds to Willis' unique contribution to subsequent cognitive paradigms throughout Britain. It also speaks to the need to situate Willis' cognitive model as a materialist *philosophy of anatomy* (after all, he was the Sedleian Professor of Philosophy). The demarcations of contemporary scholarship between philosophy and neurology are not present in seventeenth- and eighteenth-century fields. Willis' physiological explanations seek to challenge the directives and false assumptions of philosophy, but his arguments still rely upon philosophic considerations that extend from his anatomical findings. Within this delicate medium, Willis' *Anatomy* undermines other burgeoning theories of mechanical medicine by challenging the

conception of the amorphous (i.e., not anatomically delineated) brain to its very core. Willis provides a re-evaluation of the brain as a bio-chemically organized system in order to explain the *corpuscular* basis of its constitution. The imagination as the central process of cognition will serve as reparation to the ahistorical misnomer generally ascribed within modern philosophies of the mind as *common sense* or the *understanding*, which are misconstrued terms taken to be primary forms or acts of cognition. The historical bifurcation of the *imagination* and *judgment* must be kept in mind at all times: without a proper context to navigate these faculties, the very paradigms of cognition radically alter the sense of what Willis, empirical thinkers, and the seventeenth- and eighteenth-century medical field once meant. For Willis, the faculties of cognition depend upon physiology that controls the synthesizing of both sensory and ideational information. As a founder of modern neurology, Willis' cognitive model also provides a foundation for the nervous system – a sympathetic unification of parts achieved through hypothesizes on the functional processes of anatomy. In the *Anatomy*, the faculties determine the body's reactions.

II. Thomas Willis' Biography

In England, Thomas Willis (1621-1675) was arguably the most famous doctor of his generation. Although a contentious assertion, Willis' inaugural construction of physiological cognition within an empirically based anatomy effectively challenged the conventional fields of philosophical Aristotleanism, chemical atomism, the medical

humours of Galen (129-217) and Hippocrates (460 BC- 270 BC), and even the still controversial Harveian theories of the heart and blood. Willis shifted away from Harvey's explanations in order to establish constitutional preeminence in the brain and nervous system. Far from one clearly demarcated practice, seventeenth-century medical training usually involved a basic anatomical knowledge accompanied by the scientific logic of Aristotle (384 BC-322 BC). The basic tenets of Francis Bacon's (1561-1626) empiricism did not yet play a prominent role in the education of physicians, and medical empiricism, or clinical pathology, did not come to the forefront until a physiological foundation became the basis for aetiological hypotheses.²⁸ Although clear disciplinary lines between medicine and philosophy did not exist and would not exist until possibly as late as the 1880s (when university disciplines started to clearly emerge), at the level of origins, Willis sought a method of medical inquiry that was markedly different from previous systems of medicine or philosophy. Instead of inquiry through logical dictums deriving from Aristotle, Willis worked with tactile experiments and an empirically-reasoned philosophy to explain physiological relationships, much to the chagrin of traditional professors of medicine. Willis never fully embraced atomism or the older hierarchical functions of the Schoolmen in order to categorize physiology.

Despite a unique methodology, Willis was by no means free of influence. He developed a physiology of the brain that relied upon the ancient theories of faculty localization found in Galen, Aëtius (296-454) and Erasistratus (304 BC- 250 BC). He had

²⁸ This was largely to the credit of Willis – the inclusion of physiology provided Willis with a distinctively modern edge over Thomas Sydenham (1624-1689). The latter's medical interests were of a topical nature; anatomical origins or physiological processes did not influence his empirical curatives (Martensen, 2004, 165-66).

several other more contemporary and influential predecessors: Pierre Gassendi (1592-1655), the anti-Cartesian, who took empiricism to be the foundation of the senses; Paracelsus' chemical investigations (1493-1541), who premised internal changes over a constant bodily identity; and, to a certain extent, William Harvey's circulation of blood by the heart, which Willis incorporated, but granted to have lesser importance than the brain. Under Willis, the heart became a central organ for the movement of animal spirits throughout the rest of the physiological system.²⁹ In the culture at large, the Epicurean model of atomism was also a new impetus to materialistic investigations. It initiated a standard conceptual frame for inquiry (even if the methodology was violently contested) and allowed Willis, and other burgeoning empiricists, to study the material constraints of the brain and develop a theoretically functional anatomy.

The extent of Willis' theoretical corporeality – the conflation of the brain with the mind – makes him exceptional, but far from finding himself rejected by the secular or the ecclesiastic orders, he received recognition and advancement on both fronts. With anatomical premises of corporeality exceeding (in places) the materialism of Thomas Hobbes (1588-1679), Willis' success surprises the usually uncompromising demands for a pious science. Several reasons seem to have allowed Willis to accomplish an overt material physiology without censure. At, perhaps, the simplest level, Willis' science of observation develops a philosophical method that, although he deeply impacted the subsequent history of empiricism, Willis does not couch his philosophical terms within

²⁹ Harvey (1578-1657) also lived at Oxford from 1642 to 1646 – the time encompassing Willis' own medical training, 1643-46. Hansruedi Isler, *Thomas Willis 1621-1675: Doctor and Scientist* (New York: Hafner Press, 1968), 11.

the specific field of philosophy. He retains a medical, scientific, and disciplinary circumscribed terminology with an overall direction and application to the advancement of medical knowledge and clinical practice. A physiological study of the brain allows for explanations that only indirectly intersected early modern metaphysical investigations in seventeenth-century philosophy, which would have made the impact on theology negligible. His method of scientific inquiry, clinical observation, and meticulous detail allowed Willis to point to the body as (largely) material without fear of repercussion, since the argument did not lay under the usual constraints of philosophy's justifications or the larger politics of faith. Where an overt charge of materialism may have been laid against Willis' corporeal observations and arguments, Willis carefully provides an immaterial subtext in the foundation of his exegesis – the *Anatomy* carefully complements acts of divinity.

On a more pragmatic basis, Willis directly proved his faith. During the English Wars, Willis and the other Royalists bulwarked Oxford while it was under siege. After the Puritans quashed the Royalist defences, the victors sought to eliminate Anglican practices for they thought them a little too Catholic. Key clergy suffered ejection from Christ Church; among them was John Fell (1625-1686). Despite attempts to quell the opposition's rebellious faith, an underground movement to continue Anglicanism continued in a large part because of Willis' willingness to hold the services in his rooms at Christ Church and later at Beam Hall.³⁰ John Fell would eventually become Canon and Dean of Christ Church College (following in the steps of his father, Samuel Fell who had

³⁰ Ibid., 13.

been dispossessed by the rebels in 1648), and Samuel later became vice-chancellor of the University and the Bishop of Oxford.³¹ Willis would claim that he received the chair from Gilbert Sheldon (1598-1677), another loyal Royalist fellow, who also used his influence as Archbishop of Canterbury to call Willis to London during the Great Plague (post-1665).³² In probability, the charge of heresy was never laid against Willis because he proved his loyalties beyond verbose rhetoric. His early actions demonstrate his allegiance to those who would become the most influential religious authorities – the very same authorities that had the power to criticize or condemn his investigations.

In 1660 at the probable bequest of John Fell and through Willis' avowed influence of Gilbert Sheldon, Willis became Sidleian Professor of Natural Philosophy at Oxford, and, shortly thereafter, he received the appointment of a doctor of medicine.³³ Traditionally, the Sedleian Professorship would necessitate lectures upon Aristotle, but Willis' anatomical and physiological investigations replaced Aristotelean explications of natural philosophy. Willis was part of the larger cultural movement at Oxford that researched the physical without overtly challenging the theological. He was intimately connected with the intellectual milieu, both a *member* of the Invisible College and a constitution member of the Royal Society. Willis had a close and direct relationship with William Petty (1623-1687), professor of anatomy and political theorist, and they gained renown for the revival of (i.e., resurrection of) Anne Greene. As was common practice in

³¹ Willis would marry John Fell's sister, Mary, in 1657.

³² Kenneth Dewhurst, *Thomas Willis as a Physician* (Los Angeles: University of California Press, 1964), 9; Thomas Willis, *Willis's Oxford Lecture, 1661-1664*, ed. and trans. Kenneth Dewhurst (Oxford: Stanford Publications, 1980), 17.

³³ Thomas Willis, *Willis's Oxford Lecture, 1661-1664*, ed. and trans. Kenneth Dewhurst (Oxford: Stanford Publications, 1980), 12.

the seventeenth century, Willis' research into anatomy, and the *Anatomy of the Brain* in particular, was a collaborative effort. A number of individuals deserve credit for the fruition of the *Anatomy*. Ralph Bathurst (1620-1704) may have helped revise the *Anatomy of the Brain* (Hughes, 1991, 39). Thomas Millington (1628-1704), who succeeded Willis' Professorship and later became President of the Royal College of Physicians, conversed and helped analyze Willis' research. Christopher Wren (1632-1723) participated in the development of procedures to adequately dissect the brain, and he drew many of the illustrations for Willis' text. In like regard, Richard Lower (1631-1691) also illustrated the *Anatomy* and contributed to Willis' research. Other notables in Willis' circle include his apprentice Robert Hooke (1635-1703) who was an assistant to Willis and probably upon his recommendation later worked under Robert Boyle (1627-1691). Then, of course, there was the diligence of John Locke (1632-1704) through whose efforts Willis' lectures come to posterity.

Although Willis garnered respect, he was not without his critics. Willis hypothesized that the brain controlled the central nervous system. Nathaniel Highmore (1613-1685) and Nicolas Steno (1638-1686) were among his most famous detractors. Highmore took offence at Willis' critique of the hysteria, since Willis posited the disease to be a consequence of the central nervous system. This shifted the disease away from the Harveian model of hysteria that relied upon the blood and the heart.³⁴ Steno makes a few reasonable corrections, but he emphasizes Willis' (questionable) inconsistencies

³⁴ Hansruedi Isler, *Thomas Willis 1621-1675: Doctor and Scientist* (New York: Hafner Press, 1968), 41 and 129-35; Trevor J. Hughes, *Thomas Willis 1621-1675: His Life and Work*, ed. Hugh L'Etang (London: Royal Society of Medicine Services, 1991), 91.

surrounding the pineal gland.³⁵ This underscores his criticism as a censure of Willis' anatomical innovations³⁶ only to promote the legitimacy of Descartes' anatomical observations³⁷ and to further the mechanics of the brain within the Cartesian-machine.³⁸ Despite these representative attempts to resist Willis' advancements in order to substantiate philosophical directives from divergent medical theories, the success of the *Anatomy of the Brain* was not significantly altered. The *Anatomy* went through numerous editions and would continue as “the definitive textbook on the subject for about one and half centuries” (Hughes 1991, 91). It is a landmark text, and generally considered the initial empirical foundation for present-day clinical approaches in neuroscience.

Willis' biography helps to understand his intellectual agenda that was at once medical and philosophical. Due recognition is paid to Willis in medical fields, yet his physiological philosophy is seen as largely an absurdity. If attention, however, is paid to Willis' anatomy and physiology as the inauguration of a new philosophical system, as I believe it should, there emerges a new conceptual apparatus and paradigm for subsequent material models of cognition. Willis' neuro-physiological philosophy augments the context for cognitive parameters ascribed to eighteenth- and nineteenth-century English

³⁵ Nicholas Seno, “A Dissertation on the Anatomy of the Brain, by M. Steno, read in the assembly held at M. Thevenot's House in the year 1668,” Vol. 2, *A System of Anatomy From Monro, Winslow, Innes, and the Latest Authors. Arranged, as nearly as the Nature of the Work Would Admit, in the Order of the Lectures Delivered by the Professor of Anatomy in the University of Edinburgh*, 2 vols, ed. Andrew Fyfe (London, 1784), 90.

³⁶ *Ibid.*, 84.

³⁷ *Ibid.*, 85.

³⁸ *Ibid.*, 91.

philosophy and literature, and is best understood through imagination and its physiological interrelationships.

III. A Note on Anatomical Terminology

Willis' obscurity outside of neurological circles may be due to the rather arduous task of navigating through his archaic anatomical demarcations and theorizations. These prove difficult for specialists in the history of medicine and will certainly challenge non-specialists. There are two tentative approaches for explaining Willis' *Anatomy of the Brain*: the first is to simplify and rest on approximations that relegate complexities to obscurity, but retain the basic concepts of the Willis' neurophysiology; the second, attempt to reconstruct the often intricate processes within the field of seventeenth-century anatomy, but what is gained in accuracy is lost in general accessibility and widespread readership. I choose the latter in order to faithfully establish Willis' brain structure and its reciprocal cognitive principles. This inquiry will allow a deeper understanding of Willis' neurology and it will eventually lead to an easier substantiation of Willis' theories in subsequent later seventeenth- and eighteenth-century cognitive models found in the fields of philosophy and aesthetics, and to which this study will turn after Willis.

For ease of reference and in an attempt to aid the non-specialist, a curtailed vivisection of Willis' *Anatomy* may prove useful in navigating the technical terrain. Primary status must be located in the brain, more accurately centralized in the cerebral hemispheres, the frontal lobes, or the middle part of the brain. The brain controls the

nervous system and cognition; in fact, cognition, or the imagination, is the primary faculty of the purely anatomical description of the brain. The brain as a complex of faculties is the voluntary system within the larger and subsidiary physiological processes. The cerebellum is key to the involuntary system, and although it has an intimate connection to the voluntary faculties in brain, it speaks to the involuntary habits, physiological movements, and general constitutional considerations. Outside of the cognitive faculties found in the brain proper, the nervous system is roughly synonymous with the *oblong marrow*, which is responsible for the nervous pathways and their communications throughout the body. Finally, Willis' passions find articulation and moderation through the heart, and it controls the reception and redistribution of the various types of passions. Although this may serve as a simple review, it would be reckless to replace this gloss for the more substantial analysis.

IV. Willis' Rejection of the Sensitive and Rational Divide

Though unrecognized in current medical history, Willis' *Anatomy* does not subscribe to the rational and sensitive two-soul theory; the brain, instead, is either entirely rational or sensitive – a classification made from discerning the anatomical complexity of the brain. Willis categorizes the faculties of imagination, memory, and phantasy according to their function, but the faculties' practical interconnectivity is essential to his model of cognition. In a decisive move away from the common immaterial rationality of

the seventeenth century, the brain becomes a material regulatory framework for both involuntary and involuntary physiology.

Willis challenges the Aristotelean division between sensitive and rational souls. The size and complexity of the hemispheres, as well as the speed in which the animal spirits move through the brain, determines the lucidity of cognition: “The Brain [*in totum*] is accounted the chief seat of the Rational Soul in man, and of the Sensitive in brute beasts, and indeed as the chief mover in the animal Machine, it is the origine and foundation of all motions and conceptions” (Willis, 1664, 58). Willis’ *Anatomy* already proposes that the rational soul is corporeal – the sensitive soul is indistinguishable from the rational. The categorization of an animal as rational or sensitive is entirely a determination of the animal’s cerebral anatomy. In the theologically-informed historical context of the seventeenth century, such a dramatic material stance cannot be overstated. Isler, Finger, Bennett and Hacker, and G.S. Rousseau perpetuate a critical reading of Willis’ dualism.³⁹ Willis’ position in the *Anatomy* is materialist to such an extent that even later eighteenth-century physiologists would still denounce the sensitive soul in both

³⁹ See: Isler; Finger, *Minds Behind the Brain: A History of the Pioneers and Their Discoveries*, (Oxford: Oxford University Press, 2000), 90; Bennett and Hacker, “The Motor System in Neuroscience: A History and Analysis of Conceptual Developments,” *Progress in Neurobiology* 67, no. 1 (May 2002); and G.S. Rousseau, “Temperament and the Long Shadow of Nerves in the Eighteenth Century,” *Brain, Mind and Medicine: Essays in Eighteenth-Century Neuroscience*, eds. Harry Whitaker, C.U.M. Smith, and Stanley Finger (New York: Springer, 2007), 360. Their assertions are accurate only if the later *Souls of Brutes* encapsulate Willis’ theory of the brain, but this rejects Willis’ actual study detailing the role of the brain. Even in the later simplified version of the mind found in the *Souls of Brutes*, Willis demonstrates an antithesis to dualism and the immaterialist corporeal mind: “the sensitive part can have the faculty of reasoning, but only within very narrow limits.” Hansruedi Isler, *Thomas Willis 1621-1675: Doctor and Scientist*, (New York: Hafner Press Company, 1968), 154.

animal spirits and in the brain proper; for instance, Samuel “Colliber argues that no single particle of the brain could be the sensitive or thinking faculty” (Young, 1983, 169).⁴⁰ The *Anatomy*, however, posits cognition in a spectrum, not a binary. Those animals of a lower, more *sensitive* brain, like fish and fowl, has a more pronounced oblong marrow [medulla oblongata] (Willis, 1664, 20); in contrast, the “Brains of Men and of four-footed Beasts were alike in most things” (Willis, 1664, 36). For Willis, humans are not markedly distinguishable from other mammals with a comparable cerebral anatomy. The traditional hierarchy of humans over animals and human thought over animal act does not hold true for the *Anatomy* – a precedence in medical history that requires recognition in order to further analyze subsequent eighteenth-century anatomical schools.

The hemispheres are the chief anatomical feature in determining whether an animal has a rational or sensitive soul, and whether cognitive decisions rely upon either voluntary or involuntary processes. The brain’s structure defines its rational capacity and suggests faculty localization: within “its double Hemisphere, also the two Lobes or partitions of either” (Willis, 1664, 58).⁴¹ In those animals with a cerebral complexity, the voluntary cognitive faculties reside within the hemispheres: “But some Functions do chiefly and more immediately belong to the substance of this [the brain, proper], and others depend as it were mediately and less necessarily upon it. Among these, which of

⁴⁰ Wright argues that the lack of division between Willis’ two souls resides entirely within the sensitive. He posits that Willis in a traditional framework of duality. He relegates animal spirits to be sensitive (148) and, despite Willis’ support for animal rationality and material cognition, rational acts were immaterial. “Locke, Willis, and Seventeenth-Century Epicurean Soul,” *Atoms, Pneuma, and Tranquillity: Epicurean and Stoic Themes in European Thought*, ed. Margaret J. Olser (Cambridge: Cambridge University Press, 1991), 149.

⁴¹ Willis (1664) only divides the hemispheres into anterior and posterior lobes.

the former sort are accounted the chief are the Imagination, Memory, and Appetite” (Willis, 1664, 58). For Willis, some involuntary functions or automatic responses do not rely upon voluntary acts of cognition, but those activities that associate, recall, and direct concepts occur within the rational medium of the hemispheres.⁴²

V. Animal Spirits, Mercury, and Aether

An examination of Willis’ (often) summarily dismissed animal spirits will substantiate them as the basis for cognition as well as the functional organization and the anatomical placement of the faculties. Animal spirits provide the structure that allows impressions of sensation. Willis initiates a new physiological model that results in a paradigm shift not just in the structural context of anatomical knowledge but also in how to ground theoretical physiology through empirical methods. Willis’ version of animal spirits appears an intellectual oddity. On one hand, Willis’ animal spirits constitute a material anatomy (1664), and, therefore, cognition derives from and literally is a chemical and a physiological component; on the other hand, Willis’ spirits first find expression as an ineffable aether (1659), which becomes (under his hypothesis) the principle behind physiological motion, and the lucid form for thought and for sensation. Animal spirits also contain divine undertones within Willis’ distillatory theory of spirit fermentation that allows him to escape the heretical stance of materialism.

⁴² Martensen initially recognizes the imagination’s location in the hemispheres, but further into his analysis he changes its position to the ventricles (2004).

Willis' *Anatomy of the Brain* is actually an outgrowth of his earlier chemical work that critiqued *both* corpuscular models and Aristotelean theories for their lack of direct chemical evidence to explain the otherwise “vain figments of forms and qualities”⁴³ within Nature. Willis' *Of Fermentation or the Inorganic Motion of Natural Bodies* shifts the general categorization of Willis' medical research from one linked to the unscientific “animal Spirits” into an empirically-based theory of experimentation and chemical reaction, which Willis sees as a general law for the “whole provision and dowry of Nature.”⁴⁴ Stanley Finger attempts to modernize Willis' terminology in order to demonstrate Willis' contribution to chemistry: “Willis based his medicine on the active principles of mercury, sulfur, and salt, to which he added the inert substances water and earth. ... [Willis] embraced new chemical principles and had little use for the four humors of times past.”⁴⁵ Under Willis' theory, fermentation should also be included in all

⁴³ This text comprised the first half of Willis' *Diatribae Duae Medico-Philosophica* (1659). Thomas Willis, “Of Fermentation, or the Inorganic Motion of Natural Bodies: A Medical-Philosophical Discourse of Fermentation or, Of the Intestine Motion of Particles in Every Body,” 1659, *The remaining medical works of that famous and renowned physician Dr. Thomas Willis of Christ-Church in Oxford, and Sidley Professor of Natural Philosophy in that Famous University: Viz I. Of fermentation, II. Of feavours, III. Of urines, IV. Of the ascension of the bloud, V. Of musculary motion, VI. Of the anatomy of the brain, VII. Of the description and uses of the nerves, VIII. Of convulsive diseases*, trans. Samuel Pordage (London, 1681).

⁴⁴ *Ibid.*, [n. pp.].

⁴⁵ Stanley Finger, *Minds Behind the Brain: A History of the Pioneers and Their Discoveries* (Oxford: Oxford University Press, 2000), 87. Finger deems Willis' theory of “spirits to be fanciful” (97), but, for Willis, the “spirits” were actually chemical agents. Clower also conditions Willis through Galen's theory of spirit conversion (the latter of which I cite to aid in Willis' distinction): “The Natural Spirit is created in the liver after the eaten food arrives in the intestine. This Natural Spirit is then converted to the Vital Spirit by the heat of the heart, and then into the Animal Spirits within the brain through the action of the proposed structure known as the rete mirabile [wonderful net].” William T. Clower, “The Transition from Animal Spirits to Animal Electricity: A Neuroscience

chemical processes, since it is the central catalyst to transmute matter and explain change. There is considerable confusion in the synthesis of spirit with mercury, the latter of which is not part of Willis' central theory of chemistry; he refers to spirit, not mercury (Willis 1659, 2). Historically, however, spirit and mercury were usually synonymous terms in seventeenth-century chemistry. Following the historical precedence of Debus and Partington, both Finger and Eadie, two substantial contributors in the history of neurology, suggest mercury and spirit are equivalent.⁴⁶ However, if these spirits are equated with mercury in order to supplement a Paracelsian context (1493-1541), there is resistance from Willis' theory of salt as the essential, chemical generative element for materials and animal spirits (Willis 1659, 11-15), as well as Willis' overt position of aetherial *spirits* being the "divine breath" (Willis 1659, 2). Willis does not include mercury within the constitutional basis for fermentation,⁴⁷ but spirit did figure prominently as an ineffable breath emanation within traditions of Stoicism and Aristotleanism,⁴⁸ which may be why Willis defines aether as physical.

The biggest opposition to reading spirit as mercury comes from the recognition of

Paradigm Shift," *Journal of the History of the Neurosciences* 7, no. 3 (1998): 202. Yet Clower adds that Willis designated separate roles for the animal spirits to supply "nutrition to the blood" and "sensory/motor functions to the nerves" (203), which he limits as co-extensive with Galenic principles.

⁴⁶ A.G. Debus, *Alchemy and Chemistry in the Seventeenth Century* (Los Angeles: University of California Press, 1966); J.R. Partington, *A Short History of Chemistry* (New York: Macmillan, 1939); M.J. Eadie, "A Pathology of the Animal Spirits – the Clinical neurology of Thomas Willis (1621-1675): Part I – Disorders of Intrinsically Abnormal Animal Spirits. Part II," *Journal of Clinical Neuroscience* 10, no. 1 (2003a): 16.

⁴⁷ William P.D. Wightman, "Myth and Method in Seventeenth-Century Biological Thought," *Journal of the History of Biology* 2, no. 2 (1969): 333.

⁴⁸ Wes Wallace, "The Vibrating Nerve Impulse in Newton, Willis, and Gassendi: First Steps in a Mechanical Theory of Communication," *Brain and Cognition* 51, no. 1 (2003): 70.

Willis' different account of spirit by eighteenth-century medical theoreticians who follow Willis' anatomical delineations but abstain from his spiritual distillations. James Handley, for instance, amply theorizes on the use mercury, but he specifically notes Willis' variance from the traditional association of spirit with mercury.⁴⁹ Historians of the last hundred years reveal a tendency to condition the past with a modernizing emphasis directed towards the promotion of science, but this modernization creates minor anachronistic oversights. Before the constant conjunctions of aether and mercury in the twentieth century, Thomas Thomson, a historian of chemistry, highlights Willis' use of aether instead of mercury: "He [Willis] admits the three chemical elements of Paracelsus, salt, sulphur, and mercury, in all the bodies in nature, and employs them to explain their properties and changes; but he gives the name of *spirit* to the *mercury* of Paracelsus. He ascribes to it the virtue of volatilizing all the constituent parts of bodies."⁵⁰ Perhaps, recent twentieth- and twentieth-first-century historians of Willis avoid his aether in order to legitimate spirit-as-mercury and substantiate modern chemistry – science and the transcendental are difficult to reconcile. Willis' uncomfortable blend of divine-materiality is, however, a crucial foundation to the general intercommunication of Willis' chemicals.

VI. The Anatomy of the Brain, Proper

Upon taking the brain "out of the skull" (Willis, 1664, 10), Willis curiously

⁴⁹ James Handley, *Mechanical Essays on the Animal Oeconomy: Wherein, not only the Conduct of Nature, in Animal Secretion, but Sensation, and Human Generation, are Distinctly Consider'd and Anatomically Explain'd* (London, 1721), 5.

⁵⁰ Thomas Thomson, *The History of Chemistry*, Vol. 1 (London, 1830), 201.

describes reattaching the membrane that appears “like a curious quilted ball” (Willis 1664, 11). The membrane

covers the gapings of the crevices. . . of the Brain, binds the *Interstitia* of either moiety or Hemispheres, draws together the hinder part of the Brain, . . . and knits it [the membrane] to the oblong Marrow: and what is the chief of all, the universal Cortical or shelly substance of the Brain (to wit, in which the animal Spirits are procreated) is covered over with this membrane. (Willis 1664, 11)

Willis finds the brain enclosed within a membrane that attaches at the oblong marrow.

The brain frames itself as a self-sustainable enclosure that provides a tangible parameter in which cognitive processes occur.⁵¹ This marks a considerable shift in the generative capabilities of the brain as an isolated act. The animal spirits find containment within this tangible border that provides a material threshold for cognition.

The actual anatomy of the brain determines the localized cognitive functions. The cerebellum and the two cortical hemispheres make and initiate distribution of the “animal spirits” to the respective faculties that, in turn, direct the spirits to the nerves.⁵² Willis’ *Of*

⁵¹ To put this into the less archaic terms of John Spillane’s analysis and to introduce the concept into a general scheme: “The animal spirits were ‘procreated only in the brain and Cerebellum.’ Moreover, because of the vascularity of the grey cortex, and the fibrous nature of the underlying white matter, he judged that their functions were different. He considered that the animal spirits were generated in the cortex and transmitted through the fibres threading their way through the white matter of the brain stem, spinal cord, and nerves. The passage downward and upward of the spirits provided the basis of motion and sensation.” Spillane, *The Doctrine of the Nerves: Chapters in the History of Neurology* (Oxford: Oxford University Press, 1981), 82. The “fibrous nature” of the “white matter” reiterates Ephraim Chambers’ localization of the imagination. “Imagination,” Vol. 2, *Cyclopaedia, or Universal Dictionary of Arts and Science*, ed. Abraham Rees (London, 1728), [n.p].

⁵² Robert Martenson’s distinctions and constraints upon reading Willis’ “brain” and correcting Samuel Pordage’s translation are crucial for understanding the *Anatomy*: “When he [Willis] wrote *cerebri*, he usually meant just the cerebral hemispheres or cerebral cortex, not the modern notion of the brain as composed of three major structures: hemispheres, Cerebellum, and medulla or brain stem. . . . I think readers will

Fermentation or the Inorganical Motion of Natural Bodies informs his later use of “animal Spirits” in the *Anatomy of the Brain*. In the *Anatomy*, they become a theoretical context that is essential to all experimentation and every chemical reaction,

The blood is it self [sic] the matter out of which the animal Spirits are drawn; and the vessels containing and carrying it every where through the whole compass of the Head, are like distillatory Organs, which by circulating more exactly, and as it were subliming the blood, separate its purer and more active particles from the rest, and subtilize them, and at length insinuate those spiritualized into the Brain and its Appendix.
(Willis 1664, 54)

Although Willis’ animal spirits require blood,⁵³ they do not follow Galen and Harvey’s circulatory hypothesis of blood as the primary constitutive element in the production of animal spirits. For Willis, blood must travel through the distillatory organs of cerebellum and the hemispheres in order to create the animal spirits (Willis 1664, 60).

These spirits in the hemispheres of brain undergo subtler distillation in comparison with the denser spirits found throughout the lower body (which distinguishes Willis’ applied aetherial chemistry of spirit from Galen’s speculative theory of spiritual conversion in the body). In one respect, the animal spirits are rarified forms of an ubiquitous spirit in nature; however, they have a specificity that distinguishes them from other forms of spirit. The animal spirits have a physiological foundation that relies on the “pure and volatile blood,” a theory based upon gas rising from heat during distillation,

have a clear understanding of Willis’s intentions if ‘cerebral hemispheres’ is substituted for Pordage’s use of ‘brain.’ ... Even in Pordage’s day, the Cerebellum was commonly referred to by that term, not ‘Cerebel’; so to most early modern anatomists called the medulla by that term, not ‘oblong marrow.’” Robert Martensen, *The Brain Takes Shape: An Early History* (Oxford: Oxford University Press, 2004), 78.

⁵³ William Harvey, *The Circulation of Blood*, 1628 (New York: Cosimo Classics, 2006), 143.

just as it would rise in the *alembic* during chemical experiments. In addition to isolated chemical experiments, Willis grounds the distillation process by limiting anatomical functions to perform specific tasks: “the Catotides about the Basis of the Skull ... hinders the too great or too rapid approach of the blood” (Willis 1664, 54). The hydro-mechanism controlling animal spirits situates a subsidiary and simplified principle to the more important chemical processes that explain the anatomical functions within the transfiguration of the actual aetherial substance. The *animal* spirits separate because of a “chemical elixir” in the distillation process proper. The blood is a means for spirits to move in the body, and not the reason for the generation of *animal spirits*. This process moves the blood into “the four distinct regions of the Head” (Willis 1664, 55). The arteries bring blood to the door of the “Cerebel[lum] nigh the Cortical substance (the second brain, so-called)” (Willis 1664, 55) that distils the animal spirits from the blood and distributes them throughout the head. The distilled, heavier blood returns downwards through the veins,⁵⁴ but the “purified and spirituous part” now transverses into “the very Pores and passages of the Brain and Cerebel[lum]” (Willis 1664, 55). The cerebral hemispheres and its appendix receive spirits from a secondary source. The “animal Spirits are procreated wholly from the blood,” since many of the “Carotides and the Vertebrales ... are little distillatory chanel[s] of the animal Spirits. For the animal Spirits are not produced in all places, to which these Vessels reach; for we affirm, that these Spirits are only procreated in the Brain and Cerebel[lum]” (Willis 1664, 55). The animal spirits

⁵⁴ Also from the “obduction of the Meninges, like an Alembick, by which the spirituous Particles apt to fly away, are constrained and forced into the parts beneath.” Thomas Willis, *The Anatomy of the Brain*, 1664, trans. S. Pordage, 1681 ed. (Tuckahoe: USV Pharmaceutical, 1971), 55.

generate out of the blood, but they can only be created within the cerebral hemispheres and cerebellum. These specific organs of the brain generate the potential for the animal spirits' motion and perpetuate the distillation of animal spirits from the blood.

The cerebral hemispheres produce “thought” through its structure. The spiritual substructure in the blood retains a general spirit, but the blood is not simply rarefied in the cerebellum – the cerebellum produces a different type of spirit (bio-chemically distinguished as “animal”) in order to establish thought itself.⁵⁵ The brain produces the very “spiritual-material” through which thinking must subsist. The vessels distribute the “animal spirits” to the rest of the brain while the oblong marrow (part of Willis’ involuntary system) channels the variously purified spirits throughout the nervous system. The exceptional nature of this nerve-based distribution process after the material origin of thought cannot be undervalued: the divine is neither necessary for life nor for thought. In this, the first historical example, cognition (as imagination) becomes a material substrate explained and literally produced by a procreative brain-based model, which significantly predates the previous assessment of a material origin for thought to be during the eighteenth century. The spirits do not move like a part in a functional machine.⁵⁶ They generate from the physiological processes in the cerebellum and the

⁵⁵ This is another example of how Harvey and Willis intellectually part ways. Willis emphasizes the brain’s propensity to generate thought with the blood relegated to a constitutional necessity.

⁵⁶ A mechanical foundation is incorrectly attributed to Willis. See Jamie C Kassler, “Restraining the Passions: Hydropneumatics and Hierarchy in the Philosophy of Thomas Willis,” *The Soft Underbelly of Reason: The Passions in the Seventeenth Century*, ed. Stephen Gaukroger (London: Routledge, 1998), 148-57, which would align Willis with a Cartesian model of action.

hemispheres of the brain. For Willis, the brain procreates the cognitive processes that define and are strictly within the *rational soul*.

Willis' spirits are variable and immanent as the chemical substructure to all reality. Willis' conjunction of brain function and the production of animal spirits (with the chemical basis outlined in *Of Fermentation*) suggests a precedence for Isaac Newton's aetherial corpuscularism:

Spirits are Substances highly subtil, and Aetherial Particles of a more Divine Breathing, which our Parent Nature hath hid in this Sublunary World, as it were the Instruments of Life and Soul, of Motion and Sense, of every thing; whilst they of their own Nature are always enlarged, and endeavouring to fly away, lest they should too soon leave their subjects, they are bound sometimes with more thick Particles, that by entring into them, and by subtiling them, and variously unfolding, they dispose the substance to maturity, as is to be observed in the Vegetation, and Fermentation of Bodies. (Willis 1664, 9)

Spirits are of a multiple constitution, but they share in bridging the void between the divine breath of God and the divisions within strict materiality. In the broadest sense, God substantiates the world with an aetherial breath of life, echoing the living breath to create life.⁵⁷ The aether becomes the subtexture – the animating force behind life *and* the all-encompassing means to understand motion and sense. However, the divine aether (as the generative principle that allows for chemical reactions and movement) remains corporeal through its chemically-structured attachments with the other primary material components (salt and sulfur, for instance). The aether is an impetus behind the chemical process of fermentation. If it neither justifies what matter is substantially nor how

⁵⁷ Genesis 2:7, *The Holy Bible: Containing the Old and New Testaments in the King James Version* (Nashville: Thomas Nelson, 1977). Also: “And the Lord God formed man of the dust of the ground, and breathed into his nostrils the breath of life: and man became a living soul.”

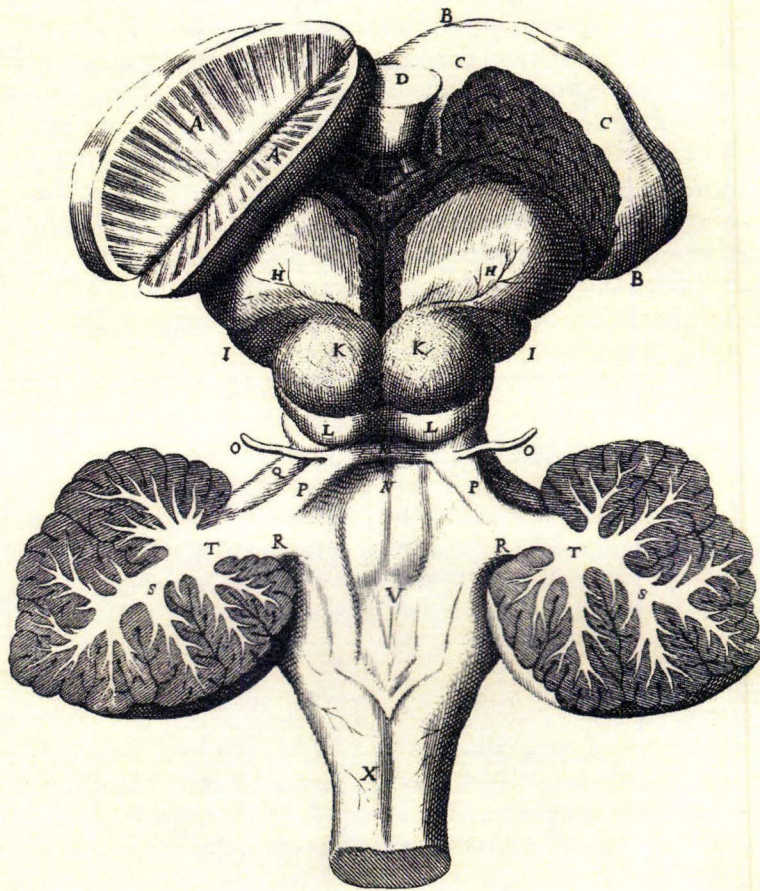
interactions appear to move through the chemically explosive “gyrations” and “vibrations” of the human body, it is still an expression of how chemical reactions can occur at all. Aether allows for substances “to ferment,” which in the *Anatomy* is necessary for all chemical distillation reactions and aetiological principles.

From a modern neurological standpoint, aether is archaic. Yet Willis’ recourse to aether may answer (at some level) philosophical complications surrounding absence (the problematic “void”) within space; the more general issue of why things move; and ensures a moderate, if not still ultimately heretical, theological safe-haven. Aether’s significance as the constitutional foundation and ubiquitous material form for a divine immanence becomes in *The Anatomy of the Brain* a unique, generative principle of chemistry. My intent is not to contradict the origin of *animal spirits* within the brain, or to shift Willis’ materially-defined basis for thought; rather, aetherial spirits – as a principle behind motion – are not adequately grounded within the scholarship upon Willis’ larger construction of *distillation* and transmission in nature.

The *animal spirits* as a material aether are the basis for thought, and they “are only procreated in the Brain and the Cerebel[lum] ... and from this double fountain of the animal Spirits they flow out into all the rest of the parts, and irradiate, by a constant influence, the whole nervous stock” (Willis 1664, 59).⁵⁸ The animal spirits direct the necessary chemical-aether to the brain and throughout the entire nervous system. These spirits directed from the brain and cerebellum pass through the oblong marrow distilling further nourishment: “One spirituous and highly active, which flows altogether from the

⁵⁸ The nervous stock refers to the anatomy controlling the nervous system, see Willis’ figura VIII, figure I (pp. 45) in this study.

Fig: viii^a



Brain and Cerebellum] ... [to] the whole nervous stock, [and] bestows upon them the sensitive and moving Faculties; and the other humor ... [from a blood-based oily-sulphur] is the Author of their Heat and Vegetation” (Willis 1664, 56). This spirit constitutes sensation and movement, not only corporeal movements but also active, or voluntary, cognitive motions within the body. The other blood-based humour works as a chemical ingredient to produce heat in order to stimulate the involuntary physiological processes: “Both these juices agree among themselves, and being every where joined together and married, they are as it were a masculine and feminine seed mixed together” (Willis 1664, 56). The “juices” (i.e., distilled degrees of blood) form a rather novel procreative mixture of (chemical) seeds.

Their admixture achieves a new chemical result, which further distinguishes Willis from the mechanical tradition and suggests a bio-chemical basis for thought and movement. The cerebellum and hemispheres “are of a more noble use than the oblong marrow” (Willis 1664, 58). They effectively create spirits and stimulate the oblong marrow to distribute the variously rarified forms of spirit throughout the central nervous system. Although in modern neurology the central function of the brain to control the nervous system is self-evident (they together are the nervous system), it was hardly so during the empiricism of the long eighteenth century. The *Anatomy* explains their co-dependency, but functionally divides the voluntary brain function from the involuntary system of the “oblong marrow,” which is a recognition of the automatic nervous system to be, for most practical functions, outside volitions of cognition. The “vital or flamy” components of the “inferior” spirits (from the blood) and the “sensitive or lucid” parts

(from the head) together “constitute a double ... Root or Fountain” (Willis 1664, 64). The spirits’ distillation and distribution also find clarification in another tributary distinction composing of two habitual currents, which suggests a regulatory pattern for temperament that originates from motion and thought. Spirits “are directed either outward towards the Nerves, when they exert the loco-motive Faculty, or they look inward towards their Fountains, when the acts of sense, or rather the apprehensions of sensible things are performed” (Willis 1664, 72). Both cognitive-sensation and nervous-locomotion have a central and unified locus within the brain; only the brain creates motions and concepts (Willis 1664, 58). The sensitive and the rational souls refer to the total working capabilities of the brain. Instead of Cartesian duality,⁵⁹ Willis promotes the distinctive basis of motion to encapsulate both voluntary movement and the ability to cognitively mediate sensible forms – cognition is an act that through its movement creates sense.

VII. The Co-dynamics of Memory and Imagination

For Willis, the hemispheres are the chief anatomical feature in determining whether an animal has a rational or sensitive soul, and whether cognitive decisions rely upon either voluntary or involuntary processes. The brain’s structure defines its rational capacity and suggests faculty localization: within “its double Hemisphere, also the two

⁵⁹ Descartes proposed the pineal gland to be the seat of the soul, which for modern historians of neuroscience, at least, problematizes the easy mind-body duality generally ascribed to him (René Descartes, *The Passions of the Soul*, 1649, trans. Stephen H. Voss (Indianapolis: Hackett Press Company, 1989), 36-46; Robert Martensen, *The Brain Takes Shape: An Early History* (Oxford: Oxford University Press, 2004), 86.

Lobes or partitions of either” (Willis, 1664, 58).⁶⁰ In those animals with a cerebral complexity, the voluntary cognitive faculties reside within the hemispheres: “But some Functions do chiefly and more immediately belong to the substance of this [the brain, proper], and others depend as it were mediately and less necessarily upon it. Among these, which of the former sort are accounted the chief are the Imagination, Memory, and Appetite” (Willis, 1664, 58). For Willis, some involuntary functions or automatic responses do not rely upon voluntary acts of cognition, but those activities that associate, recall, and direct concepts occur within the rational medium of the hemispheres.

Animal spirits, the materiality of cognition, further facilitate Willis’ decision to judge animals as either rational or sensitive, since the spiritual chemical permeates the entire cortex. In animals with a rational soul/brain, the faculties complement and invigorate their mutual processes: “For it seems, that the Imagination is a certain undulation or wavering of the animal Spirits, begun more inwardly in the middle of the Brain, and expanded or stretched out from thence on every side towards its [the hemispheres] circumference” (Willis 1664, 58); and memory is the inverse process. Both perpetuate the cognitive act. Imagination coordinates images and ideas throughout the hemispheres where memories reside (at the perimeter) and inform the imagination’s impression. The imagination begins with a central location that expands and contracts throughout the crevices (i.e., the sulci) to the exterior parts of the hemispheres. This flow of the animal spirits explains the neuro-physiological process, and emphasizes not an

⁶⁰ Willis (1664) only divides the hemispheres into anterior and posterior lobes.

exact faculty location but the physiological interdependency necessary for brain function during the imaginative acts.

After summarizing the physiological parameters for the voluntary faculties, Willis explains the relationship of the hemisphere's faculty functions through the *furrows* that lie directly underneath the brain. These fibres link the two hemispheres: "so that in the bottom of every furrow, a convolution arising from the right side, is carried to the left," which serves to double all cognitive content (Willis 1664, 58). That the fibres join the two hemispheres provides, for Willis, a rationale for the corpus callosum to link the transmission of animal spirits amongst the voluntary faculties of cognition. Willis hypothesizes that this central location acts as a processing center in order to mediate cognitive acts. The cortical fibres within the cortex create the animal spirits – the actual material basis of cognition (Willis 1664, 60). In distinction to the cortical fibres, Willis defines the medullary fibres from "inward superficies of the brain" as the callous body. The callous body includes the striatum, but because the animal spirits were thought to take their commands from the immediate anatomical vicinity surrounding the callous body. The route of the animal spirits around the callous body is just as important as the anatomical organs in Willis' cognitive system. He considers cognition a perpetually moving process that alters its form through the influence of each particular organ in the brain. The material cognition of the animal spirits "perpetually flow on every side from the outmost bounds of this body (to wit, where this common marrow besmeares the hinder productions of the brain, or the body of either of its Hemispheres) towards the fore-part of this *callous Body*, where it is thickest" (Willis 1664, 61). The medullary substance of

the callous body allows “for the exercise and dispensation of animal spirits” (Willis 1664, 60). It stores the basic form and the potential for nervous and cognitive actions through their refinement of animal spirits, but they only become voluntary through the intervention of the imagination (Willis 1664, 60).

From this “imaginative-centre” of the hemispheres and cortical fibres, the faculty of the imagination directs the cognitive, psychological, and, in general, all voluntary (as well as overseeing the direction of many acquired involuntary) processes. It directs the distilled animal spirits throughout the hemispheres from its central position above the callous body. The imagination directs the appetite and it retrieves information from memory at the exterior compass of the brain.

The heavier weight of memory (i.e., the less subtle animal spirit) is, under the logic of Willis’ fermentation/distillation, less mobile: “the act of Memory consists in the regurgitation or flowing back of the Spirits from the exterior compass of the Brain towards its middle” (Willis 1664, 58). The physiological principles behind thought and the subsequent reasoning behind brain localization have a correlation: the liquid weight of thought positions the heavier distilled-fluid of memory at the exterior compass of the hemispheres (i.e., given its exterior location it forms an arc). Memory moves inwards towards the imagination (at its behest) where it permeates or co-mingles with the present act of cognition. Memory is a denser liquid that flows into the proximity of “localized” imagination whereby memory becomes part of the cognitive process: “the Memory depends so upon the Imagination, that it seems to be only a reflected or inverse act of this: wherefore that it should be placed with it in the same Cloister, to wit in the Brain, is

but necessary” (Willis 1664, 86). Memory functions as an extension and reflection of cognition proper. The imagination is the foundation for all cognition, and memory becomes accessible through previous pathways carved out by the animal spirits through the sulci. These *habitual pathways* inform and moderate the imaginative process in order for faculties to collectively function and direct physiological action. Willis’ cognitive model emphasizes imaginative acts involving memory, not by their content but in their manipulation and in the processing of content. The motion and interaction of memory with the imagination entice cognition to recall or to integrate memory, suggesting that memory is neither stagnant nor perfect. Willis’ faculty localization and his initial account of the basic interactive functions amongst the faculties establish a model for the brain that is not simply categorical (i.e., no faculty is completely separated from other cognitive acts) – cognition needs a complete interactive system of principles and this requires a dynamic relationship amongst the faculties. The imagination may be the central process for the voluntary acts of cognition, but if lacks context or impulse then it neglects memory and appetite. Willis’ theory of the imagination uses a changeable set of co-relationships that should not suffer reduction to simple faculty localizations, since, for Willis’ physiology, cognition needs the correlating influences from other faculties that lie throughout the extant anatomy of the brain. Nor should the expressions of cognition – the content of ideas – be linked to one specific form of cognition, since Willis uses an applied model of physiology. To imagine is a collective and integrative process; a recollection of memory or a complete moment of phantasy are inseparable from the act through which thinking generates its expressive form in the imagination.

Imagination and memory are interdependent. They rely upon a continual interchange, seepage, and movement of animal spirits – a “spiral circuit” (Willis 1664, 59), which speaks to the larger frame of the brain that receives and dispenses the animal spirits (Willis 1664, 59). The “turnings” or movements of thought depend upon the animal spirits, but the animal spirits function according to their anatomical directives from the interplay between the imagination within the cortical part of the hemispheres and the more exterior location of memory (the gyri) found throughout the “crankling turnings and windings” of the sulci (Willis 1664, 58). The brain and the cerebellum distil the blood to produce animal spirits. The production of animal spirits – the means for the faculties – occurs because of the blood’s movement that produces heats: “the blood waters the medullary substance of the brain in every small quantity; which seems to be rather for the sake of exciting of heat, than that the animal Spirits should there be generated by the flowing in of that blood” (Willis 1664, 80). This is a considerable distinction from other rival medical accounts for the production of animal spirits, and it emphasizes the brain’s material generation of thought. Building upon theoretical constraints in *Of Fermentation*, the heat of the blood causes a reaction in the latent salt within the cortex:

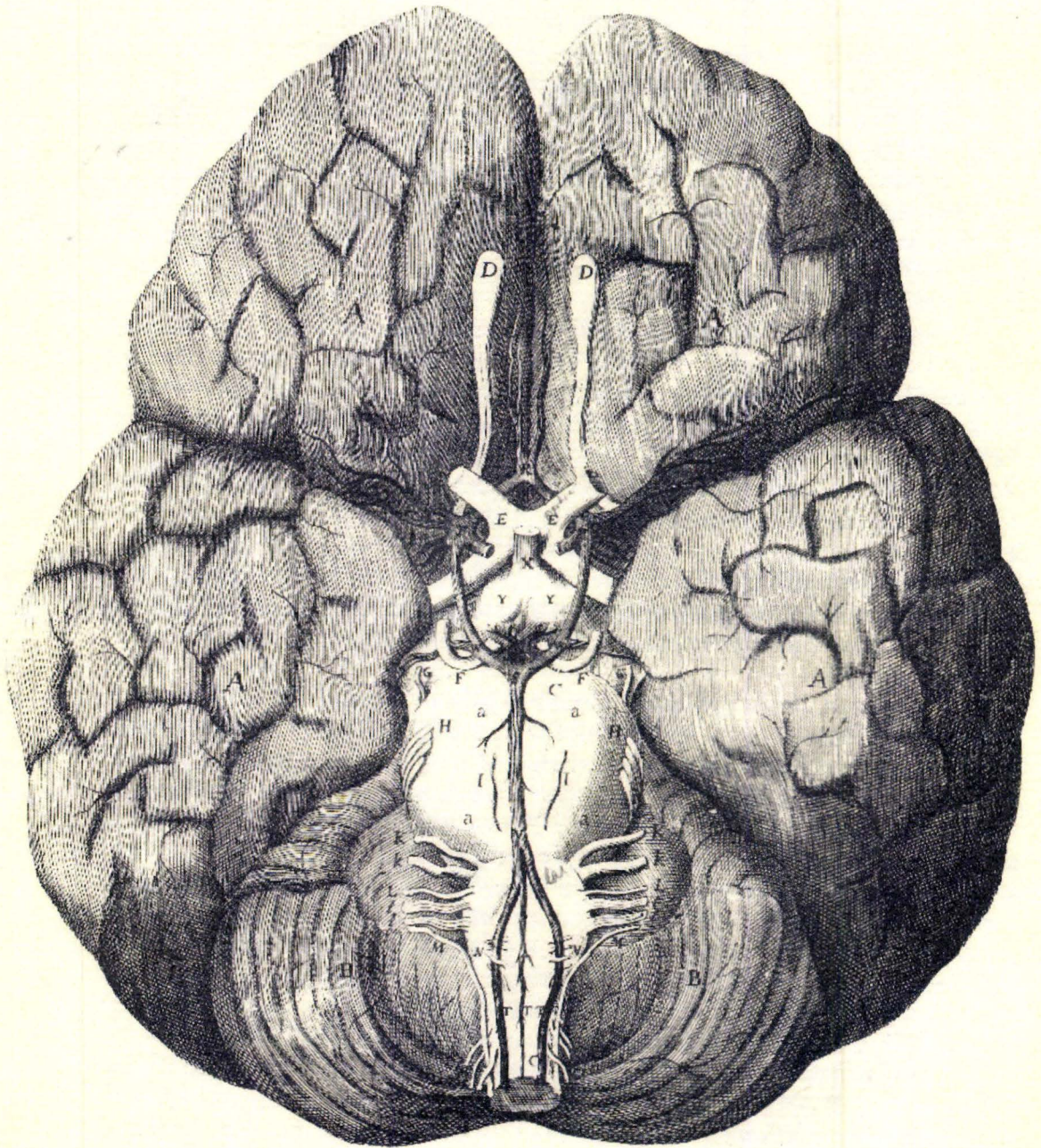
In truth, the blood waters the medullary substance of the brain in a very small quantity; which seems truly to be rather for the sake of exciting of heat, than that the animal Spirits should there be generated by the flowing in of that blood. Indeed, the volatile salt, which like Ferment, spiritualizes the subtil liquor stilled forth from the blood, is had more copiously in the *Cortex* of the brain, rather than in its middle or marrowy part, because that part, being endued with an Ashy colour shews by its aspect the spermatick particles and Humor contained in them. (Willis 1664, 60)

The significance of Willis' departure from the Cartesian model is an emphatic one, and it has gone unrecognized in scholarship;⁶¹ Willis uses blood to heat the salt that then causes the generation of animal spirits. This volatile salt is not only *material* but its very constitution is the cortex. In the *Anatomy*, animal spirits are material derivatives of the cortex (i.e., the hemispheres and the cortical fibers). The logic of Willis may be askew, but he seeks answers through an anatomical analogy. He tries to provide a rational justification for animal spirits' generation, as the material form of cognition. Through a rudimentary form of comparative empiricism, Willis associates the cortex, because of its ashy colour and "armeniack smell," with a spermatick quality.⁶² Willis takes the procreation of animal spirits from within the logic of fermentation and argues that the extent of the distillation determines the degree of "subtil liquor" within each cognitive faculty. After their procreation, the animal spirits move into the callous body where the faculties are exercised, "and there, if there be need, they are employed on the act of Imagination, or entring the shanks of the *oblong Marrow*, they actuate and inspire the nervous *Appendix*" (Willis 1664, 61).

⁶¹ John Yolton, *Thinking Matter: Materialism in Eighteenth-Century Britain* (Oxford: Basil Blackwell, 1983), 161; Yolton cites Malebranche. Nicholas Malebranche, *The Search After Truth: With Elucidation of the Search after Truth, 1674-75*, ed. and trans. Thomas M. Lennon, and Paul J. Olscamp (Cambridge: Cambridge University Press, 1997), 91.

⁶² For Willis, the brain's production of animal spirits doubles the more conventional biology of the reproduction organs (the orbicular and lesser protuberances of the nates and testes should be read within this biological comparison). See Fig. I in the *Anatomy*, Figure II in this study (pp. 54).

Figura I^a



VIII. Phantasy, Distinguished from Imagination

After animal spirits become thought or find distribution in the nervous system, some of them remain as a distilled, subtle spirit and circulate from the fornix back to the “hinder region of the brain” where “they perform in this circular motion those more subtil acts of the Phantasie” (Willis 1664, 61). Imagination is distinct from phantasy; where imagination co-ordinates every thought or where the nervous system follows the involuntary commands formed from habitual acts of imagination, phantasy is the remainder of an involuntary or voluntary action. In Willis’ earlier notebooks (transcribed by Locke) leading up to the publication of *The Anatomy of the Brain*, phantasy generally takes place during sleep (Willis 1661-64, 106), under moments of duress – fevers (Willis 1661-64, 116), and from lack of sleep (Willis 1661-64, 97). During sleep, cognition does not cease; rather, the habits of physiology resulting from the constant workings of the cerebellum (which controls the involuntary system) allow phantasy to ease into the central and middle location of the hemispheres (where the imagination processes usually command and link cognitive actions and memory). Phantasy is a residual and incomplete imaginative habit (Willis 1661-64, 103).

Phantasy is the leftover dregs of fermentation that remains in subtle form from a previous act of cognition; it is an after-effect that becomes relegated to the circulatory storage routes of the animal spirits waiting for future application. This is a place beyond the everyday *motions* of cognition and distinct from periphery locations of the memory within the gyri. Phantasy holds loosely to the past and retains the previous sense of an

idea, but without a slavish claim to the initial event; it is more fancy than memory; it is more of a residual idea than a sensible impression. Phantasy's exterior position (as opposed to cortical location where the imagination usually directs) suggests a theoretical affinity to memory. Both phantasy and memory remain at the outer rim of the active form of imagination proper, but they are accessed according to habit, sleep, or the necessity of the imaginative processes involved in all forms of voluntary cognition:

For it is to be believed [in sleep] that the spirits in the nerves and the external or cortical part of the brain (where we have shown above that the memory, phantasy and the sensitive will reside) return to its middle part, the white or medullary part, and, as it were, are concentrated there. And similarly the nervous system being almost totally deprived of the spirits from the brain, collapses from its own tension and, as it were relaxes into itself, and then does not perform its operations in the whole body night and day, so in this microcosm sleep and wakefulness take turns. (Willis 1661-1664, 96)⁶³

Willis' Oxford Lectures limits phantasy to an exterior role that takes prominence when the mind regroupes its internal system during sleep. Phantasy, as a subtle residue of previous thoughts and actions, moves to the forefront of cognition during sleep where it enters into the cortical center. In sleep, the attention necessary for voluntary tasks slacken, and the lessening of tension, under Willis, allows for the subtler refinements of phantasy to attain a conditional preeminence. Phantasy originates from habitual acts and reactions that are regulated throughout one's daily routines (Willis 1661-1664, 96-7).

⁶³ Kenneth Dewhurst's anatomical approximations into contemporary neurological terms create problems. Dewhurst conflates imagination with phantasy; and the appetite (or *appetitus*) with the "sensitive will," which is not necessarily sensitive (it is rational if human), nor is "appetite" part of philosophical history relating to the "Will." Also, the appetite is voluntary because of its specific localization and co-ordination with the faculty of imagination." If Willis' appetite is "sensitive" and more central to the central nervous system, its location would belong more properly within the involuntary system of the oblong marrow, the medullary fibres, and the cerebellum.

Both day-dreams and sleeping-phantasies share in the repetitions of cognition, but due to their subtler form they do not retain an exact felicity to the original and should be distinguished by their dissolution (and reconfiguration) of the earlier, voluntary and, often, involuntary processes.

The subtler animal spirits provide a physiological explanation that is a reflection of the type of cognition performed – the distilled physiological form determines cognitive activity. Phantasy's movement into the center of the brain marks a constitutional shift away from the usual waking functions of the involuntary nervous system's influence upon cognition (i.e., the involuntary system controls the deliverance of impressions to the voluntary system). The animal spirits (residue of imagination proper) take precedent over the sensory impressions left in the involuntary nervous system that are at the forefront of sensory sensations while awake. Sleep regroupes and recentralizes both cognition and the nervous system. Sleep causes the weighted-tension of imagination and memory to lessen. Although phantasy has to engage with the processes of imagination and rely upon memory, in sleep the usual degree of accuracy accompanying waking cognition relies upon the subtler forms of cognition, since the usual stimulants from sensible impressions do not stimulate memory, and memory does not inform ideational content. The animal spirits of phantasy may have a less substantial relation to their initial impression than other more habitual, waking forms of cognition, but they needed to follow the neural pathways created by habitual acts of imagination. Although phantasy's functions are most prominent during asleep, the faculty remains a rational form of cognition, and, despite its

location, it is a voluntary power directly dependent on, or often consequent of, the passions (Willis, 1664, 65).

IX. Reflexive Responses and the Involuntary System

The involuntary nervous system influences all the faculties through their transmission and eventual reception in the cognitive centers of the brain. The nervous system establishes habitual tracts that the faculties subsequently follow because of the repetitive regularity of sensory impressions. These repetitions gradually become familiar ideas. For Willis, cognition could be a response to sensations affecting the involuntary physiological system:

after [the initial stimuli of] the sensible Species, having past from the common sensory to the *callous Body*, hath stirred up the Imagination, the Spirits, *reflecting* [my emphasis] from thence, and flowing back towards the nervous Appendix, raise up the Appetite and Local Motions, the Executors or Performers of the same. (Willis 1664, 65)

Sensation determines one's nervous sensibility through the movements of the animal spirits from the common sensory into the callous body. At the upper limits of the callous body (with its close proximity to the interior core of the hemispheres), sensible impressions (indistinguishable from the physiological substratum which delivers them) stimulate the imagination to react. After the impressions impose upon the callous body, the imagination takes stock of the impressions and determines the subsequent action:

Willis was aware of the concept of reflex action. He believed that nerve impulses journeyed to and from the brain, and that 'animal spirits' were 'reflected' back towards the periphery from the striatum. His theories about the passage of nerve impulses are all the more remarkable when one

considers that they antedate the discovery of electric current by hundreds of years. (Molnár 2004, 334)⁶⁴

Earlier than the *OED*'s citation of Locke's first use of reflection/reflexion (2000, 8c), Willis (who was Locke's teacher) considers cognitive reflection as a reflex to those impressions that move past the involuntary nervous system and incite the imagination to respond. This aspect shifts the historical origins of reflection from a cognitive act to Willis' faculty reflex action. The imagination's *animal spirits* reflect the information of the involuntary impressions and infuse a response to the stimuli, which is redirected back into the nervous appendix. The imagination's involuntary reception and response to its own physiological system provides the imagination with a basis for cognition that is indivisible from its own physiological foundation.

The processes of cognition reflect the physiological impressions through their reciprocal physiology:

And sometimes a certain sensible impression, being carried beyond the callous Body [the anatomical limit generally ascribed to the involuntary system], and striking against the *Cortex* of the Brain it self [the location of the voluntary faculties], raises up other species lying hid there, and so induces Memory with Phantasie, also often with Appetite and Local Motion associates. (Willis 1664, 65)

Once the sensible impression progresses to the cortex, the hemispheres also become involved – from the locations of the corpus callosum *and* the interiority of the

⁶⁴ See also M.J. Eadie, "A Pathology of the Animal Spirits – the Clinical neurology of Thomas Willis (1621-1675): Part I – Background, and Disorders of Intrinsically normal Animal Spirits," (2003a): 26-7; M.R. Bennett and P.M.S. Hacker, "The Motor System in Neuroscience: A History and Analysis of Conceptual Developments," (2002): 15-7; François Clarac, "Some Historical Reflections on the Neural Control of Locomotion," (2008): 14. Molnár uses the specific anatomical details of the striatum from *The Soul of Brutes* (1672).

hemispheres, the imagination reacts in reflex to the impression on the callous body and then transmits the sensible impression throughout the hemispheres, inducing associative affinities generated by the recurrent cognitive-patterns and previous habitual impressions. An impression's initial affect is as equally important to its perceived content as an idea, since its affect-as-content determines its neurological route, through the *pathways* of sulci, that access the storehouses of memory. In the movement from the involuntary nervous system to the habitual currents of imagination, the imagination interconnects and accesses memory and, potentially, phantasy, and these habitual modes of interaction excite the appetite or local motion. Memory and phantasy are specialized forms of the larger imaginative process and their variable modes determine the direction of the imaginative process by contextualizing previous nervous stimuli, which can influence how the imagination commands the appetite or induces action in counter-responses to the immediate physiological stimuli (Willis 1664, 98). Although the imagination can perform voluntary acts in response to nervous stimuli,⁶⁵ the reception of the stimuli and the subsequent habits of thought are largely a matter of the imagination's automatic reflex. Cognitive habits and nervous temperaments may seem inseparable in their involuntary or automatic responses, but the imagination is voluntary insofar as it moderates the directive to control an appetite or a potential action.

⁶⁵ M.J. Eadie, (2003a), 15.

X. Neural Habits and the Storehouses of Memory

In a fascinating distinction to historical divisionary assumptions on the faculties, appetite is not a passion; it is a faculty central to rational brain function:

For indeed the sensible impression striking the streaked or chamfered bodies [the anatomical basis of the involuntary system], oftentimes, the Brain being in no ways affected, causes the local Motions to be retorted with reciprocal tendency of the animal Spirits; so in sleep (the Appetite knowing nothing of it) when pain troubles, presently we rub the place moving the hand it to it. (Willis 1664, 65)

One may be physiologically receptive to sensible impressions at an involuntary level, but the brain – the voluntary faculties – may not register an affect. The involuntary system is actually capable of working without the mediating voluntary forms of imagination.

During sleep, the body acts automatically through its own involuntary forms of regulation, which is distinct from the appetite. Willis' appetite is volitional – an active and rational faculty. Alongside the imagination, it shares the middle, cortical part of the brain, and defines the processes of motivation after receiving directives from the imagination. The appetite and the imagination suggest interdependence. They interact and communicate directly with the body's physiological sensibilities: "The Appetite is stirred up, for that the animal Spirits, being some-how [sic.] moved about the middle of the Brain, tend from thence outwardly towards the nervous System" (Willis 1664, 58). The primary application of the appetite is to elicit and inform the nervous system, and then to establish habitual conditions through which the voluntary senses communicate to the involuntary nerves. Desire and the other affections influencing the nervous system are inseparable from the imaginative process. Willis initiates an *associative* physiology that

seeks cognitive patterns hypothesized upon recurrent movement: “the animal Spirits, for the various acts of Imagination and Memory, ought to be moved within certain and distinct limited or bounded places, and those motions to be often iterated or repeated through the same tracts or paths” (Willis 1664, 60). The animal spirits’ habitual pathway creates a neurological circuit that stimulates specific cognitive acts.

Willis suggests that faculty processes follow these persistent neural motions in order to access memory-cells: “these manifold convolutions and infoldings of the brain are required for these divers manners of ordinations of the animal Spirits, to wit, that in these Cells or Storehouses severally placed, might be kept species of sensible things, and as occasion serves, may be taken from thence” (Willis 1664, 60). The various patterns accessible in habitual thinking determine the imagination’s potential. For Willis, imagination regulates its own thinking process – which speaks to individual limits, patterns of temperament, and the degree of cognitive engagement.

The “storehouse” structure of memory refers to the actual localization of an idea. The measure of cognitive speed and the intensity of the “superior faculties” depend on “gyrations and turnings” – the movement of the imagination (i.e., as animal spirits) through the sulci in order to access memories. The *turnings* refer to cognitive movement that travel to the exterior “infoldings” of the brain – the latter are the actual texture and contour of the gyri upon and throughout the hemispheres.⁶⁶ Willis observes that the

⁶⁶ Willis’ basis for measuring intelligence upon the infoldings and turnings would appear to also make him a forefather to the contemporary direction in the neurosciences that looks at gyri and sulci development.

hemispheres' overall development define cognitive ability.⁶⁷ The complexity of the hemispheres' size and contour indicates the ability for higher cognition that *both* humans *and* four-footed animals are capable of performing; the animals that lack complexity in "those gyrations or turnings" (Willis 1664, 60) are lesser species precisely because their cerebrums have comparatively less textural *infoldings* than the brains of humans and mammals. Willis further posits that the extensiveness of the brain's gyri-complexity determine the circuit and movement of the animal spirits, and the capacity for cognition to "be free and changeable, and not determined to one" type of thought (Willis 1664, 60). In some beasts, like cats, the gyri contours of the hemispheres are far less than other animal species, which illustrates their cognitive capacity: "a certain figure and order: wherefore this Brute thinks on, or remembers scarce any thing but what the instincts and needs of Nature suggest" (Willis 1664, 60). From an analysis of comparative differences in animal anatomy, Willis hypothesizes that underdeveloped hemispheres have a diminished intellectual capacity than more intricately formed cerebrums, and this further reinforces the connection between faculty function and the material features of the brain:

⁶⁷ Several contemporary examples are Christine Wu Nordahl *et al's* (2007) "Cortical Folding Abnormalities in Autism Revealed by Surface-Based Morphometry," an article on neurological disorders and cortical folds; a premise of investigation paralleled (conceptually) by Willis' preamble to the *comparative* anatomy of a healthy brain fig. III in *Anatomy* (fig. 3 in this study) to that of fig. IV (fig. 3 here) that portrays "the Effigies of an humane Brain of a certain Youth that was foolish from his birth" (Willis, 1664, 28). Several recent studies link intelligence to brain size, cognitive ability, and gyri complexity, which have a similar methodology to Willis' early and still rudimentary propositions (this shortlist is by no means exhaustive): Katya Rubia *et al's* "Progressive Increase of Frontostriatal Brain Activation From Childhood to Adulthood" (2006); Jeffery Rogers *et al's* "Heritability of Brain Volume, Surface Areas and Shape – An MRI Study in an Extended Pedigree of Baboons" (2006); and Anders M. Fjell and Kristine B. Walhovd's "Stability of Brain Potentials, Mental Abilities, and Cortical Thickness" (2007).

Fig: III.

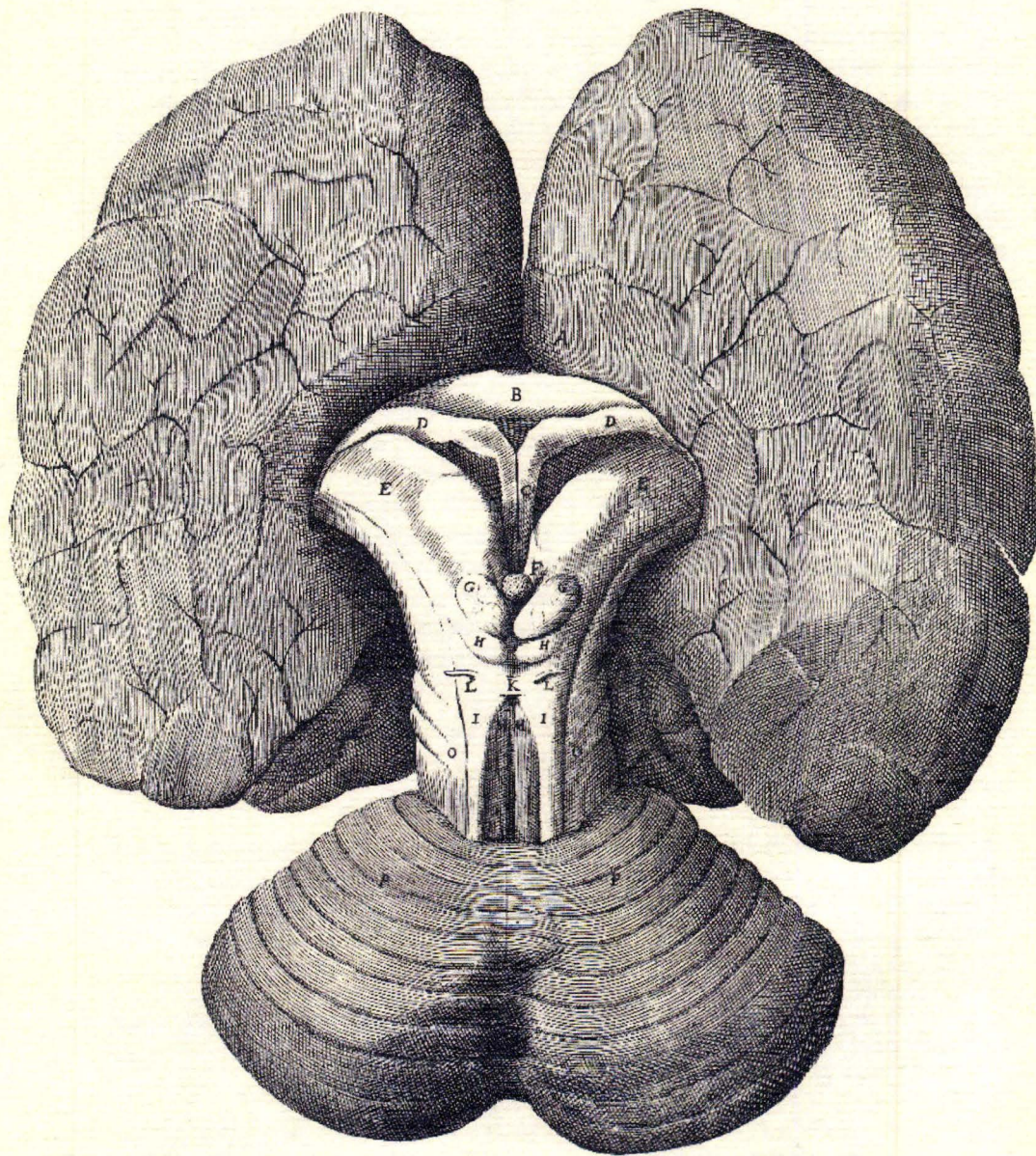
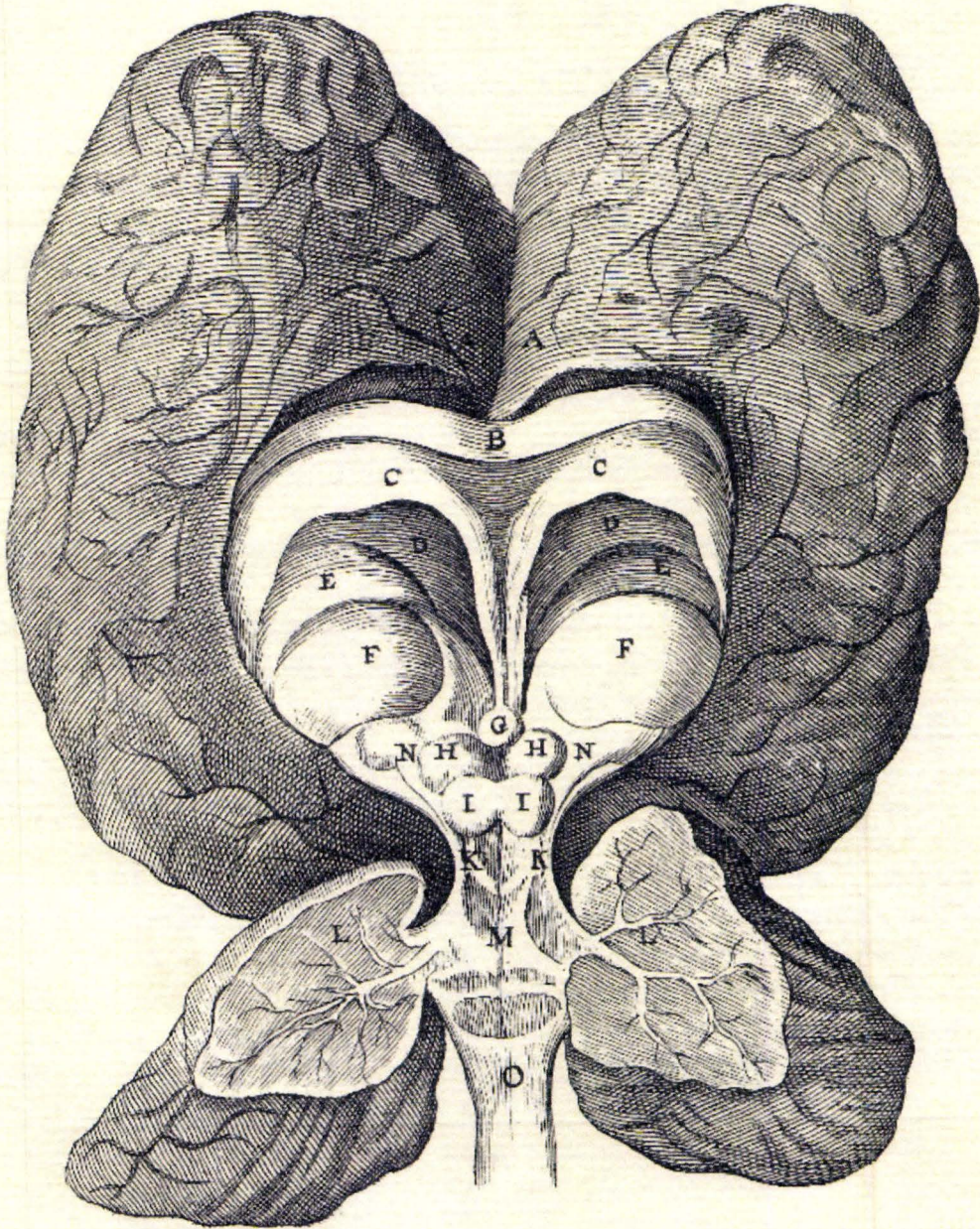


Fig. III.



The superficies of the brain being plain and even, wants all cranklings and turnings about: wherefore these sort of Animals comprehend or learn by imitation fewer things, and those almost only of one kind; for that in such, distinct Cells, and parted one from another, are wanting, in which the divers Species and Ideas of things are kept apart. (Willis 1664, 60)

Thought function or the types of thought that an animal may perform follows the anatomical determination of the brain's *infoldings* and *cranklings*. Each fold serves as a “storehouse” of memory, or a specific location for particular memories. The extent of *gyri turnings* determines the degree of union between conceptual complexity and the tangible density of memory. The fewer compartmental *cranklings* on the brain designate the lesser degree to which the faculties can perform complex functions. The diverse folds separate cognitive content; each storehouse is a specific type of idea or memory. Animals with less developed brain structures have less capacity for higher forms of cognition.⁶⁸ Considerable credit ought to go to Willis' “cranklings and turnings,” the *gyri*, which when coupled with Willis' hypotheses on the frontal hemispheres size and the complexity of its development anticipate contemporary methods for measuring an animal species' intellectual capabilities. Of course, Willis' neurology has its conjectural variations. He posits the multi-form complexity of the brain's interior core (i.e., the imagination) as the representative capacity to moderate and to form ideas, but this hypothesis, however

⁶⁸ Hakeem *et al*'s research into elephants' corpus callosum is a comparative and contemporary equivalent, see “Brain of the African Elephant (*Loxodonta Africana*): Neuroanatomy From Magnetic Resonance Images,” (November 2005). James K. Rilling and Rebecca A. Seligman's “A Quatitative Morphometric Comparative Analysis of the Primate Temporal Lobe” (May 2002) provides a comparative investigation between primate and human brain temporal lobe and cerebellum (505) variables that is surprisingly similar to Willis' distinction.

unconventional, satisfies a means for imagination to dictate from a central command that acts as a medium or bridge to connect ideas and to retrieve memories.

XI. Controversy over the Location of Natural Memory

Not all forms of memory, however, proceed from voluntary or even habitual acts of imagination. Willis' "natural memory" is an instinctual faculty, which instigates a second-set of involuntary, reflex "faculties" for the nervous system.⁶⁹ No small amount of critical contention surrounds Willis' two-fold localization of memory. Spillane complains that Willis "does not seem to have had any cogent reasons for placing memory in the cortex."⁷⁰ He neglects that Willis' placement of the faculties are justifications derived from anatomy, inference, deduction, and even sensation. For Willis, the physiological feeling of cognition appears to occur in frontal lobes (even if it may be a tactile illusion): "As often as we go about voluntary motion, we seem as it were to perceive within us the Spirits residing within the fore-part of the Head to be stirred up to action, or an influx" (Willis 1664, 52). Willis observes that humans have significantly larger frontal and temporal lobes than other animals, which accounts for people's comparatively more complex cognitive abilities (i.e., anatomical differences suggest cognitive capabilities). Willis' anatomy and physiology reciprocate a logic directed through sense and nervous

⁶⁹ A thought-provoking conceptual parallel to Willis' much more theoretical "natural memory" can be found in Bradley R. Postle, T. Jason Druzgal, and Mark D'Esposito's "Seeking the Neural Substrates of Visual Working Memory Storage," *Cortex* 39, no. 3 (2003): 932, 940.

⁷⁰ John D. Spillane, *The Doctrine of the Nerves: Chapters in the History of Neurology* (Oxford: Oxford University Press, 1981), 82-83.

sensibilities. Robert Martensen is cognizant to a memory located elsewhere,⁷¹ but makes the faculty an extension of the sense provided in kind by Rina Knoeff's reading of Willis' intercostal nerves,⁷² and places memory in the cranial nerves (which may have their origin in the cerebellum but are completely distinct from it).

In contradistinction to Cartesian and Galenic physiology, Willis' system makes it impossible for the nerves to function as a faculty. Willis is explicit in defining the nerves as merely "executors," (Willis 1664, 72) and they take their commands from the distribution orders of the cerebellum that, in turn, the brain directs.⁷³ The cerebellum, however, often has control over the voluntary faculties (Willis 1664, 91). Neither the cranial nerves, nor the intercostals, nor any of the organs responsible for the transmission of passions and instincts to the brain – the imaginative directions from the brain to the cerebellum – are either capable of creating the animal spirits or of housing memory (Willis 1664, 83).⁷⁴ Part of the difficulty that contemporary scholarship encounters comes

⁷¹ Martensen 2004, 138.

⁷² "The intercostal nerves are of paramount importance for his neurology. Willis explained that via these nerves, which connect the brain to the heart and lower viscera, the brain controls the passions and instincts of the lower body" (Knoeff 2004, 413). Although I hold this account generally true, emphasis should place Willis' system as an intercommunicative exchange between physiology and the brain (Willis 1664, 91).

⁷³ Eadie may be useful for a more general contextual clarity: "Willis was among the first to locate brain function not in the ventricles but in the substance of the cerebrum and cerebellum. His medulla oblongata, and the spinal cord and peripheral nervous system, provided pathways of communication which joined the periphery of the body to the areas in the cerebrum and cerebellum responsible for different brain functions." M.J. Eadie, "A Pathology of the Animal Spirits – the Clinical neurology of Thomas Willis (1621-1675): Part I – Disorders of Intrinsically Abnormal Animal Spirits," *Journal of Clinical Neuroscience* 10, no. 2 (2003a): 16.

⁷⁴ For the opposite assertion, see Stanley Finger, *Minds Behind the Brain: A History of the Pioneers and Their Discoveries* (Oxford: Oxford University Press, 2000), 92.

from Willis' historical precedence for two divergent systems of memory: one is the faculty performed within the cortex; and the other is a natural inclination (or an involuntary instinct) directing sensibilities of the physiological system.⁷⁵ Stanley Finger notices Willis' dual system of memory, but believes Willis finally affirms memory's location in the temporal lobes.⁷⁶ Although Willis does propose a faculty of memory most prominently throughout the exterior (where memory is most dense) location of the hemispheres, but not necessarily limited to the temporal lobes, he also contends that the involuntary system uses its own self-referential form of *natural memory* that has its location elsewhere.

XII. Impressions of Sound and their Reception in Natural Memory

The involuntary system functioned automatically – a *natural response*, before and without the interjection of the voluntary faculties. The vestibulocochlear or auditory nerve delivered sound to the cerebellum:

In the hearing, the impression of the sound, or the Species admitted to the Ears by the hearing faculty of the Processes of the same or neighbouring Nerve, and being carried inwardly towards the Cerebel[lum] and common Sensory [a major part of the involuntary system], and from thence again

⁷⁵ Willis does not suggest a double brain, as G.S. Rousseau contends with the rejection of the dual brain theory founded upon the two separate hemispheres (2007, 360). Although Rousseau's reference is a possibility, Willis makes explicit reference to the Galenic double brain theory of the cerebellum (with which it was an anatomically synonymous term). See figure I, BB in Willis (1664, 85) and fig. II on pp. 62 of this study.

⁷⁶ Stanley Finger, *Minds Behind the Brain: A History of the Pioneers and Their Discoveries* (Oxford: Oxford University Press, 2000), 92.

reflected on the vocal process, it is carried out by the Mouth. (Willis, 1664, 95)

Impressions transmitted through the nerves to the cerebellum, which could then, in turn, become vocal. Yet between reception and reflection other physiological processes occurred:

Foreasmuch as the outward Echo renders back the sound immediately; but the sound of the Hearing is not necessarily carried forth at the mouth presently, but that this leaves an Idea in the Head, according to which afterwards, as occasion serves, the voice is formed, which bears the type and image of that, though some time before admitted. (Willis, 1664, 95)

For Willis, hearing did not immediately find imitation through vocalization, since an impression of sound must have previously left an image in the memory storehouses. Sound is insubstantial without becoming an idea that has been fully assimilated within the voluntary faculty of memory (i.e., the gyri cells). Learnt activities and products of speech are applied acts made possible only as applications of memory, but natural memory differs from these applied forms of thought.

After the reception of sound occurs, Willis ponders, “in what part of the Head the Ideas of sounds are left [sic.]: whether only in the Brain, which is the Chest of Memory acquired as it were artificial or whether not also in the Cerebel[lum], which is the place of natural memory?” (Willis, 1664, 95). Willis’ memory was two-fold – a (intercommunicative) division based upon involuntary physiological systems of the nervous system and the voluntary faculties of the cortical region of the brain: “sounds belong to both these, as it were to distinct Store-houses” (Willis, 1664, 95). Willis’ natural memory of sound follows his general theory of impressions being reflected upon arriving at the common sensory (also the location for natural memory):

Every audible impulse being struck against the Ear, it [the sound] is presently carried by the passage of the auditory Process to the annular Protuberance, but from thence it is carried, as other sensible Species, to the chambered bodies or the common Sensory. ... This impression ... being also delivered to the [the hemispheres of] Brain, stirs up the Imagination, and so leaves in the Cortex an image or private mark of it self for the Memory. (Willis, 1664, 95)

Auditory stimuli follow the same rules as sensible impressions, but each sound has their own particular route according to its entrance through the cranial nerves. The audible impulse (and all nerve impulses) transmits the impression to the common sensory, from which the physiological reception of the impression became (via the imaginative process) a memory. The nervous impression, however, is only capable of becoming an idea if the impulse progresses beyond the involuntary system into the imagination. The imaginative process transfers the nerve impulse into an image or idea to which it then assigns a place within the storehouses of memory.

After the imagination converts the impulse into an idea, the idea, no longer just an impulse, finds its allocation within the specific region of memory predetermined by habitual currents that structure the patterns of memory. Without this habitual aspect, there is no reciprocity between sound and speech.⁷⁷ The process of movement into either the

⁷⁷ This model of transmission is an amendment to Wallace's (2003) claim that "Willis understood the nerve as a conduit of information, not involved in the transfer of force but only in its signification" (80). Wallace's reconstruction denied Willis' chemical physiology in the brain. Willis held that an impression remained a sensible impulse as it became an idea. Wallace emphasizes only the idea as a complete conversion and not the continuing physiological process. Even at the level of impulses converting into memory, Willis' very foundation of imagination relies ultimately upon physiological processes intimately involved with the passions; to speak otherwise misconstrues Willis' theoretical premise of needing cognitive routes that gradually carved out habitual modes of thinking by the physical repetition of animal spirits' force.

natural-involuntary nervous system or the cerebral-voluntary faculty system defines habitual formations intrinsic to both types of memory:

As the auditory Process depends on the Cerebel[lum], and receives from it the provision of the animal Spirits: so it is most likely, that by the recess of the same Spirits the Ideas of the Sounds are conveyed also to the Cerebel[lum], which forming there footsteps or tracts, impress a remembrance of themselves from whence when afterwards the Species there laid up are drawn forth by the help of the vocal process, voices, like the sounds before admitted, and breaking forth in a certain ordained series, come to be made. (Willis, 1664, 95)

The cerebellum allocates the animal spirits to the auditory process. The auditory process depends upon the chemical principles of the animal spirits that allowed for the foundation of healthy auditory nerve function. The constant movement of the animal spirits gradually generates natural memory *as* nervous pathways. The auditory nerves follow these anatomical designs and deliver sounds back to their initial generative basis in the cerebellum. Willis employs a corpuscular model that incrementally develops – the practice of hearing generates a habitual process of reception. From the controlling directions of the imagination, the involuntary process (i.e., the cerebellum) receives ideas of sound. The cerebellum acts as an intermediating structure that correlates the reception and reflection of both the auditory impressions and the cognitive impressions (imaginative ideas). The animal spirits carve out the pathways for proper organ and nerve function, and this physiological order structures temperament and, in this case, speech. The vocal processes gradually form into memories out of habit, but speech forms through the previous sound-pattern, which can only be heard insofar as the functional physiology provides by the animal spirits determines how an organ is structurally receptive to sound. Memory, therefore, becomes an extension of physiological habits.

The physiology of memory has, consequently, an involuntary component: some people learn music and melody “without any mediation or labour of the Brain” (Willis 1664, 95). The natural form of memory retains “distinct accents of the heard harmony, [and] the Spirits moving within the Cerebel[lum] are disposed into peculiar Schemes” (Willis 1664, 95). The cerebellum, Willis’ primary directive locus for the involuntary system, organizes the animal spirits into patterns that the cerebellum physiologically determines (Willis 1664, 96). One’s physiology contains a machine-like (corpuscular rather than iatrometric) spontaneity to remember patterns of sound, which lies outside categorical conditions generally ascribed to the faculty of memory, since the natural memory relies upon one’s individual physiological constitution (Willis 1664, 96). In a parallel to the degree of the memory’s distillation-weight as an intellectual faculty, the cerebellum habitualizes natural, sound-based memory through its relative density:

Yet in some the Cerebel[lum] being harder, and not easily yielding to the received impressions, those [audible] Species, because they could impress nothing of themselves in their passing to the Cerebel[lum], being carried towards the common Sensory [the callous body or, more generally, up into the involuntary nervous system], leave their Types or Ideas chiefly and almost wholly in the [Storehouse centres of the] Brain. (Willis 1664, 96)

The ability to recall patterns of sound is, for Willis, a physiological corollary to the voluntary faculties. The cerebellum’s malleability is responsible for the retention of audible impressions, but once the impressions proceed into the brain proper (i.e., into the domain under the directives of the voluntary faculties), these ideas find allocation in their relevant memory storehouse. Some people have faculties that suffer from too great an influx of “disturbed motions” to retain the harmonic modules, but when the animal spirits

within the cerebellum are naturally ordered into “convenient little places and cells [where] they flow out from thence, almost unthought of, without any endeavour or labor of remembrance, but in a distinct series” (Willis 1664, 96), another type of involuntary memory emerges. The regularity of harmonic patterns dictates auditory reception, and the sound is automatically recapitulated in the involuntary memory. The natural memory reciprocates its casual impression (i.e., the nerves’ stimulation) with a reiteration of the initial sound (if it passes to the vocal processes).

The cerebellum reiterates harmony and music, but the retention of harmony affects more than simple speech – harmony influences the passions of the soul. Music incites “phantasie” and “allays all turbulent Passions excited in the Breast from an immoderate heat and fluctuation of the blood” (Willis 1664, 97). The cerebellum *sympathizes* with the praecordia, and the cognitive process recognizes the “perturbations” and contributes to the transmission of spirits throughout the entire physiological system. The foundation of the passions exceeds any simple analogies with emotion. Willis’ passions may retain classical and archaic links to the heart, but they demand the direct involvement of the cerebellum and the contributions of the cognitive system to distribute spirits throughout the body.

XIII. Unity between the Brain and Nervous System

Despite contentions to the contrary,⁷⁸ Willis privileges neither the faculties of the brain nor the involuntary nerves. Willis does not organize his anatomy into binaries: the nervous system reveals the distribution of the nerves (Willis 1664, 97-98) to receive their designation from the cerebellum and the hemispheres: “the Nerves of either Government communicate variously among themselves with shoots sent forth one to another, so that oftentimes the offices of the one are drawn into the parts of the other” (Willis 1664, 98). In order for the physiological system to function and respond to the faculties from these two systems each must communicate but still retain a degree of independence in order to successfully respond to impressions. For Willis, the faculties themselves are dependent upon the transmission of sensory stimuli they receive from the involuntary system (with its central locus of the cerebellum): “But besides, we have mentioned before, that the sensible impression being inflicted on the parts of the involuntary Function, forasmuch as it is vehement, like as strong waving of water, passing through the Cerebel[lum], affects the Brain it self” (Willis 1664, 98), which positions the cerebellum as responsible for “the command” (i.e., the reception of the impression in the brain). The sensible impressions do not immediately affect the brain without the nervous sensibilities first enveloping the impression within the automatic and involuntary system – only then can the voluntary

⁷⁸ Robert Martensen, *The Brain Takes Shape: An Early History* (Oxford: Oxford University Press, 2004), 140.

faculties (potentially) respond. The higher voluntary functions from the hemispheres and the involuntary system grounded in the cerebellum share a mutual physiology:

For the Brain owes much to the Cerebel[lum], forasmuch as it receives from the vital Function (which is of its province) the provision of the blood, and by consequence the Tribute of the Spirits produced of it: so indeed that both these parts, though Principles, perform mutual offices, and as it were in a circle, require and accomplish services one for another. (Willis 1664, 98)

The physiological and subsequent intellectual function of the brain needs the provisions given from the cerebellum, and the cerebellum, in turn, needs the hemispheres to stabilize and to moderate itself and the rest of the nervous system.

XIV. The Passions and Involuntary Physiology

The motion of animal spirits in the brain directs the intellectual faculties with a particular constitutional *force*, it gives them a “form in which they [the animal spirits] unfold,” and the movement explains their “diffusion” – all three of which “produce the acts of the Imagination, Memory, Appetite, and other superior Faculties of the Soul” (Willis 1664, 64). The brain and the cerebellum have capabilities distinct from “the Soul of Brutes and its powers” (Willis 1664, 64), which positions the involuntary and voluntary system as physiological command centres separate from the usual historical distinction of the sensitive soul of brutes proper. The inferior soul has a composition of “vital and flamy” chemical principles, and it is the foundation for the “sensitive or lucid” element that diffuses throughout the “head and the nervous dependences.” A distinguishing feature to Willis’ sensitive soul is its blood-based foundation, but the

blood, as a means of transmission and heat, is still distinct from the sensitive or lucid quality that is the constitutional quality of the animal spirits (Willis 1664, 64).⁷⁹

Distinguishing himself from Galen, the vital part of the blood neither constitutes the faculties of the brain nor determines the involuntary system of the nerves. The sensitive or lucid part disperses throughout the brain and the cerebellum (the double intertwined fountain of the brain's rational physiology). The lucid part is inseparable from the animal spirits that it helps comprise in the nerves, and its distribution is the foundation for physiological *sensibilities* or physical *sensations* proper. The lucid component flows from the fountains into "the frame or substance of the nervous System ... they effect or cause the whole *Hypostasis* or subsistency of the sensitive Soul" (Willis 1664, 64). As the governing force, the command centre of the brain provides the lucid part the means to direct the sensitive soul (i.e., over the nervous physiology). For Willis, the sensitive soul is the physiological nervous system within the body that achieves its sensation through the lucidity provided by the distillation and distribution of the processes excited in the brain and the cerebellum.⁸⁰

The sensitive soul has the same physical conditions as the rational soul; both souls have an *experiential quality of movement* as an expression of their physiological functions. The movement of "contraction or dilation" is a matter of "impulse" (Willis

⁷⁹ See G.S. Rousseau, "Temperament and the Long Shadow of Nerves in the Eighteenth Century," *Brain, Mind, and Medicine: Essays in Eighteenth-Century Neuroscience*, eds. Harry Whitaker, C.U.M. Smith, and Stanley Finger (New York: Springer), 360. Rousseau varies from this study insofar as the sensitive and rational have a co-existence, which alters the context of the lucid in the sensitive.

⁸⁰ The network of nerves is functionally distinct from brain's direction of the involuntary system, but it relies on the cohesion of all its parts.

1664, 64), which has a physiological definition that rejects scholastic epistemology (i.e., the conveyance of signs). The nervous impulses are contractions and dilations reverberating throughout the species of like physiological affinities within the entire sensitive soul. These impulses are the involuntary or voluntary systems' distribution of animal spirits expressing "divers manners both of Actions and Passions, to wit, the Senses, which we call its Passions; and Motions, which we name the Actions of the same" (Willis 1664, 64-65). Willis' entire physiology relies upon an interrelation of parts, a complex unity that if separated would lose the very foundation necessary for its constitutional integrity. Under his model, the sensitive soul can perform an act and experience multiple sensations *simultaneously*. The senses are literally the passions. The physiological process of a passion

consists in the retraction or drawing back of the Spirits, or a flowing back towards their Fountains. For where-ever the impression of a sensible object is carried to this radiant or beamy contexture, presently either the whole frame, or some portion of it, whereby it admits the species, is compelled to wag, and to be moved back, as it were to leap back and recede into it self. (Willis 1664, 65)

Passions register their affect upon the nerves by their movement into the sensory fountains, which then carry the sensation to the rest of the body. The physiological complex that comes by the name of passion encapsulates several concepts: it is an impression; the reception of the physiological bodily component; and the seat of the involuntary system that responds to the impulse of the impression.

The reflective model of imagination in response to sensory data becomes a construct that finds a similar reiteration of the nerves responding to stimuli with reflexive gestures:

Both the Senses and Motions of this sensitive Soul are made either transient, when the Spirits, or its constitutive Particles, being moved somewhere in the System of the Nerves, draw together with them the containing parts, and deflect them with the like carriage or gesture with themselves, as is observed in the five outward Senses, and the local motions of the Members. (Willis 1664, 65)

The sensitive soul responds physically to the movement of its constitutive aethereal particles throughout the nervous system. The senses and motions are expressions of the sensitive soul, and during physical actions and active engagements with the senses, the sensitive soul unifies the transient nervous stimuli. This makes a single action or sensible motion, and it allows for a response in kind to the initial sensory impressions. This reaction is the reflexion of the impulse, and since the sensitive soul is a natural and nervous act – it is an automatic response: “either both Actions and Passions are continuing, to wit, when both the Motions and Senses are silently performed without any great agitation or moving of the body, or its parts, within the first Fountains of the Soul, viz. the Head it self” (Willis 1664, 65). The sensitive and automatic refraction of a stimulus is a response to the initial impression, and it does not necessarily involve the rational, voluntary faculties. Willis’ *Anatomy* is a significant departure from traditional physiological models: the sensitive soul is capable of non-rational automatic reactions, but it is also integrated with the brain, defying seventeenth-century binaries and hierarchies that otherwise dictated cognition and sensation. The sensitive soul unifies the sensory and directs physiological motions. In its more complex applications, the “sensitive” is a physiological function that includes vital or flamy elements as they become lucid in the voluntary forms of cognition or in automatic nervous responses.

For Willis' *Anatomy*, the sensitive soul refers to the nervous physiology, which is co-present in the faculties and in the nervous system. The sensitive includes the conversion process of aether to animal spirit within the cerebellum and in the cerebral hemispheres, since the sensitive soul is the nervous passion at the level of felt sensation. Although the passions are necessary for the integration of the rational with the sensitive, there is the working division between the voluntary faculties of the imagination and those faculties that rely more on the involuntary system and natural instinct. The cerebellum and the hemispheres make the animal spirits, which allocates these felt passions – as animal spirits – to the imagination and its correlated voluntary faculties: “These kinds of passions [those in the head] indeed, made within the substance of the Brain, are common Sense and Imagination; but the Actions are Memory, Phantasie, and Appetite, and either of these, as to their beginnings and instincts, depend for the most part upon the outward Senses” (Willis 1664, 65). Passions of instinct and of sense rely more heavily upon reception and interaction with nervous stimuli, and are, therefore, more properly sensitive. Willis' separation of physiological interactions and stimuli reveals his theoretical physiological model – memory records sensible impressions; phantasy is a consequence of the faculty of imagination, and takes a prominent role during sleep; and appetite reacts to outward or nervous stimuli. An involuntary system works with an apparent separation from the imagination in most, but not in all, cases.

The passions are a physiological principle. The brain's anatomy makes animal spirits and is the foundation for the passions felt in the intellectual faculties, specifically common sense and imagination. Common sense (otherwise termed the “internal sense” or

the “imagination”) would appear to follow the eighteenth-century premise (1660s-1750s) of unifying all external sensations in the imagination; as Mayne exemplifies: “The use of it [the imagination] is manifest; for it is a sort of *secondary* or *subsidiary Sense* . . . And seeing it is but *one*, whereas the *Senses* are *many*, it is therefore in respect of them like a *common Sense*, or serves them as their general Representative” (Mayne 1728, 70).⁸¹

Francis Hutcheson (1694-1746), a philosopher more in line with Willis’ theories (and less an extreme rationalist proponent like Charles Mayne)⁸² would also speak of the imagination as a type of common or internal sense. Using the title of Joseph Addison’s aesthetic inquiry (1672-1719), Hutcheson explains that the “Pleasures of the *Imagination*; or [what] we may call the Power of receiving them [pleasant external perceptions], [is] an *Internal Sense*.”⁸³ The imagination is the impetus for action, and provides the means by which the voluntary faculties influence the nervous system. The imagination is the central command and the synthesizing process for the senses and the faculties; in effect, the other faculties are at the disposal of the imagination, which the imagination, in turn, uses during its reflexive response to the incoming nervous impressions or passions.

For Willis, the hemispheres and the cerebellum direct the animal spirits’ flow into the oblong marrow (i.e., roughly, the medulla oblongata, but more generally the nervous

⁸¹ Zachary Mayne, *Two Dissertations Concerning Sense and the Imagination*, 1728 (New York: Garland Press, 1976), 70.

⁸² Tim Milnes, “On the authorship of *Two Dissertations Concerning Sense and the Imagination*, with an *Essay on Consciousness* (1728),” *Notes and Queries* 47, no. 2 (2000): 196-98. Milnes corrects the authorship of *Two Dissertations* from Zachary to Charles Mayne.

⁸³ Francis Hutcheson, *An Essay on the Nature and Conduct of the Passions and Affections, with Illustrations on the Moral Sense*, 1728, ed. Aaron Garrett, rev. ed. of 1742 (Indianapolis: Liberty Fund, 2002), 17.

distribution pathway), and from which they proceed to “all the nervous parts of the whole Body” (Willis 1664, 72). From the dictation of the involuntary system, the animal spirits’ movements are “directed either outward towards the Nerves, when they exert the locomotive Faculty, or they look inward towards their Fountains, when the acts of sense, or rather apprehensions of sensible things are performed” (Willis 1664, 72). The movement of the animal spirits is circular, and this cycle works to continually provide the intercommunication between the nerves and the faculties. The animal spirits are the lucid principles responsible for sensation and the chemical vehicle in which the apprehension of the faculties occur.

The spirits proceed to the nerves, and the nerves act as “the Executors of spontaneous Motion in most members” (Willis 1664, 72). The appetite is the executor of the imagination, and it carries out the inclinations of the intellectual faculty and delivers direction to the nerves. In what could be roughly considered an anatomical hierarchy, the nerves are executors of the appetite’s executive actions: “as often as the Appetite discerns any thing to be done, presently the reciprocal tendencies of the animal Spirits, that is, from the brain into these parts, are disposed here to act the conceptions of motions coming from any part or member. For here, as in a most famous Mart, the animal Spirits, preparing for the performance of the thing willed, are directed into the appropriate Nerves” (Willis 1664, 73). The appetite commands the animal spirits that, in turn, carry the sensible motion from the initial impression into the brain. The “mart” of the oblong marrow directs part of the involuntary system and along with it the animal spirits, and through this central distribution zone “every influence from the Brain into the nervous

stock ... must of necessity pass” (Willis 1664, 73). The oblong marrow prominently includes, at its upper end, the lower portion of the callous body, chambered body of the common sensory that appears “streaked” (the furrows on the striata), the cerebellum adjacent to the medullary fibres, and collectively the brain stem, the medulla, the pons, and the pineal gland; it is the route and storage place for animal spirits moving from the hemispheres into the nerves.⁸⁴ This complex of organs “receives the strokes of all sensible things [recorded on the furrows of the striata], dilated from the Nerves of every Organ, and so causes the perception of every sense; which kind of strokes of sensible things, when from hence they are passed further into the Brain, presently Imagination succeeds the Sense” (Willis 1664, 73).⁸⁵ Animals with markedly less anatomical development in the brain, Willis argues, fuse the involuntary actions of the nerves and what would otherwise be higher brain function: “the callous body is transferred into the oblong marrow, and in its place the chambered bodies are removed into the Brain” (Willis 1664, 75). This makes the sensitive, involuntary system pre-eminent in the brain.⁸⁶ In humans and other mammals, the callous and chambered bodies and the rest of the involuntary system (i.e., the common sensory) collect and deliver the sensible

⁸⁴ “The other Faculties within the [sensitive or rational] Soul [are], as Sense and Motion, also the Passions and Instincts merely natural, though they depend in some measure upon the Brain, yet they are properly performed in the oblong Marrow and Cerebel(lum), or proceed from them” (Willis 1664, 58).

⁸⁵ The *Anatomy's* definitive disparity with the *Souls of Brutes* lies here: the strokes of impressions upon callous body, or the striatum, remains an involuntary feature of the sensitive soul until it progresses upwards into the brain where the faculty of the imagination responds as the voluntary action.

⁸⁶ This may further clarify Willis' *Souls of Brutes* (1672). If the animal is of a lower species, the callous body of the striatum controls brain function as part of the nervous system and is always sensitive. This is, however, entirely dependent upon the complexity of brain structure that indicates cognitive capabilities.

excitements from every nervous organ and bring them to the imagination. First, impressions affect the common sensory, which is the sensitive soul or, more technically, the involuntary processes of Willis' oblong marrow. Then, if the impression moves into the voluntary realm of cognition, the imagination receives the sensory data and determines the response to the stroke of the initial impression.

The imagination is bypassed if the impression does not progress beyond the common sensory: "Species of sensible things, received by those Nerves [optic and nasal], might more immediately be carried to the middle of the Brain, unless that they ought first to be staid at this Sensory" (Willis 1664, 74). The imagination only responds to the stimuli when the sensible impressions are carried beyond the involuntary system of the common sensory; otherwise the sensible impressions move downwards and "are preformed [by] the Instincts of Motions" (Willis 1664, 74). Willis, in fact, proposes an entire physiology of the nerves that works without directly involving the intellectual faculties. The senses, such as those conveyed by sight or smell, first affect the involuntary processes to which the nervous body may reflexively respond to the sensible affect, but the imagination does not have initial access to the stimulant because the nervous transmission has not moved beyond the callous body. The voluntary faculties only respond to the sensible stimulus if the impression proceeds past the common sensory, which allows it to move from the jurisdiction of the involuntary system into the voluntary acts of the imagination.

Although the anatomical terms and Willis' description of the nervous process may side on the arcane, the importance of nervous impressions first registering within the

involuntary system instead of within the faculties of the brain (the cerebral hemispheres) sets an important precedent for the effect the impressions have upon the passions. Impressions and nerves are not immediately subject to reflection by the brain's faculties, and may never be, if they do not move past the involuntary processes into the cortical fibres of the corpus callosum and into the hemispheres. The nerves carry the impressions to the involuntary system where the natural faculties reside, natural memory, and physiological processes may keep the impressions at an instinctual or automatic level. However, the proximity of the nerves to the upper end of the medullar track [a component of the oblong marrow]⁸⁷ explains "why odors or the objects of the sense of smelling so strike the Brain it self, and immediately affect it; also why there is so exceeding swift a communication between Sight and Imagination" (Willis 1664, 76). The anatomical arrangement of the nerves allows impressions of sight immediate access to the common sensory. For Willis, the position of the nerves centralizing in the middle of the brain (i.e., the circle of Willis) explains why there is a rapid transition from an object's visual identification to the imagination's reception and reaction of the imagery. The ramifications of Willis' instinctive based nervous system allows an alternative means to understand impressions in later empirical modes of enquiry. John Locke and David Hume, for example, posit the passions, the natural faculties, and the reception of impressions in accordance with Willis' instinctive actions and his nervous anatomy.

⁸⁷ The oblong marrow is a complex of organs at the base of the cerebral hemispheres: "under which name we comprehend all the substance which reaches from the inmost Cavity of the callous Body, and conjuncture in the Basis of the Head, to the hole of the hinder part of the Head; where the same substance, being yet farther continued, ends in the spinal Marrow" (Willis 1664, 72).

XV. The Passions, An Involuntary Synthesis

The pathway of the oblong marrow bridges the faculty activities of the cerebral hemispheres and the involuntary activities of the cerebellum. The oblong marrow also provides a route for the lucid basis of all sensation, the animal spirits, to travel from the cerebellum to the heart (and vice-versa): “the Passions or Affections of the sensitive Soul, begun from the brain [in this case, the cerebellum], may be transmitted to the Praecordia and Viscera; then, secondly, that the natural Instincts, excited in the Praecordia and Viscera, might be communicated to the brain” (Willis 1664, 82). This bridge allows for a sub-demarcation between the cerebellum’s directives of the passions to the heart and the rest of the physiological system. It also allows sensations from the heart to transmit back to the cerebellum:

There may be had a constant commerce between the brain and many organs of sense and spontaneous motion: from which those parts are entertained which perform their actions, not at the beck of the Appetite [an intellectual faculty], but either by the instinct of Nature, or the blind impulse of the Passions; for such receive wholly their influences from the Cerebel[lum]. (Willis 1664, 82)

As a distinction from Willis’ intellectually defined appetite that carries out the actions commanded by the imagination,⁸⁸ the cerebellum’s involuntary stimulants are sensory impulses implicit in the passions. The oblong marrow is also the means for continual

⁸⁸ Willis’ unified appetite is in contrast to the scholastic division of the appetite into *appetitus rationalis* and *appetitus sensitivus*, which was found in such authors as Eustachius de Sancto Paulo and Adrian Heereboord, but originated with Aristotle (“On the Soul,” Vol. 1, *The Complete Works of Aristotle*, 2 vols, ed. Jonathan Barnes, trans. W.D. Ross, rev. trans. J.A. Smith (Princeton: Princeton University Press, 1984). Willis’ appetite is not simply rational either, since he calls the very divisions of sensitive and rational into question.

communication between the multiple processes of the brain and the rest of the nervous physiology; “otherwise the exercises of these involuntary Faculties should very much disturb the acts of the outward Senses, or the intentions of spontaneous motions” (Willis 1664, 82). The involuntary system and the nerves allow for separate physiologic functions, and these demarcated responsibilities provide a constitutional equilibrium (i.e., an animal’s involuntary breath should not interfere with sight perception or intentional acts).

The passions of the sensitive soul are agitated against our volition: “Anger, Sadness, Pleasure, and other Affections, the *Praecordia* are disturbed, whether we will or no” (Willis 1664, 82). The passions are felt sensations and should not suffer a complete conflation with the emotions, even if the former category includes emotional affections. The passions are integral to emotive modes of physiology. Willis (arguably) follows the standard, classical account of the passions in his inclusion of the heart (although he excludes the liver), but the heart does not produce the passions; instead, the heart influences the manner in which emotions take affect. Its engagement with sensation defines the eventual propensity for subsequently similar sensations.

The passionate affections also have a natural correlative with physiognomy,⁸⁹ since the agitation alters how the blood fluctuates in the body:

From this kind of force of the Passions the countenance or the aspects of the Face are wont to be altered and distorted after various ways [...] because when the animal Spirits, existing within the brain, are moved according to the idea of the conceived Passion ... [they] affect the Cerebel[lum] (Willis 1664, 83),

⁸⁹ This is not to be confused with later physiognomy; wherein physical appearance became the emotion – effectively bypassing one’s nervous physiology.

which then affects the intercostals and the other periphery nerves that united the heart, the internal organs, and the facial muscles (Willis 1664, 83). Animal spirits within the hemispheres move into the cerebellum because of the association of an idea with a particular passion (the ideas are in the gyri memory storehouses in order to help organize and regulate habits and responses). The cerebellum, consequently, determines how the body's physiology responds to the passion. The cerebellum's response manifests through the nervous reactions and muscular demonstrations, such as facial contortions.⁹⁰ At a simple level and before the propensity for willful dissemblance, expressions are muscular reactions that one cannot control. They are not signs of passions, since a sign would sever the expression from the nervous musculature of which it is part. This is a distinction from linguistic theories and sign-premised approximations of physiology that falter in their division of a passion into an "emotion" or "expression," which was only part of what the passions meant during the long eighteenth century. A passion forms a complex that incorporates impressions (internal or external) dictated by the animal spirits moving through the cerebral hemispheres and the cerebellum, which enlivens the nervous physiology, dilates or contracts the blood and muscles, and continually registers the feeling of the sensation in order to respond to it. The impulse, the lucid or sensitive passion provided through the movement of animal spirits, is the emotion, and muscles whether internal or facial, can no more be separated from its contraction than an

⁹⁰ Beyond this case specific context of Willis, Susan James asserts, more generally, "passions, it is agreed, have intrinsic physical manifestations which bridge emotion and action and are written on the body in facial expressions, blushings, tremblings, and postures." *Passion and Action: The Emotions in Seventeenth-Century Philosophy* (Oxford: Clarendon Press, 1997), 4.

impression can be abstracted from its initial agitated impulse without creating a belief system premised on binaries.

The nerves also transmit “the impressions of natural Instincts to the Brain” (Willis 1664, 83), which is an extension, in kind, of the natural faculties (i.e., faculties controlled by the involuntary system), since the action relies upon one’s physiology and not cognitive experience. The nerves are inherent components to the physiological structure:

When in a young one newly born the stomach crys [sic.] out for hunger, the Instinct of this is carried by the passage of the Nerves to the Cerebel[lum] [and then through the common sensory]; and the Spirits there inhabiting, form the Idea of the impression, and carry it to the brain, wherein presently, without any previous knowledge or experience, such kind of conceptions of the Soul are stirred up, that every little living Creature presently seeks out the Mothers breasts and sucks. (Willis 1664, 83)

The infant’s physiology can instinctively feel hungry, and the passages of nerves throughout the body automatically communicate with the brain’s involuntary system. The physiological basis to create an idea from an impression and the brain’s ability to respond are both equally innate. The rudimentary form of an instinctive reaction to an impression and its migration into the brain to solicit a response from it together complement the reception of external impressions and their integration into the physiological nervous system. The nerves impart the simplest reactions, and they teach “by natural Instinct before any knowledge of the Brain” (Willis 1664, 93).

For Willis, the eyes share a close affinity to the natural instincts and are “affected with a certain manifest Sympathy” (Willis 1664, 84). Sympathy has a *pathetic* anatomical basis and reflects the initial affect. Spirits may define the impulse and transport the impressions, but the sympathy occurs at the point of junctures – where one physiological

process enters another system that redirects or adapts the initial impulse to an automatic or intellectual end. The *pathetic nerves* of the eyes sympathetically refract nervous states, either mental or emotive: “the Eyes do so clearly shew the Affections of the Mind, as Sadness, Anger, Hatred, Love, and other perturbations, that those who are affected, though they should dissemble, cannot hide the feeling and intimate conceptions of the mind” (Willis 1664, 84). Poetic clichés aside, eyes reveal the passions because they intersect with the directives of the cerebellum. The passions are affections, but they do not exclude the mental affections. Nervous physiology is inseparable from the cognitive faculties. While thinking, the imagination experiences affections and emotions. The brain may fall under the rubric of the rational soul— depending upon the complexity of the “infoldings” on the brain (i.e., the gyri) – but the imaginative faculty is always subject to sensitive stimuli (as part of the nervous system). Impressions will constantly influence the performance of cognitive acts, since rationality, for Willis, is a condition of habitual affections. The separation between rational and sensitive souls depends upon the type of physiological response to the passions, because the imagination only performs rational acts after the acquisition of experiences. The passions moderate the faculties, and eventually the imagination reflects and commands the impulses that the passions (as involuntary instincts) initially brought to incite the first foundational acts of cognition.

To deny the formative role of passions upon cognition or upon involuntary responses would be tantamount to rejecting the instinctive physiology of the cerebellum that first stimulates and literally forms the imagination through the natural responses to habitual experiences (the cerebellum is also the *natural storehouse* of memory that

determines instinctive pathways for animal spirits [Willis 1664, 99]). The passions have an anatomical distinction from the commands of the imagination or the vivacious foundation for the animal spirits. They can receive their directives from the annular protuberance – the posterior appendix of the cerebellum and a specialized subsection of the involuntary system (Willis 1664, 99). In addition to Willis' muscular explosions, aetherial transmissions, refracted impressions, and the vitality of blood, the annular protuberance uses wind to drive the passions throughout one's physiology:

But as the annular Protuberance seems to be the chief Organ or Chest of the Spirits, from whence the winds of the Passions, destined for the exciting the *Praecordia*, are conveyed into the breast; so we suppose the orbicular Prominences [anterior appendix of the cerebellum] to be a means of passage, and the very instruments whereby the instincts and necessities of the *Praecordia* and *Viscera* are communicated from the Cerebellum to the Brain. (Willis 1664, 100)

The passions (metaphorically) move throughout the nervous body as wind. The actual vehicles for the passions are the prominences, but the ubiquitous animal spirits (the chemical and essential foundation for all animals) still carry the impulse or reflected impression of the passion: “the animal Spirits ... do not only transmit these kind of Ideas of formal Reasons of the Instincts, but in some measure form and prepare them for the Brain” (Willis 1664, 100). The animal spirits residing in these protuberances replace the commands of brain, if cognition does not have any “previous knowledge or practical habits” (Willis 1664, 100). They are able to “chuse and bring forth some spontaneous actions as [if] it were with [intellectual] judgment and deliberation” (Willis 1664, 100). Passionate winds are a frequent descriptor for Willis' physiological functions.

The protuberances explain the movement of the senses, since the passions (as the senses) receive direction through an organ pump-like system. Willis observes in those animals with a pronounced involuntary system (and lesser developed cerebral anatomies) the “orbicular or natiform Prominences” (Willis’ alternative terms are the *buttock* and *testes*) (Willis 1664, 1) are considerably larger than the “ringy Protuberance” (the appendixes of the cerebellum) found in those animals of greater intelligence. In those animals where the orbicular or natiform are of greater size, Willis conjectures, these prominences act as “another or supplementary Brain, and [they are] the chief Organs of the natural Instincts” (Willis 1664, 101). This conjecture on a “double brain” initiates further symmetry to Willis’ inductive logic. Both divisions of animals (regardless of the respective brain’s propensity to sensitive and rational acts) have two functional command systems, akin to two brains: the one cerebral-brain concentrates upon the faculties; and the other directs the sensitive and nervous components of the passions, which are largely involuntary functions of the cerebellum in response to the senses. Although I would not suggest Willis is positing a two-brain theory proper, the brain and the physiological system concentrate upon the voluntary or involuntary systems, respectively. In one sense – and despite its necessity to invigorate the entire physiological system – the brain’s ability to rationally command makes it almost separate from the body proper, but the involuntary and the voluntary systems are still far from dualism. In a parallel fashion to the distinct directives of cognition, the instincts control physiological functions as if it were another brain, and they mediate natural forms of habit and the spontaneous (often involuntary because automatic) movements.

XVI. Physiological Movement and Metaphor

The transference of passions throughout one's physiological frame is at first non-descript: "For the Spirits so produced in the Cerebel[lum] plentifully by a perpetual emanation, ought to flow outwardly for the offices of natural and vital Function: but more inwardly for the impulses variously sent into them, they admit certain undulations or wavings" (Willis 1664, 101). The physiological functions of the body are perpetually ebbing in a two-fold process that both receives and produces the coursing impressions of animal spirits. The wave-like motion of animal spirits from the medullar truck (the involuntary system) "seems like the Pneumatick Chest, or Bellows of a pair of Organs, which includes the blast or breath destined to every Pipe" (Willis 1664, 103). Not to take Willis' iatromechanic metaphor too literally, the waves of animal spirits blow as if driven by a breath that enlivens one's physiological sensibilities.

The sensitive soul is the lucid foundation of one's entire nervous physiology that by necessity includes the means for the brain's cognitive abilities. The head is "the chief part of and power of the sensitive soul, [and if it] be taken for the body of some Luminary, as of the Sun or a Star; the nervous System shall be that radiant or beamy concretion encompassing it about" (Willis 1664, 105). Willis positions the head – the brain and its faculties – as the foundation for the irradiating sensibilities of the central nervous system. The animal spirits retain their fuller aetherial premise as both chemical and metaphysical, and they resonate with a biblical first cause metaphor: "the animal

Spirits flowing within the Nerves with a living Spring, like rivers from a perpetual Fountain, do not stagnate or stand still” (Willis 1664, 105). The variously located animal Spirits carry and move upon the “waters,” or the blood and humours, of the body:

the Spirits in the rest of nervous kind, especially those abounding in the Membranes and muscous stock, are like Ponds and Lakes of Waters lately diffused from the chanel of Rivers, whose waters standing still are not much moved of their own accord; but being agitated by things cast into them, or by the blasts of winds, conceive divers sorts of fluctuations. (Willis 1664, 105)

The spirits’ movement upon the waters is the genesis to the physical manifestation of life founded in one’s nervous and mental physiology. They animate the waters of the body, which is a direct reiteration of the divine beginnings and echoes the most basic principles of form brought out from the lifeless chaos: “And the earth was without form, and void; and darkness was upon the face of the deep. And the Spirit of God moved upon the face of the waters.”⁹¹ The animal spirits as aether are the generative foundation to the body. They serve as an underlying principle or divine light that allows the sensible and lucid elements to exist at the physiological level. The spirits are more than just divine acts distinct from the physical world; they are the visible effects of creation. They do not copy the divine simply as a metaphoric allusion, since they are divine manifestations of physicality that perpetuate the very first effects of form. Under these conditions, Willis’ apparently offhand and somewhat whimsical remarks take on greater significance. The brains of brutes and humans are “Twins from the Creation of the World” (Willis 1664, 36), since they both continually reiterate their creation through their functional physiology (as well as in their actual ability to cognate). The head itself has a shape like

⁹¹ *Genesis* 1:2

the “world” (Willis 1664, 44), and this becomes a parallel embodiment of creation.

Willis’ obscure claims from the dedicatory epistle in the opening pages of the *Anatomy* finally become clearer. The *Anatomy* seeks “to unlock the secret places of Mans Mind, and to look into the living and breathing Chapel of the Deity” (Willis 1664, 1). *The Anatomy of the Brain* investigates “the Pandects of Nature, as into another Table of the Divine Word . . . there is no Page certainly which shews not the Author, and his Power, Goodness, Trust, and Wisdom” (Willis 1664, 1), since the pandects of physiology – of the brain itself – perpetuate their origins through the manifestation of their effects, which are the most basic physiological and imaginative acts.

XVII. Conclusion to Willis’ *Anatomy*

This study allows for a reinvestigation into the structure and physiological logic of eighteenth-century empirical faculties. Willis provides a precedent to read the imagination as the central cognitive faculty. He conditions the physiological processes of the faculties through the acquisition and the perpetuation of habitual pathways, which is an explicit, if not still rudimentary, means to inform and to contextualize later associative theories. The ferment of imagination situates Willis as a materialist – cognition becomes subject to the constraints of its anatomical structures. Although the process of fermentation as physiology may be a slightly nebulous and archaic pre-science, the effort to ground the faculties within a chemical system that shifts with and responds to new

impressions presents Willis as a forerunner to interactive models of eighteenth-century empiricism.

Several important concepts are crucial not just for Willis' application to other eighteenth-century disciplines but also for the unique considerations he initiates and that have not received adequate recognition in contemporary medical scholarship. Willis' theory of distillation explains the retention and recurrence of ideas. The greater the frequency and the more substantial the impression of an idea or set of ideas, the more automatic the habitual pathways the imagination becomes in its associations. These patterns of habitual impressions provide regular tracts throughout the nervous system and within the formation of ideas. Because of the professor to student relationship, Willis predates Locke with his theory of reflection and suggests a physiological model that is pivotal for contextualizing the paradigms of reflection within later philosophical contexts. Reflection is a voluntary reflex to impressions of sensation that move beyond the involuntary nervous system. The imagination, as the faculty expression of the reflex reaction, becomes cognizant of impressions and can follow either a common trajectory or associate variable contexts. This interaction between sensible impression and imaginative reflex is the basis for memory and intellectual development. Willis' co-foundation and theoretical interaction between the brain and the nervous system suggest that cognitive functions can direct their own processes and content, but he also explores how the basic nervous anatomy can moderate sensible impressions and direct associations. Their interplay creates habitual actions and modes of attention. Willis presents a new anatomical basis to judge memory complexity and assess cognitive ability – the brain's

size and its *cranklings, turnings, and infoldings* refer to the *gyri* and *sulci*. As a complement to the logic of voluntary acts of the reflection by the imaginative faculty, Willis suggests a two-fold model of memory: one natural, more a part of the involuntary system that automatically responds without cognitive intervention; the other, belonging primarily to the voluntary system of cognition that develops through conceptual habits and imaginative interactions. Willis' *natural memory* and *memory storehouses* suggest that the brain and its higher cognitive function have a physiological subsystem to control the involuntary nervous system. *The Anatomy of the Brain's* physiological and anatomical exploration of the cognitive faculties provides a unique alternative through which to reconsider the traditional eighteenth-century interpretations of faculty divisions, associative habits, and the dynamic reflections between the involuntary and voluntary systems.

Part 2. Imagination and Physiology in Hume's *A Treatise of Human Nature*

2.1 A Theory of Unity in Book I of the *Treatise*

I. The Approach in Overview

Historically, *A Treatise of Human Nature* has been truncated into compartmentalized epistemological positions that correspond with philosophical sub-specialties. The prevalent contemporary model for critics and philosophers is to isolate a position from the rest of the *Treatise* and determine the degree of its analytic success. As a consequence, the contexts of Hume's imagination and the interrelated arguments suffer neglect. This study proposes an alternative reading in order to establish basic interconnections amongst Hume's arguments. I read BK I of Hume's *Treatise* as a historical document, without an overt alliance to contemporary or otherwise contrary models of philosophy, and with the explicit intention of integrating the Hume's epistemology with BK II's theory of the passions.

At the forefront of Hume's philosophy – and the cornerstone of the eighteenth-century materialism – is the imagination. The imagination is Hume's fundamental cognitive faculty, which finds its use and pre-history in Thomas Hobbes, Pierre Gassendi, Thomas Willis, and Francis Hutcheson. Without recognizing the pre-eminent position of the imagination (and the very different meaning the word once held) Hume's central cognitive process is, at best, obscure: "For the early modern materialists, the preferred

replacement for the faculty of reason was the imagination. This faculty [the latter] was recognized, on all sides, to be dependent on bodily processes” (Buckle 2007, 569). To understand the *Treatise*, scepticism must be seen as integral to a new experimental philosophy.⁹² Hume’s philosophy is an experimental method of modern science that lies outside Pyrrhonic and Academic Scepticism. Within this context, scepticism offers a viable mode of inquiry based upon probability that judges the relative degree of validity in an idea. The contextualization of Hume’s philosophy as a science will specifically counter the denouncements of common scepticism set against him and establish a system to unify the imagination. Far from a negative philosophy, Hume’s scepticism is a methodological tool that is crucial to investigate belief and to determine contingent probabilities. If the elimination of the dichotomy between scepticism and naturalism is to prove successful, the traditional binary between impressions and ideas becomes untenable, and a continuum model will situate simple and complex ideas as interdependent and fluid relations that rely upon each other to build and dissect ideas. Although there is a relationship between all concepts that the imagination unites, ideas can exceed empirical sense and become subject to absolute modes of abstraction. The imagination’s purely fanciful constructions may entertain and conceptualize the abstract paradoxes of infinite divisibility, but these non-representational concepts are no longer empirical. The missing shade of blue and infinite divisibility seem to share in the same abstract species of argument, but each demonstrates the imagination’s associative limits from antithetical view points. The limits of the imagination as a faculty define the

⁹² Nicholas Capaldi, *David Hume: The Newtonian Philosopher* (Boston: Twayne Publishers, 1975), 32.

measurable and anti-empirical limits of abstraction. The interrelationship of simple and complex ideas will also help explain why recognition of a missing shade of blue is possible in Hume's system, since the building of ideas requires hypothetical and imaginative constructions. The imagination has, I will show, a special function. It can abstract any concept from its first impression and supply or rearrange the basic constitutive parts into probable ideas, but it is precisely this potential for divisibility common to ideas (which unites all ideas) that causes Hume to reject abstract principles. Pure phantasy, as a perfect abstraction, abandons tangible and observational means to achieve empirical validity. In point of fact, Hume's rejection of infinite divisibility is not antithetical to its premise as a concept, but its foundation as a pure abstraction exposes a need to limit the anti-empirical as unintelligible. There must be sensible rules guiding imagination's processes in order for empirical laws to regulate the comparable affinities possible amongst all ideas. To exclude these sensible limits of physicality is entirely possible, but such a cognitive model is neither following empiricism nor investigating the *Treatise*.

II. Impressions and Ideas

Hume's impressions and ideas lie within a continuum: "The difference betwixt these consists in the degrees of force and liveliness with which they strike upon the mind,

and make their way into our thought or consciousness” (1.1.1.1).⁹³ An idea is a less distinct reflection of the initial sensation from the impression: in the latter, “I comprehend all our sensations, passions and emotions, as they make their first appearance in the soul. By *ideas* I mean the faint images of these in thinking and reasoning” (1.1.1.1). Impressions and ideas are *degrees* of expression from the same sensory stimulus. They explain the basic difference between “thinking and feeling” (1.1.1.1). Hume clarifies the subtlety he introduces into each term: “ideas stand for all our perceptions” and impressions are not the manner “in which our lively perceptions are produc’d in the soul, but merely the perceptions themselves” (1.1.1, footnote 2). Ideas are a consequence of a reception of sensation. The process in which the idea bridges into consciousness through the imaginative correlative is a secondary process that occurs after the initial impression as a simple sensation. Despite the common critical assertion, the binary construction between impression and idea is invalid;⁹⁴ instead, an impression is the sensible stimulus. It is not an idea, proper, but a sensation before the voluntary interjection of cognition. An original impression is a passion – a sensation, emotion, or nervous movement. The transition from impressions to ideas is a process in which feeling becomes thinking. An impression of sensation initiates a cognitive response: “The one seems to be in a manner the reflection of the other; so that all the perceptions of the mind are double, and appear both as impressions and ideas” (1.1.1.3). Far from a form of an inverse copy of Platonic

⁹³ David Hume, *A Treatise of Hume Nature*, eds. David Fate Norton and Mary J. Norton (Oxford: Oxford University Press, 2000), 1.1.1.1.

⁹⁴ See, for examples: David Owen, *Hume’s Reason*, (Oxford: Oxford University Press, 1999), 68-71; Janet Broughton, “The Inquiry in Hume’s *Treatise*,” *Hume Studies* 113, no. 4 (2004): 153; L. Bargeliotes, “David Hume: Universality, Causality, Induction, Uncertainty,” *Philosophical Inquiry* 22, no. 3 (2000): 83.

inspiration,⁹⁵ *reflection* has an earlier historical origin as a reference to cognition's *reaction* to sensations.⁹⁶ Reflection is part of the process of reception and has a long history in experimental schools of anatomy and medical scholarship.⁹⁷ To conflate copy with reflection is to run the danger of perverting basic anatomy into an anachronistic theory of memory. Although Hume does refer to ideas copying impressions, he explains copy as a reflection between the passions (as sensible impressions) and the imagination. Ideas are the formative response to impressions, and the former only result through the reception of sensation. Mindful of the potential duality, Hume already rejected categorical divisions in an antecedent claim. From the very first, he posits that occasions of "madness" or the more conventional circumstances of "violent emotions" could cause impressions and ideas to intermingle and confuse the recognition of simple distinctions between them (1.1.1.1).⁹⁸ This will become even more complex, since Hume's

⁹⁵ An argument proposed by A. Flew, "Impressions and Experiences: Public or Private?" *Hume Studies* 11, no. 2 (1985): 183-191.

⁹⁶ Thomas Willis, *Anatomy of the Brain*, 1664, trans. S. Pordage, 1681 ed., (Tuckahoe: USV Pharmaceutical, 1971), 58.

⁹⁷ Zoltán Molnár, "Thomas Willis (1621-1675), the Founder of Clinical Neuroscience," *Nature Reviews Neuroscience* 5 (April 2004), 334; Wes Wallace, "The Vibrating Nerve Impulse in Newton, Willis, and Gassendi: First Steps in a Mechanical Theory of Communication," *Brain and Cognition* 51, no. 1 (2003): 66-94. Meyer, Alfred and Raymond Hierons. "Thomas Willis's Concepts of Neurophysiology: Part I." *Medical History* 9, no. 1 (1965): 10; Sheehan, Donald. "Discovery of the Automatic Nervous System." *AMA Archives of Neurology and Psychiatry* 35, no. 3 (1936): 1081-1115.

⁹⁸ Wayne Waxman represents a standard model of phenomenological criticism. He provides an analytical critique of what Hume should think rather than a textual exegesis:

"the gulf between impression and idea seem wellnigh insuperable, and so points to a true difference in kind. . . . never can *the idea itself* become an impression or *the impression itself* an idea. Hume, therefore, may well have taken the view that a thought can no more become a sensation or reflexion (emotion, passion, desire)." Wayne Waxman, *Hume's Theory of Consciousness* (Cambridge: Cambridge University Press, 1994), 30. Hume,

construction of belief (and cognition in general) is indistinguishable from its construction as an indirect passion.

III. Simple and Complex Ideas

Hume unfairly receives criticism for not justifying the simple and the complex formation of ideas as separate impressions of sensation. Several scholars argue that Hume allows for complex ideas without complex impressions;⁹⁹ whereas Barry Stroud maintains the opposite point of view, and condemns Hume's imperfect copies and related subsequent principles within the empirical tradition:

For them it is apparently not true that the world is everything that is the case, or that the world we believe in is everything we believe to be the case. They draw an invidious distinction without all the things we believe; the 'world' they think we believe in amounts to something less than the truth of everything we believe.¹⁰⁰

As an alternative to both critical approaches, Hume's philosophical premise follows that the imagination can potentially restructure any simple impression into a complex form.

Hume anticipates and responds to contrary critical objections: the imagination has the

however, actually premises all modes of imagination (i.e., understanding, judgment, and belief) upon the passions.

⁹⁹ D. M. Johnson, "Hume's Missing Shade of Blue, Interpreted as Involving Habitual Spectra," 1984, *David Hume: Critical Assessments*, Vol. 1, ed. Stanley Tweyman (London: Routledge, 1995), 208; Jerry A. Fodor, *Hume Variations* (Oxford: Oxford University Press, 2006), 118.

¹⁰⁰ Barry Stroud, "'Gilding and Staining' the World with 'Sentiments' and 'Phantasms,'" *The New Hume Debate*, eds. Rupert Read and Kenneth A. Richman (London: Routledge, 2000), 29.

capability to explain emergent properties synthesized or modified through the imagination:

I observe, that many of our complex ideas never had impressions, that corresponded to them, and that many of our complex impressions never are exactly copy'd in ideas. I can imagine to myself such a city as the *New Jerusalem*, whose pavement is gold and walls are rubies, tho' I never saw any such. (1.1.1.4)

Hume recognizes the potential for complex ideas to form without corresponding impressions. D.M. Johnson provides the traditional rejection of Hume's theory by suggesting that the missing shade of blue is an exception to the copy principle, since this simple idea never has a corresponding simple impression.¹⁰¹ Hume, however, does not mean to reject an empirical foundation to cognition by aligning himself with an abstract cognitive faculty to justify *a priori* ideas. For Hume, the missing shade of blue is a sub-argument of the imagination's potential to alter all impressions. Once an impression becomes an idea, then the imagination can create abstract, non-empirical ideas. The imagination is able to separate any idea to a degree of indiscriminate minutiae, and its only limitation to generate abstractions comes from the ability to parse concepts:

Our ideas are copy'd from our impressions, and represent them in all their parts. When you wou'd any way vary the idea of a particular object, you can only encrease or diminish its force and vivacity. If you make any other change on it, it represents a different object or impression. The case is the same as in colours. A particular shade of any colour may acquire a new degree of liveliness or brightness without any other variation. But when you produce any other variation, 'tis no longer the same shade or colour. (1.3.7.5)

¹⁰¹ D. M. Johnson, "Hume's Missing Shade of Blue, Interpreted as Involving Habitual Spectra," 1984, *David Hume: Critical Assessments*, ed. Stanley Tweyman, Vol. 1 (London: Routledge, 1995), 210.

The missing shade of blue is not an inseparable, simple idea. The colour is subject to division within a *fanciful* gradient of blue. As blue becomes an idea, it can also become a complex idea through its repositioning within blue's potential spectrum of vivacity (i.e., interpreting vivacity upon a scale, blue retains its conceptual unity as a color, but it is divisible just like every other idea in the imagination).

IV. The Faculties of Fancy and Imagination

Although, at times, Hume's references to fancy may appear congruent with the term imagination, in the *Treatise* the faculties of fancy and imagination usually have distinct intellectual capacities.¹⁰² Fancy subsists, along with every other faculty, within cognition's unified principle of the mind, the imagination. As the preeminent cognitive faculty, imagination creates the union among ideas of association. It makes connections that are the basis to every cognitive experience. Fancy, as a term and sub-faculty process, is an abstract, non-empirical idea. It is without a structuring memory or a simple impression (excepting exceptional circumstances, miracles or insanity).¹⁰³ Fancy and memory both become ideas because of the imagination's associative functions, but

¹⁰² For a previous investigation into fiction and fancy as distinct from the more general act of imagination, see Saul Traiger, "Impressions, Ideas, and Fictions," *Hume Studies* 13, no. 2 (1987): 383-84.

¹⁰³ A position Hume would reiterate in *An Enquiry Concerning Human Understanding*: "Whenever any object is presented to the memory or senses, it immediately, by the force of custom, carries the imagination to conceive that object, which is usually conjoined to it; and this conception is attended with a feeling or sentiment, different from the loose reveries of fancy. In this consists the whole nature of belief." David Hume, *An Enquiry Concerning Human Understanding*, 1748 (New York: Cosimo, 2008), 47-48.

memory and fancy lie at either side of the spectrum of lively complex ideas (1.2.5.5 [app.]). A memory is a strong, nearly verbatim impression of a sensory experience; an idea of fancy has no such empirical foundation. Hume argues that the fables found in poems are examples of traditional fancy, and they show a *nature* that

is totally confounded, and nothing mentioned but winged horses, fiery dragons, and monstrous giants. Nor will this liberty of the fancy appear strange, when we consider, that all our ideas are copy'd from our impressions, and that there are not any two impressions which are perfectly inseparable. Not to mention, that this is an evident consequence of the division of ideas into simple and complex. (1.1.3.4)

Although monstrous acts of the imagination are without sensible impressions and exist only as *fancy* – ideas can represent completely abstract creations. Once a simple or a complex impression becomes an idea, it is also possible for it to become a divisible idea.¹⁰⁴ The primary facet of the imagination is its ability to divide and to revise every idea, but this directly challenges the order and rigidity that otherwise defines rationality.

When a simple impression becomes a simple idea, the latter is no longer subject to empirical limitations. All ideas – no matter how simple – are divisible through the associative acts of the imagination, since abstractions only have the conceptual limitations of the imaginative faculty's ability to associate new unities. The limitations of conceptualizing divisibility (or the lack thereof) are integral to, and the foundation for, Hume's investigation into the concept of infinity.

¹⁰⁴ Jerry Fodor contends that the abstract construction of ideas of the imagination is impossible, since a volitional act of the will can create ideas – impressions stimulate association. See Fodor, *Hume's Variations* (Oxford: Oxford University Press, 2003), 31.

V. Infinity Divisibility and the Limits of Abstractions

Hume's argument of infinite divisibility is intimately tied to the faculty of imagination. The argument's principal purpose is to expose the basic parameters of imagination's ability to form abstractions. In the history of the infinite divisibility, Zeno's paradoxes serve "the many and one" in order to regulate time and space as constants; infinite divisibility is a paradox to prove absolute unity (a refutation of change that otherwise fragments time and space). As Plato's *Parmenides* illustrates, the many and one are conceptual absolutes that show abstract thought to be without limit; any concept that can be thought, quite simply, exists, which ironically (considering the subsequent history of the argument) excludes infinity, as it is a concept without unity. Hume positions this abstract framework for cognition on a conditional hypothesis: if empirical conditions are subject to the rules of *Eleatic* abstraction, then the concept holds sway. If physical parameters are pre-eminent, then the simple act of walking refutes infinite divisibility. If the concept of divisibility dictates the "experiment," the argumentative constraint of continual half-divisions holds true.

In the Introduction to the *Treatise*, it is Hume's avowed goal to find "a measure dependent on the science of man"¹⁰⁵ in order to establish empirical experience as a corrective to absolute concepts of abstraction. This critical parameter sets the potential for the imagination: "tho' the capacity of the mind be not infinite, yet we can at once

¹⁰⁵ David Hume, *A Treatise of Hume Nature*, 1739-40, eds. David Fate Norton and Mary J. Norton, Introduction by D. Norton (Oxford: Oxford University Press, 2000), pp. 4.

form a notion of all possible degrees of quantity and quality ... as, however imperfect, may serve the purposes of reflection and conversation” (1.1.7.2). Cognition is not capable of infinite abstraction. For Hume, ideas retain their similarity to an original impression(s) by degrees, and, although not without limit, one can imagine potential relationships to other ideas beyond the first, limited impression. To know the limits of knowledge is not the same as allocating cognition to be a failure. Hume seeks a conceptual foundation in order to secure an experimental method that is neither subject to *fancy* nor reductively absolutist: “To explain the ultimate causes of our mental actions is impossible. ’Tis sufficient, if we can give any satisfactory account of them from experience and analogy” (1.1.7.11). Hume’s empiricism situates a new criterion for knowledge. As foundational to empiricism, cause and effect are associations of habit that establish a general causal rule because one assumes a customary relationship (1.1.7.13-4). In order for Hume to establish his new methodology, however, he must expose the limitations in the old philosophical method of inquiry: “If ideas be particular in their nature, and at the same time finite in their number, ’tis only by custom they can become general in their representation, and contain an infinite number of other ideas under them” (1.1.7.16). In a moment of humor, Hume jests that if nature provides an origin for finite ideas, then infinite numbers and general representations are products of custom’s fancy.

Hume suggests, at first, an Aristotelean refutation of infinity: “’Tis universally allow’d, that the capacity of the mind is limited, and can never attain a full and adequate conception of infinity” (1.2.1.2). Infinity is only a potential concept (in Aristotle), since it can never become actual. Hume does this argument one better: Aristotle still accepted the

potential infinity as a concept, but Hume posits that there are finite boundaries to ideas, both empirically and conceptually. The mind has limits. There is a point where a tangible empirical object imaginatively transitions into an outright abstraction: “’Tis therefore certain, that the imagination reaches a *minimum*, and may raise up to itself an idea, of which it cannot conceive any sub-division, and which cannot be diminish’d without a total annihilation” (1.2.1.3). In the argument of infinite divisibility, cognition can always imagine half of any given object, but Hume argues that there is a divisible *non sequitur*. During the conceptual act of dividing an object in half, an empirical limit is eventually reached, and the smallest object *capable of representation* within cognition becomes strictly a non-representational idea. This moment illustrates the division between an empirical representation and a purely ideational form. Hume differentiates between these two types of divisions: representational concepts have an empirical basis and differentiate themselves from ideas that are purely symbolic representations.

If a non-empirical abstraction can represent a spatial idea, then the object’s size as a verifiable, objective element is no longer an issue within the infinite divisibility argument. As a perpetually divisible symbolic-representation of unity, the non-representational idea becomes a reiterative-component within the context of the argument. The divisible entity repeats its previous abstraction in each successive division; once the single object is divided into two objects, half of the divided object again assumes the conceptual quality of unity in the next division. This is possible because the spatial idea no longer has recourse to an empirical object for its verification. Marina Frasca-Spada grants a few concessions to Hume’s argument for representational objects.

She observes that there is a “(finite) ability of comprehension of the mind,” but she establishes an abstract capacity for divisibility that stands in antithesis to Hume’s proposition:

We have an image of the grain of sand distinct from our idea of it – which is divisible. Nevertheless, we can easily conceive of dividing the grain of sand into a thousand or ten thousand parts, since our notion of these numbers and of their propositions is independent of our imaginal apparatus. (1998, 54)

Her differentiation of an image from an idea is valid, abstraction can continue to subdivide a non-representational object in half, but her argument of an idea’s potential divisibility contrasts with Hume’s antithetical stance. Hume rejects the purposefulness of abstractly perpetuating a division without an imagistic basis. Infinite concepts are meaningless unless they are verifiable at an applied, representational, and empirical level. It is not the process of infinite division that Hume considers meaningless, since, at an abstract, purely imaginative level, every non-representational object is divisible; but, rather, he denies the exercise of abstraction to guide empiricism. For Hume, conceptual ability should have the same self-checking limits that empirical observation does in order to maintain scientific veracity.

As a complementary counter argument to infinite divisibility, Hume suggests that an impression of sight loses its empirical meaning when an object becomes unobservable: “Put a spot of ink upon paper, fix your eye upon that spot, and retire to such a distance, that at last you lose sight of it; ’tis plain, that the moment before it vanish’d the image or impression was perfectly divisible” (1.2.1.4). Sight has a limited capability, which

depends upon the strength of vision and the relative distance of an object. Scholars generally understand Hume's empirical limitations to be sceptical:

Hume in his moments of Academic scepticism might prefer to remain silent about such matters of speculative metaphysics concerning the exact nature of these entities [indivisibles], having satisfied himself that extension must ultimately be constituted by sensible extensionless indivisibles. (Jacquette 2001, 205)

In contradistinction, Hume holds that for objects and spatial units sensible perception and extensionless objects are mutually exclusive, since, once a spatial entity is extensionless, it becomes an abstract, non-representational idea; for Hume, the object must be a *sensible indivisible*.¹⁰⁶ Empirical representation does not include extensionless objects or spatial concepts, since concepts without extension are abstractions of the imagination.¹⁰⁷ A visual impression, however, will have a minimum visual point in order for the imagination to validate it empirically, but a *minimum sensibilia* is not the same thing as extensionless. Hume is far from silent on the topic of "speculative metaphysics," under which extensionless abstractions belong: he rejects all abstractions as purely fanciful.

¹⁰⁶ Dale Jaquette makes this point before proceeding to his conclusion of extensionless indivisibles: the ink dot acts "...to establish the impossibility of the infinite divisibility of finitely extended bodies." "Hume on Infinite Divisibility and Sensible Extensionless Indivisibles," *Journal of the History of Philosophy* 34, no. 1 (1996): 63.

¹⁰⁷ For Paul Russell's support, see *The Riddle of Hume's Treatise: Skepticism, Naturalism, and Irreligion* (Oxford: Oxford University Press, 2008), 108.

VI. Scepticism and Empirical Probability

Hume's rejection of abstractions is generally cast as either an Academic or Pyrrhonic Scepticism.¹⁰⁸ Although the use of scepticism is an undeniable method in the *Treatise*, and all inquiry is to some measure (colloquially) sceptical, Hume's methodological principals do not rightly belong to historical scepticism: "No doubt some passages in Hume, taken alone, might support this line of interpretation, but it is an extreme and unfortunate distortion of what he actually wrote" (Stroud 1977, 1). Hume's use of scepticism, as a term, may seem to demand a historical reading of scepticism, but, for Hume, skepticism is intended to critique dogmatic assumptions that rely upon abstractions.

The empirical method demands a self-referential basis of experience to legitimate a hypothesis, and this especially true for the contrivance of equality:

'tis evident, that the eye, or rather the mind is often able at one view to determine the proportions of bodies, and pronounce them equal to, or greater or less than each other, without examining or comparing the number of their minute parts. Such judgments are not only common, but in many cases certain and infallible. (1.2.4.22)

Hume begins with resemblance as a valid form of knowledge, but he actually subverts the accuracy of resemblance to acquire knowledge by suggesting that it can neglect subtle

¹⁰⁸ One of the earliest critics to see Hume in this context is R. H. Popkin, "David Hume: His Pyrrhonism and His Critique of Pyrrhonism," *The Philosophical Quarterly* 1, no. 5 (1951): 385-407. For a more recent argument, See James Fieser, "Hume's Pyrrhonism: A Developmental Interpretation," *Hume Studies* 15, no. 1 (1989): 93-119; Don Garrett weights the context of Pyrrhonism and Naturalism, siding on the modern recent critical trend to read Hume as a mitigated sceptic, "'A Small Tincture of Pyrrhonism: Scepticism and Naturalism in Hume's Science of Man,'" *Pyrrhonian Skepticism* (Oxford: Oxford University Press, 2004), 68-98.

differences. If objects of *certainty* and *infallibility* become open to scrutiny, then the previous approximation often prove incorrect. For Hume, knowledge is a trial and error process – an evolving hypothesis that reformulates previous errors through a “juxtaposition of the objects.” For even after multiple corrections, our first opinion (hypothesis) is still “susceptible of a new correction, and of different degrees of exactness, according to the nature of the instrument by which we measure the bodies, and the care which we employ in the comparison” (1.2.4.23). His critical methodology continually acquires new measures of knowledge that corrects the previous causal hypothesis. Learning is a comparative act that challenges the presumptions of imagination’s three associative laws. The application of associative principles to acquire and to correct standardized assumptions ought to be the critical framework of Hume’s scientific method.

Far from an incidental argument, Hume’s critique of infinite divisibility is a critical revolution away from the historical bias of philosophy’s use of abstraction instead of the new science’s recourse to empirical observation. Hume exchanges the premises of abstract, hypothetical, and insubstantial proofs for an empirical methodology that relies upon the associative foundations of the imagination. The “Reid-Beattie interpretation” of Hume is correct; Hume’s rejection of abstraction does court atheism.¹⁰⁹ Hume continually attempts to expose the philosophical prejudices of abstraction like those in mathematics and divinity as inadequate foundations for empirical methods of inquiry. Cognition, for instance, is fallible in its construction of geometry, since geometry is a *common measure*, or a generalized approximation of multiple objects, first acquired through the senses

¹⁰⁹ Paul Russell, *The Riddle of Hume’s Treatise: Scepticism, Naturalism, and Irreligion* (Oxford: Oxford University Press, 2008), 12-15.

(1.2.4.29). With this insight, Hume rejects the Cartesian legitimation of geometry through an equally abstract divinity:

In vain shou'd we have recourse to the common topic, and employ the supposition of a deity, whose omnipotence may enable him to form a perfect geometrical figure, and describe a right line without any curve or inflexion. As the ultimate standard of these figures is deriv'd from nothing but the senses and imagination, 'tis absurd to talk of any perfection beyond what these faculties can judge of; since the true perfection of any thing consists in its conformity to its standard. (1.2.4.29)

In the broader history of the argument, infinite divisibility and its parent argument of the one and the many, left its Greek origins at the inception of Christian metaphysics that sought unity within infinity. Although the infinite unity of a deity is arguably of a very early foundation, the ontological tenets of Anselm's argument provided a comparative "greater than" to every quality and quality. The conceptual "greater than" could always achieve a comparatively greater concept. Historically, the ontological argument inversely mirrors Zeno's smaller than any abstract conceptual size¹¹⁰ – the ontological argument replicates in an inverse application infinite divisibility. With the probable influence of Anselm upon the *Meditations*, Descartes shifts the basic principles of infinite spatial potentials into a system of God's ability. He can do anything, even greater than that which can be thought. Countering Descartes, Hume posits that "greater than can be thought" is empirically meaningless. As with Descartes, Hume's inference applies equally to God and to geometry. To believe an omnipotent entity could make the right

¹¹⁰ Anselm, "Proslogion," *Monologion and Proslogion with Replies to Gaunilo and Anselm*, Trans. Thomas Williams (Indianapolis: Hackett Publishing Company, 1995), II, 99-100; Kirk, G.S., and J.E. Raven, eds., "Zeno of Elea," *The Presocratic Philosophers: A Critical History with a Selection of Texts* (Cambridge: Cambridge University Press, 1957), 286-297.

line without inflexion, as in the preceding example (1.2.4.29), would literally make the crooked line straight, and this would constitute a miracle.

Hume disavows abstract standards of cognition.¹¹¹ The concepts of geometry must be subject to the same rules by which any impression develops into a complex idea. The impressions define the contextual basis of the senses, and sensory experiences define the limits for rational hypotheses. The imagination becomes irrational if it includes purely abstract ideas. Experience and the basic standards for observation have limits in order to ensure cognition maintains a coherent standard. The critique of infinite divisibility is a measure of the imagination's potential incoherence as a cognitive process. The limitations and potential abstract excesses of imagination are the necessary extremes to standardize empirical verification. Are empirical concepts that use probable relations still imaginative fabrications? Absolutely, the associative conjectures of the imagination make an empirical hypothesis that is necessarily a contingent *probability*. Even individuals with apparently authoritative knowledge must consider their experiences as probabilities:

In the man of the best sense and longest experience, this authority is never entire; since even such-a-one must be conscious of many errors in the past, and must still dread the life for the future. Here then arise a new species of probability to correct and regulate the first, and fix its just standard and proportion. (1.4.1.5)

In a mock twist to the initial censure of infinite divisibility, Hume premises scepticism as a potentially infinite exercise of inquiry that ceaselessly tries to underwrite absolutist theories of knowledge. For Hume, experience is a comparative act uniting

¹¹¹ Annette C. Baier, *A Progress of Sentiments: Reflections on Hume's Treatise* (Cambridge: Harvard University Press, 1991), 25.

desperate experiences. Every experience is finite, but constant analytic diligence allows for a perpetual reconfiguration of the initial hypothesis:

No finite object can subsist under a decrease repeated *in infinitum*; and even the vastest quantity, which can enter into human imagination, must in this manner be reduc'd to nothing. Let our first belief be never so strong, it must infallibly perish by passing thro' so many new examinations, of which each diminishes somewhat of its force and vigour. (1.4.1.6)

The disappointment some philosophical scholars have in reading Hume is a symptom of an ideological schism: on the one side, Hume believes in the continual process of an experimental method to uncover knowledge; on the other side, there is the philosopher of absolute ideas, which are intangible and, quite simply, invalid in Hume's system. Hume's empiricism is a vision for a new science away from the absolutes of Truth:

While a warm imagination is allow'd to enter into philosophy, and hypotheses embrac'd merely for being specious and agreeable, we can never have any steady principles, nor any sentiments, which will suit with common practice and experience. But were these hypotheses once remov'd, we might hope to establish a system or set of opinions, which if not true (for that, perhaps, is too much to be hop'd for) might at least be satisfactory to the human mind, and might stand the test of the most critical examination. (1.4.7.14)

Hume targets abstract ideas because they are without empirical verification. The standards governing abstract judgments are tantamount to a conventional but unverifiable hypothesis. Purely abstract ideas may perpetuate the previous systems of philosophy, but they serve and reflect the inherited beliefs of custom. Hume proposes the “steady principles” of an experimental method ought to redefine philosophy. Experience within empiricism has only a probable validity, which is not the end of philosophy but the beginning of Hume's new empirical intentions. Traditional scepticism is neither Hume's purpose nor method. Hume intends to denounce the false beliefs of philosophy: to be

sceptical of the insubstantial – because non-empirical – proofs of *a priori* assertions. The explicit conceptual limitations in the exercise of infinite division act as a safeguard against the unchecked abstract conjectures of the imagination. Hume replaces these abstract premises with an experimental methodology. Hume's purpose is to test the viable limits of imagination. This limitation is not acutely scepticism; it is an applied experiment turned upon cognition. Ideas are simply hypothetical premises – an imaginative assemblage achieved through the basic associative principles. All cognition is only a probable conjecture. Cognition is not truth; it is interpretation.

Hume's critical method in philosophy uses scepticism to test hypotheses and to determine their probabilities. Philosophical interpretations mimic scientific hypotheses. Hume's scepticism functions to limit abstract universals. At a level of verification, a sceptical methodology of probability is antithetical to the proofs of syllogisms. To apply a contingent probability to a syllogistic statement of logic would undermine the very exercise of the syllogism (i.e., to establish a general rule). Hume has different goals.¹¹² Hume needs a sceptical methodology to ground empirical hypotheses and to determine the relative probability of associative (imaginative) premises.¹¹³ Hume remains true to his

¹¹² Only a few years later, Hume would be more adamant: "Even Philosophy went to Wrack by this moaping recluse Method of Study, and became chimerical in her Conclusions as she was unintelligible in her Stile and Manner of Delivery. And indeed, what cou'd be expected from Men who never consulted Experience in any of their Reasonings, or who never search'd for that Experience, where alone it is to be found, in common Life and Conversation?" David Hume, "Of Essay-Writing," 1742, *Essays: Moral, Political, and Literary*, ed. Eugene F. Miller, rev. ed. (Indianapolis: Liberty Fund, 1987), 534-535.

¹¹³ William Edward Morris' considers the greatest difficulty facing Hume's concept of cognition is in the negative characterization of probability. "Hume's Scepticism about Reason," *Hume Studies* 15, no. 1 (1989): 58. Kevin Meeker sees

intentions of the *Introduction*. He finds a complementary model for philosophy similar to those found in the new methods of the experimental sciences.¹¹⁴ The fabrications of the imagination are always incomplete, but they still achieve probable hypotheses.

The associative act of the imagination exposes the conditional relationship of everything, but the foundation of probable facts relies upon the empirical account of probable recurrence. Hume does not simply shift philosophy into an empirical paradigm of probable hypothetical ideas; his “moral” inquiry is an extended hypothesis about the nature of human action (i.e., the empirical laws that govern cognition). Hume’s new model of philosophical experiments, or empirical science, are test cases that hypothesize a degree of validity in the experiment, but these observations are also conditional (and conditioned by belief); both infinite divisibility and Hume’s basic associative model are hypotheses.¹¹⁵ Hume questions the basic conditions for experimentation, and finds that all standards of knowledge rely upon the imagination’s conjunction of ideas. For Hume, the experimental method as philosophy is not a literal correlative to Isaac Newton’s empirical hypotheses,¹¹⁶ but an investigation into the associative process that frames experiments

probability as an exclusion of belief and “the implausibility of naturalism.” “Hume’s Iterative Probability Argument: A Pernicious *Reductio*,” *Journal of the History of Philosophy* 38, no. 2 (2000): 222.

¹¹⁴ Nicholas Capaldi, *David Hume: The Newtonian Philosopher* (Boston: Twayne Publishers, 1975), 38.

¹¹⁵ Throughout the *Treatise*, Hume defines his propositions as hypotheses in excess of eighty times.

¹¹⁶ Michael Barfoot, “Hume and the Culture of Science in the Eighteenth Century,” *Studies in the Philosophy of the Scottish Enlightenment*, ed. M.A. Stewart (Oxford: Clarendon Press, 1990), 156-7; Paul Russell, *The Riddle of Hume’s Treatise*, 99-105. Barfoot moderates Hume’s overt use of Newton, but several scholars take Hume’s reference to Newton’s scientific laws too literally. See David Owen, *Hume’s Reason*, (Oxford: Oxford University Press, 1999), 79; Nicholas Capaldi, *David Hume:*

and govern the principles of belief. Hume questions the viable limits of cognition's ability to gather knowledge in order to form ideas. This is not scepticism; it is an applied experiment.

VII. Scepticism as Inquiry into Belief

Hume's scepticism interrogates the prejudices of custom and belief.¹¹⁷ It is a means to investigate habitual patterns. Despite the tradition within criticism to read belief as a mode of understanding or a synonym for thinking,¹¹⁸ belief has a very different premise within Hume. Biro's opening statements suggest that an interpretation of Hume's philosophy ought to have a basis in science:

The true laws governing the mind can be discovered by science; in contrast, the claims of metaphysician, based on his *a priori*, arm-chair, method are forever destined to remain mere speculation. This shift in focus – from a vain attempt to give a philosophical justification of our fundamental beliefs to a scientific account of their origin in the operations our minds – is what Hume, with a deliberate air of paradox, calls a 'sceptical solution' to the sceptical challenge (EHU 5).¹¹⁹

The Newtonian Philosopher (1975), 61-69; and Mary Shaw Kuypers, *Studies in the Eighteenth-Century Background of Hume's Empiricism* (1966), 3-14. Russell's *The Riddle of Hume's Treatise* provides an excellent discussion on Hume's relation to Newton.

¹¹⁷ Lorne Falkenstein and David Welton, "Humean Contiguity," *History of Philosophy Quarterly* 18, no. 3 (2001): 281.

¹¹⁸ Henry E. Allison, "Hume's Philosophical Insouciance: A Reading of *Treatise* 1.4.7," *Hume Studies* 31, no. 2 (2005): 14; Wayne Waxman, *Hume's Theory of Consciousness* (Cambridge: Cambridge University Press, 1994), 1-57.

¹¹⁹ John Biro, "Hume's New Science of the Mind," *The Cambridge Companion to Hume*, ed. David Fate Norton (Cambridge: Cambridge: Cambridge University Press, 1993), 39.

The problem with Hume's concept of belief is partially one of interpretation.¹²⁰ Hume uses belief in three interrelating contexts: as an extension of *custom*; as an expression of *vivacity* within cognition; and as functionally indistinguishable from the *passions*.

Critical interpretations tend to separate these concepts to justify their own variegated arguments, but I hold these concepts must have textual harmony. First, belief must be a type of passion; second, it must have a sentimental premise to legitimate thinking; and, third, it must be an extension of uncritical custom(s).

¹²⁰ The interpretations of Hume's concept of belief are extremely diverse. Some argue that belief and thought are the same (Henry E. Allison, "Hume's Philosophical Insouciance: A Reading of *Treatise* 1.4.7," *Hume Studies* 31, no. 2 (2005): 427-456; Wayne Waxman. *Hume's Theory of Consciousness* (Cambridge: Cambridge University Press, 1994). Although it is a type of feeling, it is not simply hedonism, as O. J. Johnson contended. Oliver A Johnson, *The Mind of David Hume: A Companion to Book of A Treatise of Human Nature* (Urbana: University of Illinois Press, 1995), 214-5. Owen manipulates the context of belief, and contends that custom infixes belief. David Owen, *Hume's Reason* (Oxford: Oxford University Press, 1999), 67. His concept of an "infixing belief," however, is literally the antithesis of Hume's explanation. In the example Owen cites, Hume actually speaks of "infixing" through the *repetition* of lies, which is an entirely mutable process: "This is noted in the case of liars; who by the frequent repetition of their lies, come at last to believe and remember them, as realities; custom and habit having in this case, as in many others, the same influence on the mind as nature, and infixing the idea with equal force and vigour" (1.3.5.6). In contrast to Owen, Hume's context explicitly posits the mutable transitions in attaining or in losing beliefs. Capaldi argues that imagination forms belief, which is moderately correct, since both the imagination and belief mutually reinforce each other (1.3.5.6-7), but he further claims that beliefs are never called into question and are not subject to scepticism. See Nicholas Capaldi, *David Hume: The Newtonian Philosopher* (Boston: Twayne Publishers, 1975), 134-135. In another variation of belief, James Nixon (1976) frames imagination and memory in terms of belief (272-75), but the criterion – the meaning – of belief beyond the simple justification of "truth" suggests a phenomenological context outside of Hume's conjectural empiricism and sentimental premises. "Remembering and Imagining the Past," *Hume: A Re-Evaluation*, eds. Donald W. Livingston and James T. King (New York: Fordham University Press, 1976), 288. J.P. Wright does right to warn that such "phenomenalist reconstructions" or similar critical positions that put "faith in an objective world" are in danger of misinterpreting Hume. "Hume's Academic Scepticism: A Reappraisal of His Philosophy of Human Understanding," *Canadian Journal of Philosophy* 16, no. 3 (1986): 407-435.

The faculty of the imagination associates through resemblance, contiguity, and causality in order to generate complex ideas. Out of these three modes of association, belief belongs only to causation, since belief revives impressions of memory that are beyond the immediate sense impressions (i.e., the framework of empiricism proper). A cause “can be trac’d beyond our senses, and informs us of existences and objects, which we do not see or feel” (1.3.2.3). The imagination unites sensory impressions or ideas of memory (1.3.4.1-2), creating the relationship between cause and effect that substantiates belief. At the origin of ideas, the imagination synthesizes the ideas in belief:

Reason can never shew us the connexion of one object with another, tho’ aided by experience, and the observation of their constant conjunction in all past instances. When the mind, therefore, passes from the idea or impression of one object to the idea or belief of another, it is not determined by reason, but by certain principles, which associate together the ideas of these objects, and unite them in the imagination. Had ideas no more union in the fancy than objects seem to have to the understanding, we cou’d never draw any inference from causes to effects, nor repose belief in any matter of fact. The inference, therefore, depends solely on the union of ideas. (1.3.6.12)

Unlike contiguity and resemblance, causation is potentially culpable to abstraction and anti-empirical inquiry. If the premise of causation goes beyond direct observation, it becomes assumption:

We have no other notion of cause and effect, but that of certain objects, which have been always conjoin’d together, and which in all past instances have been found inseparable. We cannot penetrate into the reason of the conjunction. We only observe the thing itself, and always find that from the constant conjunction the objects acquire an union in the imagination. When the impression of one becomes present to us, we immediately form an idea of its usual attendant; and consequently we may establish this as one part of the definition of an opinion or belief, that ’tis an idea related to or associated with a present impression. (1.3.6.15)

Hume questions why specific ideas seem to engender belief (1.3.4) and how to recognize ideas of belief. To simply observe that there is a connection between cause and effect states the problem, not the solution.

Hume first introduces belief as physiological problem. Belief gives assent or provides the feeling of certainty to an idea after the imagination creates the association:

Thus it appears, that the belief or assent, which always attends the memory and senses, is nothing but the vivacity of those perceptions they present; and that this alone distinguishes them from the imagination. To believe is in this case to feel an immediate impression of the senses, or a repetition of that impression in the memory. (1.3.5.7)

Belief has a completely different conceptual usage than its use in present historical contexts. Although belief is usually considered an idea or a faculty unto itself, for Hume, it is mode of feeling that makes an idea more vivid. Belief is presently though to be an idea with content. Hume, however, places the creation of all ideas, opinions, and judgments to be associated concepts of the imagination. For Hume, belief is an assent to an idea, not an idea itself. It is an intensity that accompanies an impression. Belief bestows feeling upon an idea (1.3.7.7), but it is not the driving force within the association. Belief is neither a faculty nor a rational act. It can neither directly explain memories, nor acts of the imagination. Instead, it grants value to memory's contents and their habitual associations.

It has a special attributive role in causality: "belief does nothing but vary the manner, in which we conceive any object, it can only bestow on our ideas an additional force and vivacity. An opinion, therefore, or belief may be most accurately defined, a lively idea related to or associated with a present impression" (1.3.7.5). Belief validates

an opinion at an emotional level. It contributes to the degree in which the force of the impression imprints its vivacity at the level of the secondary passions and the imagination (1.3.7.7. [app.]). It accompanies a present impression in order to invigorate it, or to give the idea “more weight.” In the *Treatise*, belief is an untested position from a prejudicial truth. Hume’s “rejection” of causality is an attempt to question the standards through which one comes to believe in a facet of experience. His purpose is neither to simply undermine belief nor to disprove the foundations for knowledge; rather, he investigates our claims of certainty – those sentiments of righteousness accompanying the presumed correctness of an idea.

Belief is a response to causation that occurs through the inference of one object with another (1.3.6.1-2). The inference is not automatic. The imagination’s association of impressions creates the context, and belief diminishes or increases the vivacity. Belief is the basic tenet for Hume’s new science of human nature, and he attempts to explain the motivation (but not the act) for habitual associations (1.3.8.1-2). Repetition facilitates the degree of belief’s intensity, and, consequently, its veracity. Habitual beliefs are the inclination to associate particular relationships:

Hence it happens, that when the mind is once inliven’d by a present impression, it proceeds to form a more lively idea of the related objects, by a natural transition of the disposition from the one to the other. The change of the objects is so easy, that the mind is scarce sensible of it, but applies itself to the conception of the related idea with all the force and vivacity it acquir’d from the present impression. (1.3.8.2)

Belief adds a feeling of importance to an impression, and it gives the ensuing idea a sentimental quality to which every subsequent idea in the associative process becomes likewise coloured. Belief creates the directed emphasis within cognitive attentions. It

substantiates the feeling of necessity in its attribution, but it is a disposition without content. It is the sensitive within the intellectual; without the assent-of-belief, any directional impetus within associations would be sporadic. This is a fundamental point of confusion in the reading of Hume's cognitive system: belief is not an intellectual act, but it is necessary for the cognitive process. Whatever else it may be, belief is hardly a laudatory premise for Truth.

Hume's critique of belief is an attack upon the institutions and customs that generate beliefs. In a move of sheer subversion, Hume critiques belief under the guise of Catholicism. The larger target may be causality, but he condemns the rituals that induce false feelings of belief in terms of, and as an example of, a failed causal system: "they [devotees] feel the good effect of those external motions, and postures, and actions, in invivening their devotion, and quickening their fervour, which otherwise wou'd decay away" (1.3.8.4). Hume rebukes the institution of Catholicism for belief's use of excessive accoutrements in order to produce feeling. The actions accompanying a ritual produce a custom, which feeds the habit of feeling and increases devotion. Belief becomes a subservient and not an especially praiseworthy effect of custom, which, whatever its value, still has a habitual and incremental effect on the focus and the frequency of one's attention. Although attention is not the imaginative process, it provides an inclination for the association. In this limited capacity, customs indirectly allow beliefs to modify associations:

Now as we call every thing CUSTOM, which proceeds from a past repetition, without any new reasoning or conclusion, we may establish it as a certain truth, that all the belief, which follows upon any present impression, is deriv'd solely from that origin. When we are accustomed to

see two impressions conjoin'd together, the appearance or idea of the one immediately carries us to the idea of the other. (1.3.8.10)

The sentiments of belief have a foundation in repetitive habits. These habits reject causal variations; the present impression completely conflates with the past impression. Through the rejection of past and present differences, custom appears as a constant that reinforces the constancy of belief's apparently unified identity. All belief comes from a present impression, but the custom – the causal order to generate belief – unites the present impression with the past idea (recalling that memory is also a type of impression). This unity of impressions does not change the initial idea (1.3.9.17), since custom reiterates its origin in order to increase the vivacity of the constructed impression.

Belief is a problem. Hume “attributes(s) all belief and reasoning” to custom (1.3.9.16), since it dictates a regulatory causal system that substantiates experience and validates assumptions. Custom forms the context of cultural experience. The regulatory nature of custom legitimates constant conjunctions and identity, but it can directly subvert divergent experiences. The observations of experimental science can disrupt the artificial prejudices of culture: “But let us next suppose, that a mere idea alone, without any of this curious and almost artificial preparation, shou'd frequently make its appearance in the mind, this idea must by degrees acquire a facility and force” (1.3.9.16). In opposition to cultural customs, Hume posits that direct observation could correct previous associations. Although the acquisition of empirical evidence is still a learned custom, it attempts to counter the prejudices that belief tries to uncritically substantiate as self-evident facts. Empiricism is distinct from belief in two central ways: first, it relies upon present and direct observation instead of a reiterative identification of a past event;

second, the empirical rules of inquiry are under constant scrutiny and revision, but belief must retain the illusion of its permanence. From infancy, cultural norms infuse sentimentality to mask prejudices, and these established beliefs subvert direct observation:

All those opinions and notions of things, to which we have been accustomed from our infancy, take such deep root, that 'tis impossible for us, by all the powers of reason and experience, to eradicate them; and this habit not only approaches in its influence, but even on many occasions prevails over that which arises from the constant and inseparable union of causes and effects. (1.3.9.17)

Cultural institutions instigate beliefs that interrupt the manner in which one acquires subsequent experiences; they may even prevent them. Cultural habits can modify belief to the point of cultural indoctrination. In explicit terms, Hume claims the failure of philosophy occurs in its inability to recognize the lies of custom that substantiate belief. The basic purpose of empiricism is to investigate the standard beliefs of culture. Hume's criticism of belief – his *scepticism* – is an attack upon the sentiments of custom.

The criticism that is directed against Hume's scepticism is a misdirection of facts. Hume's sceptical methodology is a means to critique the irrational beliefs of custom. Since beliefs are untested assumptions, the opinions inspired from belief belong more correctly to the passions: "The effect, then, of belief is to raise up a simple idea to an equality with our impressions, and bestow on it a like influence on the passions" (1.3.10.3). Custom creates its own standard of validity. Belief is an extension of the social prejudicial standard of custom. The assent felt from a belief, the feeling of truthfulness, is often antithetical to new scientific lines of probability. Belief will often deny alternative probabilities.

Hume challenges the presumptive universality of mathematics and infinity as coherent considerations. Without empirical proof, abstractions lack probability; philosophical absolutes *are* always beliefs, since they exist beyond verification and reject alternative empirical probabilities (1.3.11.8). Hume derides belief because the faculties are imperfect and experiences perpetually change. In a mock gesture of division *ad infinitum*, Hume qualifies inquiry as an infinite process:

No finite object can subsist under a decrease repeated *in infinitum*; and even the vastest quantity, which can enter into human imagination, must in this manner be reduc'd to nothing. Let our first belief be never so strong, it must infallibly perish by passing thro' so many new examinations, of which each diminishes somewhat of its force and vigour. (1.4.1.6)

Hume does not legitimate infinity at the level of a concept, but he substantiates the perpetuation of division at an experiential level of successive examinations within time. Aside from the imagination's conceptual limits, the perpetuation of experience confounds certainty, since error defines the learning process. Each successive experience is (or ought to be) a modification of "belief," and these causal variables bring new probabilities. Hume critiques absolutes as stagnant theories that obstruct the progression of knowledge. Absolute standards reject experiential conditions necessary for probabilities within science. They explicitly reject the contingency of experience. For Hume, to question belief is an attempt to defy custom in order to create new probabilities. Hume does not denounce reason so much as subvert the affirmations of belief that are merely cultural inheritances.

VIII. Habit and Belief

Although Hume seeks empirical evidence to guide interpretative analysis, his system still relies upon the passionate beliefs of custom and the representative limits of the imagination. As the physiological expression and the consequence of belief, habit is instrumental in making decisions: “Without this quality, by which the mind enlivens some ideas beyond others (which seemingly is so trivial, and so little founded on reason) we cou’d never assent to any argument, nor carry our view beyond those few objects, which are present to our senses” (1.4.7.3). Prejudice or not, belief vivifies ideas, and this accounts for the process in which particular patterns of cognition occur. Habit is an impulse that gives associative acts motivation. The supposed rationality of an act is often irrelevant; it is common for the sentiments of belief to guide choices. Habitual tendencies drive cognition to fulfill needs, to choose, and to want. Beliefs need to be desires in order to provide (one should not let this paradoxical reversal of reason with sentiment escape) the inclinations to think. In this sense alone, belief is a type of idea, but it is not the rational faculty most philosophers hope to find.

Since Hume’s initial explanation of belief as “more properly an act of the sensitive” (1.4.1.8), the critical antagonism to Hume’s conjecture has been considerable. The normative value of belief within contemporary philosophy is a reflection of the discipline, but Hume’s use of belief points to a variant terminology and different historical context. Hume’s critique of belief challenges the assumptions that ground critical enquiry in philosophy. Through probability, he explores the potential limitations of normative ideas. Hume recognizes that content of experience is gradual, makeshift,

and necessarily incomplete, since experiential knowledge comes from causal associations that vary with time. Instead of an absolute standard of knowledge, Hume introduces a theoretical approach that is entirely based on probabilities. As Hume does not tire to tell us, this is not the truth of philosophy; it is a foundation for probabilities to guide philosophy. If an experimental methodology is possible in philosophy, Hume's call to recognize belief as an extension of cultural prejudices becomes necessary in order to initiate a new method of interpretation.

These collective premises and their particular limitations become essential to a trajectory of eighteenth-century aesthetics that includes Alexander Gerard, Lord Kames, and Adam Smith. In the field of aesthetics, Hume's associative constraints in the imagination influence the theoretical foundation for taste. The principle aestheticians of the eighteenth century would argue that a refined taste could look beyond cultural *beliefs* in order to determine the merit and meaning of art: "But to enable a critic the more fully to execute this undertaking [of analysis], he must preserve his mind free from all *prejudice*, and allow nothing to enter into his considerations, but the very object which is submitted to examination."¹²¹ For Hume, a critic must be free of *beliefs* in order to assess the merits of a work without prejudice. Before this system can become fully intelligible, however, a reconstruction of Hume's imagination within its physiological directives needs further investigation.

¹²¹ David Hume, "Of the Standard of Taste," 1757, *Essays: Moral, Political, and Literary*, ed. Eugene F. Miller, rev. ed. (Indianapolis: Liberty Fund, 1987), 239.

Part 2.2. The Faculty of Imagination

I. Hume's Associative Model and Its Relationship with Memory

Hume's imagination establishes the general rules for cognition. While most ideas have a corresponding impression (1.1.1.1) through which the idea can "trace"¹²² (with varying degrees of success) back to the first instance of the impression,¹²³ Hume does not rely only upon this time-constraining method of association. Associative thinking does not ponder every event in its comparative history: "For even supposing these impressions shou'd be entirely effac'd from the memory, the conviction they produc'd may still remain" (1.3.4.3). The conviction of an idea – the belief – remains after the contextual origin of the idea is no longer apparent to memory. Nowhere does Hume claim that association and memory are perfect faculties. Quite the opposite appears to be the case, since all ideas are corruptible through the very premise of division or cohesion. Louis Loeb recognizes the three "principles of imagination" to be cause and effect,

¹²² Although several critics condemn Hume's lack of a faculty in order to trace ideas (Janet Broughton, "Impressions and Ideas," *The Blackwell Guide to Hume's Treatise*, ed. Saul Traiger (Malden: Blackwell Publishing, 2006), 49; and Jerry Fodor, *Hume Variations* (Oxford: Clarendon Press, 2003), 116 and 142. As a correction to their readings, Hume's imagination does not need a separate faculty, since "traces," Hume's term, are the habitual patterns of ideas (1.2.5.20).

¹²³ Collier's inverts the general criticism against the simple and the complex with the intention to redirect the principles of association to an infinity of particulars: "When we hear a general term, according to Hume, it not only calls to mind a particular exemplar, but it also revives each of the various instances to which the term has been applied in the past (Hume, 1739, 21)." Mark Collier, "Hume and Cognitive Science: The Current Status of the Controversy over Abstract Ideas," *Phenomenology and the Cognitive Sciences* 4, no. 2 (2005): 198.

resemblance, and contiguity, which distinguishes, as a working division, the associative process of imagination from memory.¹²⁴ Imagination is the faculty behind all conjunctive abstractions: “The imagination is not restrain’d with the necessity to the same order and form with the original impressions; while the memory is in a manner ty’d down in the respect without any power of variation” (1.1.3.2). Hume contrasts the two ways an impression becomes an idea(s):

Either when in its new appearance it retains a considerable degree of its first vivacity, and is somewhat intermediate betwixt an impression and an idea; or when it entirely loses that vivacity, and is a perfect idea. The faculty, by which we repeat our impressions in the first manner, is called the Memory, and the other the Imagination. (1.1.3.1)

These principles of division correspond to two basic types of ideas,¹²⁵ and in the tradition of philosophy memory and imagination are separate faculties distinguishable by vivacity, which, in turn, allows memory to become a measure and regulator of sequential time and imagination to be the contingent correlative basis for all other considerations.¹²⁶ The curious nature of the division between memory and imagination is that they originate

¹²⁴ Louis E. Loeb, *Stability and Justification in Hume’s Treatise* (Oxford: Oxford University Press, 2002), 48; Donald L. M. Baxter, “Identity, Continued Existence, and the External World,” *The Blackwell Guide to Hume’s Treatise*, ed. Saul Traiger (Malden: Blackwell Publishing, 2006), 118.

¹²⁵ Francis W. Dauer claims that Hume’s explanations on memory are unhelpful (87), but his reading relies upon variable principles of reflection and an ontology that derides Hume’s empirical premise. “Force and Vivacity in the *Treatise* and the *Enquiry*,” *Hume Studies* 25, no. 1-2 (1999): 83-100. For Passmore, Hume’s theory of memory “reaches epic inconsistencies.” John Passmore, *Hume’s Intentions* (London: Gerald Duckworth, 1968), 94.

¹²⁶ Christopher Bernard, “Hume and the Madness of Religion.” *Hume and Hume’s Connexions*, eds. M.A. Stewart and John P. Wright (University Park: Pennsylvania State University Press, 1995), 224; David Owen, *Hume’s Reason* (Oxford: Oxford University Press, 1999), 73; E. J. Furlong, “Imagination in Hume’s ‘Treatise’ and ‘Enquiry’ Concerning the Human Understanding,” *Philosophy* 36, no. 136 (1961): 62.

from one impression. Memory is the idea of time or the recollection of sequential order (1.1.3.3). If the recollection is already a reflex of the initial impression, then memory and imagination have the *same* impression for their constitutive origin:¹²⁷

When we search for the characteristic, which distinguishes the memory from the imagination, we must immediately perceive, that it cannot lie in the simple ideas it presents to us; since both these faculties borrow their simple ideas from the impressions, and can never go beyond these original perceptions. These faculties are as little distinguished from each other by the arrangement of their complex ideas. (1.3.5.3)

To further underwrite the traditional criticism of categorically separating memory and imagination, the subsequent idea of memory that forms becomes coherent as a series of substantial ideas only *through* the contingent associative laws of the imagination. The imagination is the basis through which every memory, as a remnant of causal inference, becomes concrete.¹²⁸ Far from a division of the faculties, the imagination constitutes the order in which the memory will take form, and it substantiates the order of associations in memory: “the principles of union and cohesion among our simple ideas, and in the imagination supply the place of that inseparable connexion, by which they are united in memory” (1.1.4.6). The imagination directs the way in which impressions become sequenced in memory. It provides not just the basic principles within the causal order but also the focus within the causal construction of the memory.

¹²⁷ Oliver A. Johnson, *The Mind of David Hume: A Companion to Book I of A Treatise of Human Nature* (Urbana: University of Illinois Press, 1995), 141. Johnson proceeds to read the impression in the context of judgment from the Appendix. Wayne Waxman misrepresents this single impression by immediately positing the duplication of impressions and ideas. *Hume’s Theory of Consciousness* (Cambridge: Cambridge University Press, 1993), 57. For an earlier objection to Hume’s lack of faculty distinction, see J.O. Urmson, “Memory and Imagination,” *Mind* 76, no. 301 (1967): 84–85.

¹²⁸ Louis Loeb, *Stability and Justification in Hume’s Treatise* (Oxford: Oxford University Press, 2002), 52–53.

Although a distinguishable standard between memory and imagination is necessary in order to speak to variable cognitive functions, from the opening paragraph Hume situates the potential for the imagination to increase its vivacity and attain the more concrete associative order of memory (1.1.1.1). Memory may fail, but the conviction of the idea, of the experience, can remain afterwards as a belief.¹²⁹ Memory does not work with a different set of simple or complex ideas. There is a dichotomy of convenience between memory and imagination in order to make the faculties appear consistent in their respective functions, but this division is without a textual basis:

For tho' it be a peculiar property of the memory to preserve the original order and position of its ideas, while the imagination transposes and changes them, as it pleases; yet this difference is not sufficient to distinguish them in their operation, or make us know the one from the other; it being impossible to recal the past impressions, in order to compare them with our present ideas, and see whether their arrangement be exactly similar. (1.3.5.3)

The faculties have variable effects, but they occur through the same sensible impression and moderate their form through standardized associative principles.

Hume proposes a decisive alteration of the traditional version of memory within philosophy. The memory cannot recall the past impressions, since the initial impression becomes an idea of that impression only through the modifying conditions of association, so any recollection would be a tautological reiteration of the idea and not the impression proper:

¹²⁹ One of the more consistent errors in reading Hume is the conflation of belief with the faculty of reason. For belief as reliant on the imagination, see B. Winters, "Hume's Argument for the Superiority of the Natural Instinct," Vol. 3, *David Hume: Critical Assessments*, ed. Stanley Tweyman, 6 vols. (London: Routledge, 1995), 263.

Since therefore the memory, is known, neither by the order of its complex ideas, nor the nature of its simple ones; it follows, that the difference betwixt it and the imagination lies in its superior force and vivacity. A man may indulge his fancy in feigning any past scene of adventures; nor wou'd there be any possibility of distinguishing this from a remembrance of a like kind, were not the ideas of the imagination fainter and more obscure. (1.3.5.3)

Habitual associative acts create distinct idea patterns that become the constitutive foundation for memory. The sentimental assent of belief is crucial to understand Hume's formation of memory, since belief explicitly contributes to the vivacity of ideas. Belief's vivacity contributes to the concretion of memory, but the distinguishing features between memory and imagination are still not entirely permanent:

And as an idea of the memory, by losing its force and vivacity, may degenerate to such a degree, as to be taken for an idea of the imagination; so on the other hand an idea of the imagination may acquire such a force and vivacity, as to pass for an idea of the memory, and counterfeit its effects on the belief and judgment. This is noted in the case of liars; who by the frequent repetition of their lies, come at last to believe and remember them, as realities. (1.3.5.6)

It is worth repeating: the separation between imagination and memory is one of degrees.¹³⁰ Memory and imagination share the same conceptual spectrum. The systematic divisions between the faculties are precisely the scholastic prejudices Hume sought to reject. Hume understands the faculties to be interdependent, and the very ideas distinguishing them are potentially fluid. Although the imagination is the preeminent faculty,¹³¹ it can become a memory through, for instance, lies that gradually affirm

¹³⁰ See J.P. Wright, *The Sceptical Realism of David Hume* (Manchester: Manchester University Press, 1983), 213.

¹³¹ The modern equivalence of imagination with reason and judgment is inaccurate. Several philosophers recognize the importance of the imagination as a faculty, but align the faculty differently from this study. See John P. Wright, *The Sceptical*

themselves as belief. The repetition of lies can produce habitual ideas that increase vivacity, and this augmented affect is simply an extension of custom's prejudices. This is not to suggest that all ideas are false, or to introduce a context for scepticism; rather, the formation of ideas is gradual and subject to error. There are neither absolute faculties nor true ideas. Ideas are probabilistic and ought to be subject to change.

The difference between memory and imagination is the vivacity of belief that accompanies an impression. Belief is an affirmation of the regularity in impressions that generally distinguish memory from imagination. Memory appears more exact in its recollections because the vivacity of belief makes the habitual formations of familiar impressions seem more stable.¹³² The feeling of belief creates the degree of an impression's reception:

Thus it appears, that the belief or assent, which always attends the memory and senses, is nothing but the vivacity of those perceptions they present; and that this alone distinguishes them from the imagination. To believe is in this case to feel an immediate impression of the senses, or a repetition of that impression in the memory. 'Tis merely the force and liveliness of the perception, which constitutes the first act of the judgment,

Realism of David Hume (Manchester: Manchester University Press, 1983), 188-190, 234-35; Stephen Buckle, "Hume's Sceptical Materialism," *Philosophy* 82 (November 2007): 569; Robert Fogelin, *Hume's Scepticism in the Treatise of Human Nature* (London: Routledge and Kegan Paul, 1985), 56; Dabney Townsend, *Hume's Aesthetic Theory: Taste and Sentiment* (London: Routledge, 2001), 181. Donald Garrett recognizes memory and imagination to be the two primary faculties. See "Hume's Conclusion," *The Blackwell Guide to Hume's Treatise*, ed. Saul Traiger (Malden: Blackwell Publishing, 2006), 153.

¹³² Annette Baier points out the relationship between vivacity with habit, but contextualizes it in terms of belief and causal conjunctions. See Annette Baier, *Death and Character: Further Reflections on Hume* (Cambridge: Harvard University Press, 2008), 195-96; Louis E. Loeb observes the relationship between habit and vivacity, but questions the degrees of probable certainties and its destructive nature on ideas. *Stability and Justification* (Oxford: Oxford University Press, 2002), 227-229

and lays the foundation of that reasoning, which we build upon it, when we trace the relation of cause and effect. (1.3.5.7)

The particular vivacity of a belief attends an impression, which moderates the feelings that distinguish the ideas of memory from imagination. The characteristic features for both faculties are, however, potentially mutable, since the assent of belief is essential to the habitual inclinations that establish cause and effect. The imagination follows the inclination of belief in order to create causal unity: “The vividness of the first conception diffuses itself along the relations, and is convey’d, as by many pipes or canals, to every idea that has any communication with the primary one” (1.3.10.7). The imagination’s associative process perpetuates the continuation of belief through the retention of vivacity in multiple associations. The imagination’s cohesion of diverse relations into ideas is the foundation of causal relationships, which, in turn, come to define the serial content of memory. Far from being completely divorced concepts within cognition, belief and imagination mutually refract vivacity and association in order to generate ideas: “belief not only gives vigour to the imagination, but that a vigorous and strong imagination is of all talents the most proper to procure belief and authority” (1.3.10.8).¹³³ The degree of vivacity within the associative pattern of a particular sentiment is a principle reason for the nonconformity to specific and absolutely predictable standards that would otherwise define experience. The imagination’s ability to fabricate alternative possibilities is a

¹³³ Francis W. Dauer undermines the context of this passage by quoting only the second half, which augments the role of belief as primary in establishing ideas. See “Force and Vivacity in the *Treatise* and the *Enquiry*,” *Hume Studies* 25, no. 1-2 (1999): 88.

determinative facet of the faculty (1.3.6.4-6).¹³⁴ Imagination provides unity to an idea because of the sentimental importance that belief attributes to the associative conjunction.

Custom is the precondition for the feelings of belief,

custom has no influence, but by inlivening the imagination, and giving us a strong conception of any object. It may, therefore, be concluded, that our judgment and imagination can never be contrary, and that custom cannot operate on the latter faculty after such a manner, as to render it opposite to the former. (1.3.13.11)

The generation of belief through custom adds clarity and focus to the contents of imagination. Belief's approximation as a passion has the positive effect of providing distinction and importance to an idea. Belief's inclination to focus on one specific aspect of content over another contributes to the imagination's selection of associative syntheses. For Hume, the imagination is the ubiquitous act necessary for all cognition: "The memory, senses, and understanding are, therefore, all of them founded on the imagination, or the vivacity of our ideas." (1.4.7.3).¹³⁵ The imagination defines the very boundary between all ideas. With an unprecedented affirmation of relativism, everything is a conditional construction of the imagination:

Let us fix our attention out of ourselves as much as possible: Let us chase our imagination to the heavens, or to the utmost limits of the universe; we

¹³⁴ Hume's imagination is decidedly not following the terminology of the earlier rationalist tradition. Reason defines absolute laws in causal relations, and this would destroy the foundation of empirical observation: "'tis evident this reflection and premeditation would so disturb the operation of my natural principles, as must render it impossible to form any just conclusion from the phenomenon." ("Introduction.10," *Treatise*, p. 6).

¹³⁵ Scholars have been critical of the imagination's multi-faculty directives: "All that we could ever know by memory, senses, or understanding is founded on the irrational psychological quirks of the imagination." R.H. Popkin, "David Hume: His Pyrrhonism and His Critique of Pyrrhonism," *The Philosophical Quarterly* 1, no. 5 (October 1951), 169.

never really advance a step beyond ourselves, nor can conceive any kind of existence, but those perceptions, which have appear'd in that narrow compass. This is the universe of the imagination, nor have we any idea but what is there produc'd. (1.2.6.8)

Whatever the focal subject under inquiry, the directing attention is the individual imagination. The limit to all inquiry is contingent upon the disposition of the imaginative faculty.

The faculty of the imagination allows for the unification and disjuncture in ideas. Although seemingly a faculty without limits, the imagination has “universal principles that guide it” (1.1.4.1). Despite the imagination’s ability to proliferate concepts indiscriminately, there is a constraint within an otherwise unrestricted process: “Were ideas entirely loose and unconnected, chance alone wou’d join them; and ’tis impossible the same simple ideas should fall regularly into complex ones (as they Commonly do) without some bond of union among them, some associating quality, by which one idea naturally introduces another” (1.1.4.1). Cognition is not arbitrary. The associative act is a natural process that provides imaginative bonds. There is a *uniting principle* that drives the very act of cognition. This is different from belief, which does not add anything to the object but a degree of passion for an idea. The basic process for the unity amongst ideas occurs through a “gentle force” (1.1.3.1).¹³⁶ This compulsive force is not an idea at the level of rational content; rather it speaks directly to a physiological component in the *act* of cognition. Cognition is not simply a set of ideas, nor is its constitution just a collection of unified associations. Beyond ideas, there is a need to think, a gentle force to stimulate

¹³⁶ Robert Anderson, *Hume’s First Principles* (Lincoln: University of Nebraska Press, 1966), 120.

the act of thinking. This is Hume's attempt to explain why human nature has a compulsion to think at all. The physiological compulsion *to think* stimulates the occurrence of the imaginative act, but this does not predispose the associative content to *a priori* applications in order to form subsequent absolute principles. There is a drive to perpetuate and to achieve associations, but there are no substantive rules from this gentle force of cognition that apply to the content or pattern of ideas themselves, excepting, of course, the passionate influences that give vivacity to ideational content.

II. Imagination and Association

Evidence of the compulsive principle to associate has three basic forms of expression: "The qualities, from which this association arises, and by which the mind is after this manner convey'd from one idea to another, are three, viz. RESEMBLANCE, CONTIGUITY in time or place, and CAUSE and EFFECT" (1.1.4.1.). Although the imagination has been indiscriminately aligned with the associative process, and it is intimately co-related, there are delineations between the unity of meaning that the imagination brings to associative qualities and the imaginative structure through which associations occur. The imagination bridges concepts in an associative act of unity, and this produces a new idea. This apparently simple model of association has a variable temporal constraint for cognition. Several instances dispersed throughout the *Treatise* illustrate the paradigmatic constitution of an associative act. Association combines multiple objects:

In thinking of our past thoughts we not only delineate out the objects, of which we were thinking, but also conceive the action of the mind in the meditation, that certain *je-ne-scai-quoi*, of which 'tis impossible to give any definition or description, but which every one sufficiently understands. (1.3.8.16)

Not limited to the constraints of linear language, Hume's association incorporates multiple objects into a single action. As one idea bridges over to associate with another, Hume introduces a third principle as the indescribable (because physiological) imaginative principle of unification. In this associative model, cognition is capable of simultaneously retaining a multiple set of ideas, and this capacity becomes incrementally possible through the habitual familiarity with association. Every complex idea has a co-relation to the single idea, since they mutually reinforce each other through their associative affinities that determine their collective interdependency as a unified, complex basis to create ideas.¹³⁷ As part of a structural complex, a single idea can trigger multiple and complex associations: "we have several instances of habits, which may be reviv'd by one single word; as when a person, who has by rote any periods of a discourse, or any number of verses, will be put in remembrance of the whole, which he is at a loss to recollect, by that single word or expression, with which they begin" (1.1.7.13). This is the basic structure for Hume's cognition and it is necessary in all associative acts of imagination.

Although the tri-part imaginative structure occurs in every complex synthesis of association, the unified temporal moment as a constitutional framework for eighteenth-

¹³⁷ For a comparable context, see Donald M. Baxter, *Hume's Difficulty: Time and Identity in the Treatise* (London: Routledge, 2008), 18-19. The present study varies from Baxter's by reading Hume's theory of absolute time and duration in different contexts in which to understand temporality.

century theories of association has been understudied. After Hume set the groundwork,

Adam Smith uses similar requirements to explain an act of association:

In one member [phrases of sense] there are generally three principle parts or terms because every judgement of the human mind must comprehend two ideas, between which we declare that relation subsists or does not subsist. In two of these we affirm something or other, and the third connects them together and expresses the affirmation. (Smith 1762, 15)¹³⁸

The additional eighteenth-century context of Smith situates a common foundation for associative functions. Smith reiterates upon a simpler scale the multiple co-relations in the associative process. The associative act is capable of bridging groups of isolated ideas into a new complex unity. The nature of corresponding impressions and ensuing imaginative associations allows cognition to comprehend multiple objects just as easily

¹³⁸ To avoid potential confusions from lack of clarity, the preceding paragraph explains the potentially obtuse terminology: “A period is a set of words expressing a complete sense without the help of any other. The members of a period are those phrases which make up that sense, and may frequently have a sense of their own, complete enough without the other, and referring to it by some word or two.” Adam Smith, “Wednesday 24 November,” *Lectures on Rhetoric and Belles Lettres*,” 1762, ed. John M. Lothian (Carbondale: Southern Illinois University Press, 1963), 14. Although Smith speaks here and in the previous in-text quotation about language, he and Hume present a very different model of associative relations from twentieth-century semantic theories of relation. Many modernists conflate language and thought. Hume and Smith’s model of cognition achieve what linguistic theories derivative of Wittgenstein could not, since without association one cannot explain how thinking ever proceeds beyond the present word in cognition. I hold in opposition that if the theoretical premise of a word is implicitly multi-referential in its definition, a word is not singular in meaning. Modernist approaches rely upon two discordant principles that obstruct the over-arching, theoretical principle of language as the totalization of thought. First, one word would actually be many words, which causes the singularity of any word (i.e., its definition) to become meaningless, since it is not what premises itself to be. Second, a referential process from one word to another situates and uses the principles of association as a functional law to explain all linguistic relations, and this points back to Hume’s construction of, and reliance upon, a physiological state of cognition to retain many ideas in order to associate beyond any single idea.

as the imagination synthesizes ideas.¹³⁹ The imagination simultaneously unites two ideas, and these ideas can have a varying complexity.¹⁴⁰ For Hume, associative conjunctions in comparative relations define every cognitive act:

All kinds of reasoning consist in nothing but a comparison, and a discovery of those relations, either constant or inconstant, which two or more objects bear to each other. This comparison we may make, either when both the objects are present to the senses, or when neither of them is present, or when only one. (1.3.2.2)

Thinking is more than simple object connections. While in the act associating, the imagination's multiplicity necessarily coordinates affinities for the emergent idea to occur. Association indiscriminately uses both empirical and conceptual material in its comparison. The associative unities that find synthesis emerge as the foundation to a new conjunction (like the illusory idea of identity):

'Tis evident, that as the ideas of the several distinct successive qualities of objects are united together by a very close relation, the mind, in looking along the succession, must be carry'd from one part of it to another by an easy transition, and will no more perceive the change, than if it contemplated the same unchangeable object. This easy transition is the effect, or rather essence of relation; and as the imagination readily takes one idea for another, where their influence on the mind is similar. (1.4.3.3)

The process of synthesis among ideas carries over the content of the previous association, making the transition from one idea to the next a fluid relation. The ease of *assent*

¹³⁹ There are, of course, empirical limits to the faculty of the imagination: "The frame, and the general character of two or three pictures, is as much as the eye can comprehend at one view, or from one station." Adam Smith, "Of the Nature of that Imitation which takes Place in what are Called the Imitative Arts," 1.3, *Essays on Philosophical Subjects*, eds. Wightman, Bryce, and Ross (Oxford: Oxford University Press, 1980), 177.

¹⁴⁰ Like Hume, Smith's pre-eminent faculty for cognition is the imagination, not judgment. See Smith's *History of Astronomy*, 1795.

between ideas and the subsequent fabrication of identity are consequences of belief's synthetic unity of time.¹⁴¹ The imagination's facilitation of this transition is potentially disconcerting, for, as it unites a multiple set of ideas, it disregards the variant temporal moments contextualizing the objects. The imagination combines separate ideas into a unity as a single associative act. The imagination achieves conceptual unities, and each unity sets a durable limit that defines the idea and its moment in the time. Allison recognizes that Hume's duration of time varies from his more traditional abstract theory of time (57-58). As a critique of Hume's theory, he suggests that time should be divided into separate units (239-40), whereas Hume's imaginative act proposes a unity of parts (t1 and t2) as the new idea complex (t3 = t1 + t2) in order to collectively form a single imaginative act. This complex *is* Hume's measure of time for a temporal duration. Hume's *duration* is not a relation to itself, as Allison claims, because association combines multiple ideas to create a new idea complex that *also defines* the act of association's durative span of time.¹⁴² In distinction to the duration of an association, the contrivances of belief also create a unity of identity, but this is only possible because a singularity becomes ascribed to two, otherwise divergent, temporal moments. The unified

¹⁴¹ Following the criticism of Terence Penelhum, Harold W. Noonan contends that identity can survive change, to which, giving a Humean response, is to alter the concept of identity and fabricate an ontological standard beyond empirical evidence or physical constraints. See Harold W. Noonan, *Personal Identity* (New York: Routledge, 1989), 80; Terence Penelhum, *Themes in Hume: the Self, the Will, Religion* (Oxford: Oxford University Press, 2000), 23-39.

¹⁴² See Allison, *Custom and Reason in Hume: A Kantian Reading of the First Book of the Treatise* (Oxford: Oxford University Press, 2008).

idea of identity comes at the expense of previous historical contexts.¹⁴³ Belief's obfuscation of variables in order to synthesize identity neglects temporal succession and denies change. Belief in an identity without the recognition of causal change destroys the science of empiricism, since empiricism is the measure of change in order to understand the conceptual dynamics of an object's variant trajectory through time.

Beyond yet another illustration of Hume's often cited rejection of identity (and a debate on its merits), his critique of belief illustrates a previously unobserved, historical component to association. Hume provides an antithetical means for imagination to redirect association away from belief and into the critical methodology of empiricism. He suggests that an analysis of the manner in which associations unite successive sensations can potentially confound belief's assent to causality:

But when we alter our method of considering the succession, and instead of tracing it gradually thro' the successive points of time, survey at once any two distinct periods of its duration, and compare the different conditions of the successive qualities; in that case the variations, which were insensible when they arose gradually, do now appear of consequence, and seem entirely to destroy the identity. By this means there arises a kind of contrariety in our method of thinking, from the different points of view, in which we survey the object, and from the nearness or remoteness of those instants of time, which we compare together. (1.4.3.4)

The passages from 1.4.3.3 and 1.4.3.4 demonstrate the contingent basis in all acts of association. The challenge to succession arises precisely in becoming cognizant of the comparative differences between two ideas. In a shift away from singular identifications of identity, Hume relegates belief's reiteration of time without alteration of content to be

¹⁴³ Barry Stroud, *Hume* (London: Routledge, 1977), 105. Stroud, however, suggests that identity could not be formed unless "we already had the idea of identity to begin with" (104).

a contrivance of custom's role in the formation of an object's identity (1.3.8.10). To recognize the difference between ideas in time initiates a comparison of temporal moments. Imagination's strength lies in its ability to unite concepts, but this is precisely the means for its abstract falsifications; being free to combine ideas, it can too readily synthesize. Just as Hume outlines the associative-similarity between ideational parts to be the fundamental building materials for complex ideas, he proposes disassembling complex ideas into their relative parts to reengage critically with those assumptions previously thought to be united. For Hume, it becomes necessary to disassemble ideas in order to question the assumptions built into the unities of identity, especially those ideas that grant affirmation to their synthesized construction too readily. Hume's philosophy is not a negative system opposed to identity (identity is of a secondary importance); rather, it is a model to investigate the foundations of cognitive beliefs that perpetuate a previous causal-content as if it were of an absolute nature.

III. The Imagination's Unity and the Constraints of Duration

The imagination's propensity to unify discordant objects relies upon a complex model of temporality. The imaginative act is multi-faceted, but its cohesive unity is collectively a single process at the foundation of association. The imagination's unification of two separate concepts creates one complete moment of duration.¹⁴⁴ This durable moment of the imaginative act encompasses the entire complex unity of the new

¹⁴⁴ To which identity is most common (1.1.5.4), but it also forms other abstractions (1.1.7.2) and relations that subsist in the present impression (1.3.8.2).

idea. The process itself functions within a varying temporal limit – the time in which cognition combines several ideas into a new form:

A man in a sound sleep, or strongly occupy'd with one thought, is insensible of time; and according as his perceptions succeed each other with greater or less rapidity, the same duration appears longer or shorter to his imagination. It has been remark'd by a great philosopher, that our perceptions have certain bounds in this particular, which are fix'd by the original nature and constitution of the mind, and beyond which no influence of external objects on the senses is ever able to hasten or retard our thought. (1.2.3.7)¹⁴⁵

The length of duration is the unity of an idea spanning a moment of time. Duration is a length of an associative act, not time, as a universal abstraction, proper.¹⁴⁶ To put it another way, each of the ideas needed in an act of the imagination creates a temporal duration. The unification of the idea and the length of the process in which the complex idea forms collectively encapsulate the temporal limit of an imaginative act. The speed with which perceptions move successively through an act of cognition corresponds with

¹⁴⁵ The reference is probably to Locke's relative durations, but cognitive attention altering the apparent length of duration finds an early example in Aristotle. Although Aristotle believed time to be absolute, the material world had different rates of corruption: "For the durations of the natural processes of passing-away and coming-to-be are equal. Nevertheless it often happens that things pass-away in too short a time, because of their mutual commingling. For their matter is irregular, i.e. is not everywhere the same; hence the processes by which they come-to-be must be irregular too, i.e. some too quick and others too slow" (336b 18-23). "On Generation and Corruption," Vol. 1, *The Complete Works of Aristotle*, ed. Jonathan Barnes, trans. H.H. Joachim, 2 vols., rev. ed. (Princeton: Princeton University Press, 1984), 553.

¹⁴⁶ R. McRae notes that some seventeenth- and eighteenth-century philosophers (like Leibniz) distinguish between "time and duration," but he does not view Hume to be one of them. See, "The Import of Hume's Theory of Time," Vol.3, *David Hume: Critical Assessments*, ed. Stanley Tweyman, 6 vols. (London: Routledge, 1995), 25-26. Although Hume uses the terms duration and time interchangeably, he distinguishes the theory of duration as the length of an association act, a purely cognitive state, and time as an absolute abstraction. For another rejoinder to McRae, see George S. Pappas, "On McRae's Hume," *Hume Studies* 7, no. 2 (1981): 167.

the imagination's experience of duration. The reciprocal affinity between perception and imagination explains the limits of perception – the durative length of attention itself.

The duration of cognition is a collection of ideas unified into a complex idea. Duration is the length of time in which a cognitive process occurs. Although many twentieth-century cognitive models rely upon abstract segments of time to define the temporal constraints of reflection, Hume argues that all cognition occurs in the present time, which attributively qualifies relative durations of temporal length for each particular idea (1.2.6.9): “there is no reason to think that all perceptions must have the same duration.”¹⁴⁷ An imaginative unity as a length of time delineates the compartmentalization of time. Separate temporal periods are necessary to conceptualize succession:

’Tis a property [unity] inseparable from time, and which in a manner constitutes its essence, that each of its parts succeeds another, and that none of them, however contiguous, can ever be co-existent. For the same reason, that the year 1737 cannot concur with the present year 1738 every moment must be distinct from, and posterior or antecedent to another. ’Tis certain then, that time, as it exists, must be compos’d of indivisible moments. For if in time we could never arrive at an end of division, and if each moment, as it succeeds another, were not perfectly single and indivisible, there would be an infinite number of co-existent moments, or parts of time. (1.2.2.4)

The structural limit of a concept defines a moment in time (the *essence* or the sensible duration defines causal experiences). The imagination's association of discordant parts precipitates a unified condition for time.¹⁴⁸ The constitutional unity, or, more properly, the limit of a unity makes the divisible nature of time – are the parts that limit and distinguish the components within succession. Each unity is one part of succession, and,

¹⁴⁷ V.C. Chappell, “Hume on What there Is,” Vol. 3, *David Hume: Critical Assessments*, ed. Stanley Tweyman, 6 vols. (London: Routledge, 1995), 81.

¹⁴⁸ Insofar as all parts are incongruent in order to be apart.

as a unity, one moment cannot be co-existent with another unified part, since both parts contribute to the compartmentalization necessary to theorize succession. As one year is not another, one present cannot be another temporal period. There are clear divisions in time. Just because one moment is present and has a durable unity, when the present moment of duration ends it can never again become present.

Hume may seem to court convention through the synthesis of “indivisible moments” and temporal unity, but, considering the *Treatise’s* argumentative context of infinite divisibility, this is a covert criticism. Two contextual considerations underwrite the obvious nature of Hume’s exposition. First, for Hume, all cognition occurs in the present moment. His concept of time confutes absolute identity, and, in turn, subjects the individual to cognitive oscillations that vary in relation from a process of memory or an act of reflection. This temporality also implies that a past experience is not completely revived in the present act of memory. Every cognitive act is and can only be in the present. Second, the argument for infinite divisibility characterizes division as *impossible* in order to legitimate the absolute unity of time. Although Parmenides’ refutation of time in relation to identity begins with an innocuous premise that one is always older than at a previous moment, the sequence of time (i.e., from, in his example, younger to older) quickly contorts through a conflation of self-as-being with time-as-sequential in order to substantiate the relative mutability in the basic framework of premising identity within time:

There is no need for a thing to come to be different from a thing that is already different; it must, rather, already be different from what is already different, have come to be different from what has come to be different, and be going to be different from what is going to be different; but it must

not have come to be, be going to be, or be different from what comes to be different: it must come to be different and nothing else. (*Parmenides* 141b-c)¹⁴⁹

Infinite divisibility seeks a refutation of time in order to affirm an absolute theory of unity, which denies difference between all things. For Parmenides, if identity in time is many, it is not one, and if not one then it is different. But to be many is not to be – since if time changes, then there is a time when you are not as you are (now). To be many promotes a basis for divisibility. It further refutes unity and subverts the cohesion of a cognitive totality, since all that can be thought *is* (in Parmenides). If the concept of *many* shifts into a temporal model, then a time when you *were* is different then you *now are*, and you are purely different without reference to the sameness of the one absolute form of identity that would deny any difference. To be different, then, is not to be, since you cannot be what you are not (a self in the past, for instance). To be the same causes a substantial edifice for unity, and it allows an absolute unity of *Being*. This abstract principle, however, generally comes at a price: an absolute unity cannot have recourse to temporal succession. Following Plato's characterizations of Parmenides' theory, a thing is different from that which it was just previously different than, but as each difference only substantiates difference and not identity, as there is only the different, then it is simply a definition of difference without recourse to an identity that can ever situate a position in time. There is no basis to establish the trajectory of time, if every moment of time is always different.

¹⁴⁹ Plato, "Parmenides," *Complete Works of Plato*, ed. John M. Cooper, trans. Mary Louise Gill and Paul Ryan (Indianapolis: Hackett Publishing, 1997), 375.

Hume directly rejects this *Eleatic* context of indivisible time with the denial of co-existence moments (1.2.2.4), since co-existent time would make all time to be one, and time that is without separation is the parmenidean basis for “no time.” This would not fit well with Hume’s model for succession that validates only the present moment *in time*. Direct observation needs causal associations – the temporal variants bridged in the imagination – to understand changes of succession. Hume, in a clever twist, uses indivisible unity in relation to the duration of cognition, for the latter defines the length of time as a part. In one sense, the unity of the part has become the whole; in another way, there is only the duration of the part to define cognition, since all imaginative processes occur in the present. Hume further manipulates the traditional use of essence (1.2.2.4). A conventional first principle in philosophy is to define identity as an essence that is constant despite temporal succession, memory alterations, or all physical evidence to the contrary (i.e., an abstract *a priori* instead of empiricism). Hume uses essence only as a curtailed version of an identity that is contingent on the *present unity* of imagination’s duration. This creates a boundary for time that is incapable of division and that cannot be co-existent with any other part of time. And since unity as essence cannot co-exist in other parts of time, it can only exist in the present moment. This allows Hume to further substantiate the validity of empiricism. Impressions in present time, not the succession of time, are the foundation of verification.

The present is the preeminent basis for all experience. The imagination’s constructive duration of the present is an authoritative correction to potentially subversive

appeals of experience or any other presumptive beliefs thought to be common knowledge. The present corrects misconstrued beliefs about the past:

[The] appeal to past experience decides nothing in the present case; and at the utmost can only prove, that that very object, which produc'd any other, was at that very instant endow'd with such a power; but can never prove, that the same power must continue in the same object or collection of sensible qualities. (1.3.6.10)

A past experience should mean little in reference to a present impression. The present impression is the decidedly authoritative period of duration on which a hypothesis must ultimately rely. The past demonstrates, at most, an event of probability, and it provides a relative degree of certainty in the associative links of causality. It may have a measure of validity in reference to the event as a past causal occurrence, but this does not have a direct or relevant application (outside of the assumptions of a belief) to the present impressions of the sensible or complex variety of ideas. The memory of a belief, past experience, is not an authoritative condition from which to premise all future experiences, and its reference should not be an oppositional appeal to a present impression. It can only situate the condition of an experience in the past, which should cause a more tentative conclusion during the present (because of multiple experiences), and this potentially decreases rather than increases certainty. Experiential events have different temporal periods, which may be similar in many respects to a present experience, but the specific context for every individual experience derives from a different causal train (i.e., a *similar* experience is not the *same* experience). These variable experiences may still suggest outcomes with a high degree of probability, but both the temporal period and the

experience rely – since they are different – upon the assumptions from previous beliefs. Every causal belief, then, is always and should only be a probability.

The recognition of these events as separate probabilities promotes cognitive temporal distinctions, and it impresses the preeminent importance for the present act of the imagination's unifying duration. Using a similar temporal model for cognition and to a similar effect of undermining the absolute distinctions within temporality, Henry Home, Lord Kames also situates memory neither in the past nor in the future, but squarely as an act in the present:

Hence it may be justly said, that in a complete idea of memory there is no past nor future: a thing recalled to the mind with the accuracy I have been describing, is perceived as in our view, and consequently as existing at present. Past time makes part of an incomplete idea only.¹⁵⁰

Faculty functions occur only in the present. Memory is not a recovery of the past; it is a construct redefining its contents in the present. Any recourse to the absolutism of memory is a belief, since only the slavish constraints of belief can deny change.

Following Kames' interpretative reiteration of Hume, a past time is incomplete for it is only one example or one moment (i.e., it is only a single contingent probability). Memory is contingent on causal trains, on the vivacity of impressions, and on the construction of belief through the moderation and affection of passion. This additional context of Kames suggests a historical prevalence during the eighteenth-century resulting from Hume's initial theorization. The intellectual trajectory following after Hume's theory of time introduces a cognitive model that relies upon a present species of temporality. A faculty

¹⁵⁰ Henry Home Kames, *Elements of Criticism*, 1762, ed. Peter Jones, Vol.1 (Indianapolis: Liberty Fund, 2005), 67.

does not determine the temporal period – memory is not literally the past. Belief in the absolute form of a memory is to see time as unchanging, which is a denial of succession's alteration of identity. No matter what particular faculty appears to be directing the associative content, and, for Hume, it is always the imagination, every faculty process is in the present. Even the act of memory is not in the past, for that would be to court co-existent moments: "'Tis evident, that time or duration consists of different parts: For otherwise we cou'd not conceive a longer or shorter duration. 'Tis also evident that parts are not co-existent'" (1.2.3.8). To think upon the past is to rethink the past in the present act of imagination, which, following Hume's rule of association, bridges the two temporal moments that are indistinguishable from physical succession (i.e., objects of an associative focus) into an emergent unity.

The issue of how Hume understands the basis of time is essential, for it distinguishes him from both eighteenth-century and most current models of memory that work with the recollection of succession to verify normative identities. As with all absolutes, Hume rejects the abstract theory of time as a distinct principle outside of cognition and succession: "the idea of duration is always deriv'd from succession of changeable objects, and can never be convey'd to the mind by any thing steadfast and unchangeable" (1.2.3.11). Time is a derivative of succession and functions only under the physical constraints of a mind's understanding of duration. The physical parameters through which time has its foundation cannot become the exception from which time exceeds the constraints of experience in order to form an *a priori* theory, "unless nature has so fram'd its faculties [of the mind], that it feels some new original impression arise

from such a contemplation” (1.2.3.10). The suggestion of nature (as a determinative instinct) within the framework of cognition is counterintuitive to traditional principles of dualism; Hume, however, is not a dualist. The traditional models of memory, of time, and of the contemporary philosophical meaning of *reflection* do not correspond with Hume’s premise and extensive explication. What has become the traditional model of memory is an extension of contemporary readings of reflection. In many post-twentieth-century contexts, a reflection of the past recaptures and authenticates what happened during that moment – a point in time that literally *is* the past in the act of reflection. Hume does not believe in the authenticity of memory in all past cases. He follows a construct of time that is necessarily contingent on succession within the constraints of a present duration. His model of duration and association during the act of imagination’s unification of ideas undermines temporal theories that pose time to be a series of distinct moments; that determine the past as an actual event that one can reclaim; and that propose every past idea re-emerges in thought exactly as it once was.

IV. Physiology and Reflection: A Critical Divide in the Temporality of Memory

Hume uses a different concept than the now standard use of reflection.¹⁵¹ Biro observes¹⁵² that the imagination is an instinctual and “non-rational faculty,” but it is also capable of an “abstract, reflective operation.”¹⁵³ The separation of the passions and

¹⁵¹ “The ‘reflexion’ to which Hume refers is clearly one of which we have become insensible.” J.P. Wright, “Butler and Hume on Habit and Moral Character,” *Hume and Hume’s Connexions*, eds. M.A. Stewart and John P. Wright (University Park: Pennsylvania State University Press, 1995), 115-116.

“belief” substantiates the conventions of dualism. Although a two-tier division between passion and belief does not fit with the *Treatise*, the pivotal role that the concept of *reflection* plays in Hume’s physiology of the passions and its influence in later (Scottish) aesthetics, collectively illustrate a need for a closer examination to what could otherwise invalidate the present theoretical reconstruction.

Terence Penelhum provides the typical critique against Hume’s theory of change by asserting that Hume is wrong because identity is indisputably constant:

What he is actually claiming is that we are constantly making a mistake in referring to a person from day to day as the same person (in using the same proper name, for example) or in referring in this way to anything that has changed in the slightest. For, strictly speaking, a changed person would be literally *another* person.¹⁵⁴

Aside from adopting the critical methodology of the *Eleatic* contestation for absolute difference, Penelhum proposes that identity finds unity through language. Language is literally equal to identity. For Penelhum, the succession of time does not alter identity (or language). This philosophical construct proposes that the past is exactly as one remembers it: “No one doubts, after all, that the actions of which one is proud were, in fact, his or her own; and even a vainglorious braggart is well aware of the distinction

¹⁵² Although Biro cites David Norton as a reference, Biro’s model is a corrective to Norton’s distinction between “reason and reasoning.” *David Hume: Common-Sense Moralist, Sceptical Metaphysician* (Princeton: Princeton University Press, 1982), 96-98, footnote 4. Norton specifically criticizes Hume for abandoning the terminology and methodology of reason for an instinctual premise: “Here Hume himself seems to have been carried along by the force of his discovery that our casual inferences are not based on either demonstrative reasoning or the perception of causal relations” (1985, 98).

¹⁵³ John Biro, “Hume’s New Science of the Mind,” *The Cambridge Companion to Hume*, ed. David Norton (Cambridge: Cambridge University Press, 1993), 39 and footnote 7.

¹⁵⁴ Terence Penelhum, *Themes in Hume: The Self, the Will, Religion* (Oxford: Clarendon Press, 2000), 30.

between that which he claims to have done and that which he really did.”¹⁵⁵ Leaving aside for a moment the full implications of these commonplace contemporary philosophical assertions concerning identity and memory, it is essential to understand why the word-as-identity proof finds no place in Hume who, first, situates words as an extension of custom (1.1.7.14), and then, second, explicitly rejects their conflation with an absolutist form of identity, since they are abstract ideas: “We use words for ideas, because they are commonly so closely connected that the mind easily mistakes them” (1.2.5.21). Although an absolute form of identity is critical to understand contemporary models of philosophy, they do little to help contextualize Hume’s theory of change.

Hume, clearly, does not substantiate identity within a constant or through words. For Hume, change is necessary in order to challenge the very beliefs that substantiate knowledge, that define principles without further investigation, and that deny the continuation of science to learn through the changing modifications of new experiences. To assert the condition for a constant identity denies empirical advancement from direct observation, and to follow a strict form of absolute identity, one should, like Parmenides, deny motion. If the physical criteria change, then to deny change becomes possible only through the introduction of a foreign consideration, such as language or ontology, to legitimize what is counterintuitive to direct observation. In fact, once the physical consequences that situated the condition for the investigation are no longer relevant, the new premise acquires sole authority in opposition to its tangible and physical foundation. By rejecting the origin for the enquiry, or the problem of change, the physical evidence of

¹⁵⁵ Eugenio Lecaldano, “The Passions, Character, and the Self in Hume,” *Hume Studies* 28, no. 2 (2002): 182.

a changing identity has already been denied and is replaced by a different criterion set. To rely upon the representational evidence gained from empirical experience is to exclude all non-representational absolute models. If identity changes it is different. If it is different, then a model of investigation needs to account for variations in order to determine the extent of the alterations and the potential consequences. What Hume may lack in an absolutism of certainty, he gains in the pursuit of knowledge.

An absolute form of identity (the ontological *being* or, historically, earlier theological *essence*) finds its complement in the perfect recollection of memory. Memory cannot be variable if identity is perfect, for to remember what one is potentially not, would be to undermine the foundation of identity's assertion for legitimacy that only finds its validity through the recollection of memory. This, to some measure, is the approach of Locke (*Essay* 2.27.9.25), but even Locke asserts that some ideas and many memories decay (*Essay* 2.10.5.25-30). If one cannot remember the precise events of the past, then one cannot claim to know who one once was in the past. If the past is something other than a means to know identity through memory, then there cannot be a claim to be of the perfect past in order to prove an unchanging identity. This model is, I suggest, an alternative basis to understand Hume's hypothesis of change in relation to identity.

In many contemporary philosophical circles, memory and present cognition (as separate faculties) create temporal variances through the process of reflection. Through an argument of infinite regression, Dauer posits reflection as a perpetual attempt to substantiate a point of proof: "Believing *p* involves believing that one believes that one

believes that *p*. Clearly, if belief (explicitly or dispositionally) involves an awareness of it, staggering infinity of (explicit or dispositional) beliefs seems to be in the offing” (Francis Dauer 1999, 90).¹⁵⁶ This complicates the act of reflection, since the reflection and the memory become two separate ideas (because they are separate faculties) that belong to distinct temporal moments. Although it may not effect the belief in ontology as a premise beyond and to the exclusion of physical, reflection proves troublesome for substantiating the acquisition of the ontological idea. This philosophical argument, however, neither works nor registers in Hume’s system. The philosophical scholarship against Hume’s temporality of reflection appears to rely more on the application of a first principle taken as fact than any attempt to reconstruct the history of Hume’s ideas.

To help legitimate the physiological substructure to the passions and its subsequent constitutional influence on the imagination, the antithetical model to Hume must be interrogated with an applied reading of Hume’s premises of association and time. To begin: if to reflect is to think upon the past, the reflection is singular and cannot be present. If the mind is only capable of one thought at a time, which is isolated in the past as the object, and if in this process of reflection one is not also cognizant of the present, then thinking can never be in the present. Every reflection is on the past and no thought is immediate, so there is no present act of thinking. If to reflect is to always be in the past

¹⁵⁶ To be fair, Dauer proposes that the infinite regression of belief and passion through the constant recapitulation of reflection could find a solution in an adverbial application of belief, if Hume’s philosophy chose to ascribe to the constructions of grammar. Hume’s rejection of words and the artifice of abstract principles make such a position an unlikely means to understand Hume on his own terms. Hume’s theory is not about analogous applications of grammatical devices; it is a philosophy reliant upon a now archaic model of reflection.

content and if it is a singular thought without recourse to the present, then the present content for future reflection is unattainable. If the act of thinking is never present, then no immediate present will become past to become an object of reflection. In the moment of reflection that once was present, the thinking process could not capture the present, since reflection is only on the past (unavoidable, unless the faculties are more than their surface content and perpetually work within a dynamic, mutually-dependent, conceptual model like Hume's).

In the traditional reflection argument, thinking dissolves if its own premise of reflection isolates a past reflection from present cognizant ability. The past cannot become past if there is never a present moment upon which to have a basis of reflection. If no present is a part of the reflection process, then the present – since it is not a part of thought—cannot become past. Therefore, thinking is only past, but it is a past that never had a present. Even further, the past period of reflection could not attain a position of the past, since the present moment could not be part of the process from which its exclusion is categorical. A poor rejoinder may be that perception is present and reflection of an object is in or of the past, but this only propagates the absurdity. If a present perception is integral to reflection through its reception and subsequent distribution of content to reflection, then the affinity they share is either entire or not at all, which points to an implicit use and need for association, and, ultimately, posits a foundation of empiricism.

To speak in these terms (without faculty interrelations) points to the artifice of dualistic reflexive constructions and the fabrication of a fragmented temporality, because of the sequentially misleading formulations within language. Language is categorically

distinct in its sequences, but thinking cannot function under absolute demarcations. Perception does not receive and then record the perception in order to distribute the information to an entirely different mental faculty, which then provides every nuance of the perception to reflection with the one outstanding exception of the temporal contingency in which the perception takes its very distinction as content within a context. The faculty categories, isolated processes, and temporal exclusions between the faculties (for no apparent reason except to control the reflection through a temporal isolation that, in turn, limits the content into a workable abstraction) are subject to arbitrary intellectual inventions in order to accompany fanciful processes. Through this model of reflection, temporal differences sacrifice change in order to achieve a strict isolation of content within an “uncomplicated” linear system of time.

These temporal contingencies, however, border on the absurd, and cognition’s categories do not seem to have any legitimacy except to supply an internal justification for the premise of the argument. If reception of content is different from the act of reflection, thinking is capable of multiple presents both to first record and to continue to receive content while constantly being able to reflect upon it. This absurdity is the consequence of time becoming out of joint in the process of reflection. The alternative is Hume: there is one durable present in which ideas associate and unite through the imagination. For Hume, at least, so far as this study is trying to present as probable, cognition is capable of multiple acts and can think upon and synthesize multiple objects (it is not limited to words). Far from perfect, memory constantly shifts and alters its content in the duration of cognition’s present attention. The past is an illusionary

reconstruction within the present attention of the cognition. The imagination continually changes memory – since cognition is and can only be in its present. One cannot time-travel in memory to their childhood and claim the event is exactly the same (experience may define time, but it does not ensure its absolute accuracy). All past memories are reconstructed impressions that continually refine their associations, and they are subject to the same rules of *probability* that are in all empirical methods of interpretation. In a Humean model, what one gives up on the side of abstract isolated periods of temporal certainty, one gains in an intellectually credible system that, if not perfect, does not fabricate separate faculties and, unavoidably, multiple temporalities within inconsistent ontological premises.

The genesis of temporal variant points of reflection first arose as a critique against Locke and should appear quite familiar after the previous discussion, but the purpose of Mayne's critique of Locke's reflection surprises:

Wherefore if *Perception*, (suppose) which is an Operation or Act of the Mind, should it self be considered as an *Idea*, (and under this Title Mr. *Locke* treats *Perception*) then one *Idea* would be the Object of another *Idea*, and there would be an *Idea* of an *Idea*, or an Object of an Object, and on *Idea* would perceive another *Idea*, which as I conceive, there is no making tolerable Sense of.¹⁵⁷

The key to Mayne's critique is to divide perception and the idea-as-object into two separate acts of imagination. For an idea to be an object of reflection, the object must become an act that again reflects upon its object. As a result, reflection perpetuates the

¹⁵⁷ Zachary Mayne, *Two Dissertations Concerning Sense and the Imagination*, 1728 (New York: Garland Press, 1976), 105-106.

cognitive process so that an idea is never possible or, at least, never fully achievable.¹⁵⁸

The framework of this application to Locke is a little disingenuous; it is, after all, a refutation. Locke did not position perception and thought as divisible distinctions: “To suppose the Soul to think, and the Man not to perceive it, is as has been said, to make two Persons in one Man” (*Essay* 2.1.19.6-7). The dualism between thought and content belongs to a later tradition with ontological interests, but it seems probable that Mayne’s critique perverts into a method later adopted by philosophy as part of the now standard tradition.¹⁵⁹ Locke devises a simple unity for sensation and cognition: “Whereas hunger consists in that very sensation, as thinking consists in being conscious that one thinks” (*Essay* 2.1.19.20-21). Just as sensation is inseparable from the experience of hunger, so the act of thinking is inseparable from the consciousness of the act. The subsequent attributions of division to the thinking process fragments cognition into compartments that degenerate into a regressive circularity because of its reliance upon the parsed segments of a grammar-like logic (i.e., the logic behind subject/thinker and object).

¹⁵⁸ In an ontological context, if the past is reflection, then what was *is being*, and the present *is non-being*, since it is not reflection (not a part of thinking proper). So what is of the past, “the was,” actually *is* the ontic basis for thought, since reflection is only in the past when focusing upon the object and cannot take part in the present (for then that would be two thoughts and two co-present moments). Therefore, the ontic reality to this constructed model of reflection makes the past, or non-being (since it is not present), into a cotemporaneous concept with reflection, and instead of defining thinking – reflection *is* – in an ontic sense – what *is not*, since reflection exists only as the *was* that never *is* present. The inverse consequence is equally absurd: the present can never be thought, for it is not a part of reflection. Therefore, one can have no concept of a present or what is, since reflection works only as a faculty of what is not.

¹⁵⁹ The previous discussion of Lecaldano, Penelhum, and Hume’s critique of infinite divisibility in relation to Eleatic time demonstrate subsequent historical debates.

V. Memory and the Brain: Willis, Locke, and Hume

In opposition to Mayne's critique, the materialist tradition integrates perception and memory. The retrieval of a memory is a revival of past perceptions. As a precursor to associative philosophy, Thomas Willis is quite literal in locating memories within the *infolding gyri* of the brain, the "Cells or Storehouses" (Willis 1664, 60).¹⁶⁰ While Locke may use the language of Willis, he does not retain the same degree of physiological emphasis:

The other way of Retention [besides direct contemplation] is the power to revive again in our Minds those *Ideas*, which after imprinting have disappeared, or have been as it were laid aside out of Sight. ... This is *Memory*, which is as it were the Store-house of our *Ideas*. For the narrow Mind of Man, not being capable of having many *Ideas* under View and Consideration at once, it was necessary to have a Repository, to lay up those *Ideas*, which at another time it might have use of. (*Essay* 2.10.2.1-6)

Whereas Willis focuses on the physical parameters and location of memory, Locke shifts the emphasis to the power or activity of the mind to retrieve – to recollect and to access. Hume includes the Lockean process and act of memory, but with a much greater emphasis on the original physiological location. Memory, for each of them, has its place in the brain, and for Hume it will become the justification for his cognitive logic, since it follows the anatomical foundations of Locke that are derivative of Willis. Although

¹⁶⁰ "These manifold convolutions and *infoldings* of the brain are required for these divers manners of ordinations of the animal Spirits, to wit, that in these Cells or Storehouses severally placed, might be kept species of sensible things, and as occasion serves, may be taken from thence" (Willis 1664, 60). Also see, Thomas Willis, *The Anatomy of the Brain*, 1664, trans. S. Pordage, 1681 ed. (Tuckahoe: USV Pharmaceutical, 1971), 96.

Hume's initial claims emphasize an absence of anatomy within his research (1.1.2.1), he finally decides to ground his methodology in the physical structure of the brain:

I shall therefore observe, that as the mind is endow'd with a power of exciting any idea it pleases; whenever it dispatches the spirits into that region of the brain, in which the idea is plac'd; these spirits always excite the idea, when they run precisely into the proper traces, and rummage that cell, which belongs to the idea. (1.2.5.20)

The mind *excites* a power or produces an activity, and the physiological expression of this process is the movement of animal spirits. The spirits are literally the physiological movement of the imagination. The animal spirits are the material component of cognition.¹⁶¹ The physiology and anatomy of brain already explored in Willis illuminate the present purpose, and provide the textual justification for Hume's argument.

Following Willis and Locke, Hume's spirits dispatch into the brain, since the faculties have a structural pattern to explain their localization and distribution. The spirits access the *cell*, the memory-storehouse, in order to generate the specific idea. The animal spirits' retrieval process from the cells occurs along pathways, Hume's "proper traces" of associative habits. Memory is the end result of a process in which the chemical expression of the imagination (i.e., the animal spirits) access the cells after they follow specific associative patterns necessary to acquire the particular idea, which demonstrates the physiological interconnectivity between association, habit, pathway, and trace. The use of *cells* and *animal spirits* is of a materialist orientation.

The division between materialist empiricists and religious apologists is wide, but Hume's material adherence marks Locke and Hume's with distinctive rejection of their

¹⁶¹ See Thomas Willis, *The Anatomy of the Brain*, 1664, trans. S. Pordage, 1681 ed. (Tuckahoe: USV Pharmaceutical, 1971), 55.

traditional alliance with those in the immaterialist tradition like Berkeley and Descartes.¹⁶² In an absolute rejection of materiality, Berkeley took animal spirits to be a heinous offence to God:

They indeed who hold the soul of man to be only a thin vital flame, or system of animal spirits, make it perishing and corruptible as the body; since there is nothing more easily dissipated than such a being, which it is naturally impossible should survive the ruin of the tabernacle wherein it is enclosed. And this notion hath been greedily embraced and cherished by the worst part of mankind, as the most effectual antidote against all impressions of virtue and religion.¹⁶³

The use of animal spirits is a religious affront because it makes the *rational soul* merely corpuscular. If the body is corruptible, and if cognition is a material component, then animal spirits are an extension of the physical localization of the anatomical parts of the brain and occur only as a part of the larger physiological process. In the materialist medical tradition (with Willis at the forefront), the imagination uses the animal spirits in their distilled physical form in order to unify multiple sensations and multiple ideas. Berkeley fears the consequences of orientating the faculties upon physiology. If the faculties are not complete (never achieve a permanent unity) and are physical at their inception and in their subsequent application, then the religious context driving the constraint of defining the mind as synonymous with the soul suffers fragmentation. Physicality destroys unity, rejects out of hand immateriality, and creates an immediate

¹⁶² For the rationalist tradition, judgment is the pre-eminent faculty and has several specific qualities: the faculty of judgment and the mind are both immaterial; the faculties belong in a hierarchy, and each faculty looks to specific types of ideas; and, as a consequence of an immaterial premise, it substantiates dualism and allows for recourse to God. The line between religious apologist and mechanical philosopher is often slight, and Hume's antithetical premises situate him outside either school.

¹⁶³ George Berkeley, "A Treatise Concerning the Principles of Human Knowledge," *The Empiricists* (Garden City: Anchor Books, 1974), § 141, 208.

antithesis to the divine. Hume would also suffer the immaterialist and religious barrage waged by James Beattie. The context of memory and its relation to the brain or to the immaterial soul were sources of contention. With Hume as the object of his attack, Beattie's anti-physiological "On Memory" rejects the brain *cell* theory for memory:

If thoughts could occupy space, we might be tempted to think, that we had laid them up in certain cells or repositories, to remain there till we had occasion for them. But thoughts cannot occupy space; nor be conceived to have any other existence, than what the mind give them by meditating upon them.¹⁶⁴

Hume did not relish Beattie's characterization of his philosophy while alive, calling Beattie's *An Essay on the Nature and Immutability of Truth*, "a horrible large lie in octavo."¹⁶⁵ It is not a little disconcerting that Hume's philosophy has subsequently been brought to conform more to Beattie's immaterialism than to the physiological premises he explicitly references. History is not without its irony.

VI. Animal Spirits, Edinburgh Medicine, and the Rival Brain Debate

The motion of the animal spirits explains the association process, not at the level of idea formation but in terms of physical parameters that define the constraints and limits of the imagination in linking ideas:

¹⁶⁴ James Beattie, "Of Memory and Imagination," Vol.1, *Dissertations Moral and Critical*, 2 vols. (Dublin, 1783), 10-11.

¹⁶⁵ Beattie's *Truth* criticized the lack of Hume's clearly delineated faculties. For Beattie, memory and imagination were perfectly distinguishable in language. See *An Essay on the Nature and Immutability of Truth in Opposition to Sophistry and Scepticism*, 1770, 6th ed. (London, 1778), 82-85.

But as their motion is seldom direct, and naturally turns a little to the one side or the other; for this reason the animal spirits, falling into the contiguous traces, present other related ideas in lieu of that, which the mind desir'd at first to survey. This change we are not always sensible of; but continuing still the same train of thought, make use of the related idea, which is presented to us, and employ it in our reasoning, as if it were the same with what we demanded. (1.2.5.20)

Animal spirits follow pathways that meander and wander upon the routes or associative pathways of previous ideas – the creation of ideas follows previous dispositions, a rudimentary neural network. One idea gives way in its movement to other traceable patterns by which a similar or associatively relatable idea previously took form.

Association is as much a process that disassociates and meanders as it builds and conforms to past idea patterns. To a certain point, this can account, at a physiological basis, for the difference between imagination and belief, which are two pattern-building principles that define habitual concepts or emergent ideas. Associations follow specific traces, but ideas mutate, alter, and deviate at a physical level.¹⁶⁶ There is a limit to attention.

Far from an antiquated mode of physiology, animal spirits are a material justification for the mind, and they are pivotal in understanding the physiological constitution of the faculties. Their movement determines the degree and the extent of cognitive attention, which defines the imagination and belief's vivacity, or the intensity of ideas:

When the imagination, from any extraordinary ferment of the blood and spirits, acquires such a vivacity as disorders all its powers and faculties, there is no means of distinguishing betwixt truth and falsehood; but every

¹⁶⁶ Robert Fendel Anderson, *Hume's First Principles* (Lincoln: University of Nebraska Press, 1966), 122.

loose fiction or idea, having the same influence as the impressions of the memory, or the conclusions of the judgment, is receiv'd on the same footing, and operates with equal force on the passions. (1.3.10.9)

As a corollary to Hume's opening statements that warned against strict divisions between the imagination and memory (1.1.1.1), he explains that the two faculties can become indistinguishable. As a consequence of excessive fermentation, the blood and spirits intensify and manipulate the faculties. Ferment is an especially important term, for it places Hume, surprising, outside of the Newtonian-orientation that he participated in while a member of Physiological Library, 1724-25.¹⁶⁷ Robert Stuart's syllabus of the Physiological Library from 1741 includes the prominent use of the Newtonian John Keill's *Introductio ad veram Physicam* (1702). Although this does not prove its use during Hume's tenure, it suggests with a strong degree of probability Keill's Newtonian presence in Stuart's lectures. Stuart was a Newtonian, and nowhere was Newtonianism more fervent during the mid-1720s than the Royal Society¹⁶⁸ and, apparently, the University of Edinburgh, which is what makes Hume's explanation of animal spirits almost inexplicable.

The theory of ferment is a rival anatomical model to Newtonian physiology. John W. Yolton suggests that the transition between Newton's aether and the theory of animal spirits and cerebral physiology "is especially smooth and easy."¹⁶⁹ Although largely unrecognized in medical scholarship surrounding Willis and Newton, their respective

¹⁶⁷ Michael Barfoot, "Hume and the Culture of Science in the Early Eighteenth Century," *Studies in the Philosophy of the Scottish Enlightenment*, ed. M.A. Stewart (Oxford: Clarendon Press, 1990), 151.

¹⁶⁸ *Ibid.*, 162.

¹⁶⁹ John W. Yolton, *Thinking Matter: Materialism in Eighteenth-Century Britain* (Oxford: Basil Blackwell, 1983), 153.

predecessors had a particularly antagonistic relationship regarding the physiological constitution of the brain. Their rival physiological positions define a mutually exclusive physiology of the brain between circa 1700-1750.¹⁷⁰ Willis' animal spirits and his theory of ferment stand as an antipodal model to the Newtonian physiological vibrations and aether principles; animal spirits became synonymous with hollow nerves and a hydraulic process (which was not the case in Willis).¹⁷¹ Despite Willis' probable influence upon Newton's concept of aether, the subsequent physiological schism rests on the use of either vibration or fermentation to explain the physiological processes within the brain. The physiological theory of fermentation originates with Willis.¹⁷² Although Henry Guerlac notes both Stephen Hales and Newton use the term (following Willis),¹⁷³ the particular use of fermentation within the brain to explain the subtle distillation of animal spirits is a theoretical formation outside of Newtonian circles.

James Keill's *Anatomy of the Human Body Abridg'd* (1703), for instance, is a vehement attack upon cerebral fermentation, suggesting infinite regress in the filtration

¹⁷⁰ David Hartley's *Observations on Man* (1749) would complicate this division.

¹⁷¹ Willis, with the apparent use of Hooke's, his assistant, microscope, describes the nerves to be neither solid nor hollow, but rather with the appearance of "sugar-cane." Despite Willis' hydraulic fermentation of animal spirits in the brain, he explains the animal spirits movement through the nerves as a vibration (he uses both metaphor and literal examples). G.S. Rousseau claims, wrongly, that Willis' nerves were hollow. See, G.S. Rousseau, "Nerves, Spirits, Fibres: Towards an Anthropology of Sensibility," 1973, *Enlightenment Crossings: Pre- and Post-Modern Discourses, Anthropological* (Manchester: Manchester University Press, 1991), 129.

¹⁷² Gillispie, Charles Coulston, ed., "Fermentation," *Dictionary of Scientific Biography* (New York: Scriber, 1972), 42.

¹⁷³ Henry Guerlac, *Essays and Papers in the History of Modern Science* (Baltimore: John Hopkins University Press, 1977), 189.

process,¹⁷⁴ but he still uses the blood's fermentation to explain the processes of the *dura mater*,¹⁷⁵ which harkens back to the preeminence of blood in Harvey rather than to Willis. James, brother of fellow Newtonian John Keill, argues that vibrations carry the impressions of sensation to the brain instead of the animal spirits method of transfer, which is a direct challenge to Willis' physiological process: "we shall easily perceive how precarious the many ingenious Hypotheses are, which the Learned Willis has elegantly describ'd."¹⁷⁶ The animal spirits are not directly relevant to impressions, since they are too slow to affect the nerves.¹⁷⁷ John Quincy would reiterate Keill's censure against Willis: nervous vibrations carry impressions to the brain and not the "slack" animal spirits.¹⁷⁸ Although there is no direct address to Willis, Thomas Knight initiates a critique against Willis' basic physiology.¹⁷⁹ Knight takes the distillation process to task by literally equating fermentation with its empirical counterpart of liquor distillation. He claims the blood does not have sufficient heat to rarify liquor in order to produce animal spirits,¹⁸⁰ which he then concludes invalidates Willis' application of distillation. He

¹⁷⁴ James Keill, *Anatomy of the Human Body Abridg'd: or, a Short and Full View of All the Parts of the Body. Together with Their Several Uses, drawn from Their Compositions and Structures*, 2nd rev. ed. (London, 1703), 54.

¹⁷⁵ *Ibid.*, 138.

¹⁷⁶ *Ibid.*, 152-3

¹⁷⁷ *Ibid.*, 152.

¹⁷⁸ John Quincy, *Lexicon Physico-Medicum: or, a New Medicinal Dictionary; Explaining the Difficult Terms Used in the Several Branches of the Profession, and in such Parts of Natural Philosophy as are introductory thereto: with an Account of the Things Signified by such Terms. Collected from the most Eminent Authors; and particularly these who have wrote upon Mechanical Principles*, 3rd edition (London, 1726), 59.

¹⁷⁹ Thomas Knight, *A Vindication of a Late Essay on the Transmutation of Blood*, 8vols. (London, 1731), 45.

¹⁸⁰ *Ibid.*, 47.

introduces Newton's alternative for the reception of impressions and for brain function: vibrations moving through the ubiquitous "Ætherial Medium."¹⁸¹ John Keill critiques the improbable size of animal spirits,¹⁸² but then promotes the mechanical necessity of aether¹⁸³ as part of the Newtonian standard for gravity and vacuum.¹⁸⁴

Hume, however, excludes all abstractions as unempirical, so to accept a physiological model that premises vibrations and aether as integral for the nervous processes would severely compromise his rejection of absolute space that is, in this case, derivative of the vacuum and aether. For Hume to arbitrarily include ferment and animal spirits is almost inexplicable. It would have been against the (unofficial) Newtonian insignia of the *Physiological Library*. It would also align Hume with a strict materialism. Aether was a contingency for the immanence of the divine, not so animal spirits.¹⁸⁵ The fermentation process for animal spirits is anti-Newtonian. Hume would have had to put in considerable effort to seek Willis out and to avoid Newtonian physiology, since Willis and his Willisian predecessors were not well represented at the Library during 1724.¹⁸⁶ In the main library at the University of Edinburgh there is a 1664 edition of Willis. The

¹⁸¹ *Ibid.*, 50-51.

¹⁸² John Keill, *An Introduction to the True Astronomy*, 1702, (London, 1721), 62

¹⁸³ *Ibid.*, 93.

¹⁸⁴ *Ibid.*, 16.

¹⁸⁵ Willis, in particular, allows for a theological safeguard against the charge of atheism.

¹⁸⁶ If it were not for physiological schism to account for it, it would certainly be an oddity that Willis, the father of neuroscience, did not find his place upon the shelves of a physiological library. As a lucky happenstance, the library catalogue of 1724 was published 1725, which covers Hume's membership. For further consultation of the catalogue, please see: *The Physiological Library. Begun by Mr. Steuart, and some of the students of Natural Philosophy in the University of Edinburgh, April 2 1724: and Augmented by some Gentlemen; and the Students of Natural Philosophy, December 1724* (Edinburgh: University of Edinburgh, 1725).

binding, unfortunately, is not original; rebound in the nineteenth century, the text itself appears to be from, at least, the early eighteenth century, which indicates the possibility that Willis' *Anatomy* was at the University of Edinburgh while Hume took his tenure there, but this alone is hardly conclusive of use.¹⁸⁷ Hume would not have to look far, however, to encounter Willis. Willis' animal spirits are synonymous with the corpuscular model of the brain: "Dr. Willis must be allow'd as a perfect Master of the corpuscularian Philosophy as appl'd to Physick. He understood perfectly well the Explosions and Suffocations of the animal Spirits."¹⁸⁸ Hume's knowledge of Willis, more than any other physiologist, demonstrates itself in the *Treatise*, and, after I present the evidence, probability suggests that Hume followed Willis' brain physiology, physical paradigms of association, and reflex theory.

By far the most substantial proof of Hume's knowledge of Willis comes from a misappropriation of animal spirits and brain function to Malebranche instead of to Willis.¹⁸⁹ Current medical and philosophical historians credit Malebranche with the origin of animal spirits, brain fibres, and nervous commands from the imagination. Yolton claims Malebranche to be the probable influence on Locke's physiology of brain fibres.¹⁹⁰ Locke was, however, the transcriber of Willis' anatomical lectures and his medical student at Oxford. In the *Essay's* 4th edition, he also incorporated Willis' *clinical*

¹⁸⁷ My thanks to Joseph Marshall, Rare Books Librarian, Edinburgh University.

¹⁸⁸ Thomas Morgan, *The Mechanical Practice of Physick* (London, 1735), xiii.

¹⁸⁹ Hume's incorporation of Malebranche into his philosophy begins inauspiciously. The *Abstract* censures the *Search after Truth* for its "too concise" treatment of *probability* (*Abstract* 4); whereas, Hume's scepticism is foremost a theory of probability.

¹⁹⁰ John W. Young, *Thinking Matter: Materialism in Eighteenth-Century Britain* (Oxford: Basil Blackwell, 1983), 160.

physiology that stood, during his time, as Britain's authority on the brain. Young compounds the historical misattribution further by ascribing Malebranche to be not just Hume's physiological influence but also essential to British physiology: "Hume knew Malebranche's *Recherche*, his references to the theory closely resemble Malebranche's and Watt's account of it. He very likely was aware of the various accounts of this physiology by doctors and scientists in England and Scotland."¹⁹¹ Hume, undoubtedly, knew Malebranche. His theories can, however, be distinguished from Malebranche's occasionalism and other divine foundations, but Hume, arguably, affirms a Malebranchean view on the insubstantial status of identity.¹⁹² The problem of elevating Malebranche over the British context of physiology misaligns Willis' immediate impact upon associative philosophy. The majority of eighteenth-century British physicians took their physiological knowledge from the British context of Newton and Willis, not the mechanism of continental Cartesianism.¹⁹³ Willis' corpuscular, not mechanical, anatomy and practical physiology were the undisputed standard, with the only rival theory to his model coming from Newton's mechanical explanation of nervous transmission. Despite the subsequent debate between Newton and Willis' nervous theories, the initial formulation of aether for Newton originates from Willis' "Of Fermentation," 1659. After the co-relation of aether and fermentation, Willis' aether supplemented the animal *spirits* of the *Anatomy*, 1664, and would return in the *Souls of Brutes*, 1672, as a foundation of

¹⁹¹ Ibid., 175.

¹⁹² For an extensive list of variables and potential influences, see P.J.E. Kail, "Hume, Malebranche, and 'Rationalism,'" *Philosophy* 83, no. 325 (2008): 318-332.

¹⁹³ Wes Wallace, "The Vibrating Nerve Impulse in Newton, Willis, and Gassendi: First Steps in a Mechanical Theory of Communication." *Brain and Cognition* 51, no. 1 (2003): 66-94.

nature.¹⁹⁴ Although aether and animal spirits started out as common united principles in all of Willis' works, the debate between Newtonian and Willisian adherents separated the terminology into distinct functions of nervous transmission between 1700-1750 in order to account for solid and hollow nerves.

Although a distinguished piece of criticism, J.P. Wright further compounds the error of Hume's reliance upon Malebranche's physiology and animal spirit traces.¹⁹⁵ Wright characterizes Malebranche as locating the cognitive faculties in the fibres of the brain: "For Malebranche, our natural judgement of external existence is directly correlated with the forceful agitation of the fibres in the centre of the brain."¹⁹⁶ Wright historically locates and attributes Malebranche with the movement of animal spirits along brain fibers because of Chambers' *Cyclopaedia*. There is a good reason for Malebranche's authority in the *Cyclopaedia*; Chambers' passage on the imagination's anatomical localization in the brain is literally a verbatim, but unacknowledged, extraction from Malebranche's *Search after Truth*.¹⁹⁷ Chambers' brain fibers citation in question actually

¹⁹⁴ "Of Fermentation, or the Inorganic Motion of Natural Bodies: A Medical-Philosophical Discourse of Fermentation or, Of the Intestine Motion of Particles in Every Body," 1659, *The remaining medical works of that famous and renowned physician Dr. Thomas Willis of Christ-Church in Oxford, and Sidley Professor of Natural Philosophy in that Famous University* [...], trans. S. Pordage (London, 1681), 1-52. Newton and Malebranche both rely on the aether-animal spirits complex from Willis.

¹⁹⁵ More recently, Frasca-Spada has credited Hume with a Malebranchean physiology. See Marina Frasca-Spada, "Belief and Animal Spirits in Hume's *Treatise*," *Eighteenth-Century Thought* 1 (2003): 151-169.

¹⁹⁶ J.P. Wright, *The Sceptical Realism of David Hume* (Manchester: Manchester University Press, 1983), 214. See also pp. 219.

¹⁹⁷ See Nicolas Malebranche, *The Search After Truth*, trans. Thomas M. Lennon and Paul J. Olscamp (Cambridge: Cambridge University Press, 1997), 89; Ephraim Chambers, "Imagination," Vol. 2, *Cyclopaedia, or Universal Dictionary of Arts and Science*, ed. Abraham Rees, 2 vols. (London, 1728), n.p.

references Malebranche, along with Descartes, Fernelius, and Willis. This list was meant to establish the standard authorities on the brain and their respective placement of the faculty of the imagination.¹⁹⁸ There is, however, a fundamental difficulty in Young and Wright's justification of Malebranche's Cartesian influence of brain fibres in British anatomical and philosophical practices. First, Malebranche does *not* credit Descartes with the use of brain fibres, referencing, instead, Descartes' faculty of imagination with the pineal gland. Second, Malebranche unequivocally follows Willis' allocation for memory and imagination to be in the medullary and cortical fibres of the brain:

Whether the common sense resides, as Willis would have it, in the two tiny bodies that he calls *corpora striata*, while the sinuosities of the brain preserve the species of the memory and the *corpus callosum* is the seat of the imagination; or whether, following the opinion of Fernel, in the *pia mater*, which encloses the substance of the brain; whether it be in the *pineal gland* of Descartes; or finally in some other portion hitherto unknown, that our soul exercise its principal function, does not much trouble us here.¹⁹⁹

The evidence is incontrovertible: Malebranche cites Willis as the author of brain fibers, not Descartes with whom he associates the anatomical, but still immaterial, soul found in the pineal gland. The critical resemblances of physiology between Malebranche, Locke, and Hume occur from their mutual reliance upon Willis' anatomy of the brain.²⁰⁰

¹⁹⁸ Ephraim Chambers, "Imagination," Vol. 2, *Cyclopaedia, or Universal Dictionary of Arts and Science*, ed. Abraham Rees, 4 vols. (London, 1786-88), n.p.

¹⁹⁹ Nicolas Malebranche, *The Search After Truth*, trans. Thomas M. Lennon and Paul J. Olscamp (Cambridge: Cambridge University Press, 1997), 89.

²⁰⁰ P.J.E. Kail also credits Malebranche to be Hume's textual source for brain fibers. The point is not that Malebranche's physiology probably exerted influence on Hume, but that Malebranche and Hume both rely upon a Willisian physiology of animal spirits and brain fibers. See Kail, "Hume, Malebranche, and 'Rationalism,'" *Philosophy* 83, no. 325 (2008): 319. Kail's study, though excellent, also needs to account for the cell

Current medical and philosophical history must acknowledge the foundational source of Willis to comprehend and properly formulate British empiricism and British cerebral physiology.

Although Hume would have encountered Willis' brain fibers from Malebranche's citation, further proof of Willis' influence upon Hume need not have been a direct reading of the *Anatomy of the Brain*. Any number of medical texts could supply Hume with a Willisian physiology. Thomas Gibson's *The Anatomy of Humane Bodies Epitomized* (1682) provides an extensive abstract of Willis' *Anatomy*,²⁰¹ complete with requisite use of the imagination,²⁰² and a characterization of animal spirits as "spirituosaline."²⁰³ John Browne (1705) mentions Willis' "immortal fame."²⁰⁴ The *Bibliotheca Anatomica* (1711-14) references Willis' interdependent "aereous nitrous Spirit" within the fermentation process.²⁰⁵ Although James Drake takes exception with Willis' description of the intercostals, he emphasizes Willis as the standard authority for the nerves,²⁰⁶ which exposes not so much the error but rather Willis' continued authority just

theory of memory in his passage on Hume, found in Locke and Willis, but not Malebranche (see the preceding section).

²⁰¹ Thomas Gibson, *The Anatomy of the Human Body Epitomized*, 1682, 6th ed. (London, 1703), 374-410.

²⁰² *Ibid.*, 414.

²⁰³ *Ibid.*, 399. Willis thought salt was generative. This dual mode of spirit and salt also gives additional credence to my construction of Willis' chemical and potentially ethereal foundation for animal spirits.

²⁰⁴ John Browne, *Myographia Nova: or, a Graphical Description of all the Muscles in the Humane Body, as they Arise in Dissection: Distributed into Six Lectures*, 2nd ed. (London, 1705), iv.

²⁰⁵ *Bibliotheca Anatomica, Medica, Chirurgica, &c. Containing a Description of the Several Parts of the Body [...]*, Vol. 1, 2 vols. (London, 1711), 7.

²⁰⁶ James Drake, *Anthropologia Nova: or, a New System of Anatomy*, Vol. 2 (London, 1717), 227.

before Hume's excursion into physiological literature. John Cook, a graduate of Edinburgh, also cites Willis' theories on the brain and nerves as examples of medical fame.²⁰⁷ He extensively paraphrases Willis' *Anatomy of the Brain* to explain the brain's anatomy,²⁰⁸ citing a similar reflex theory²⁰⁹ and suggesting that the size of the human brain indicates the "greater call for animal spirits."²¹⁰ Cook dedicates his work to all the "learned members of the Royal-College of Physicians at Edinburgh," which gives an indication of the medical training for physicians and Willis' prominence in the medical field at Edinburgh.²¹¹

Although disciplinary divisions were by no means exact (Willis himself was Sedleian professor of philosophy a half-century earlier), it would appear that under the directorship of Robert Steuart, a professor in Natural Philosophy, physiological models were sought to complement a bent towards natural mechanics instead of the more standardized physiology used to train physicians. Despite Hume's membership at the Library and his laudations of Newton in the introduction, he, like Locke, uses the physiology of Willis. Hume's use and reference to physiology is explicit, numerous, and decisive.²¹² Hume's physiology is so overt and so complete that one point he claims "all

²⁰⁷ John Cook, *An Anatomical and Mechanical Essay on the Whole Animal Oeconomy; in One View. Wherein is shewn the most Wonderfull Conduct of Nature in all the Phaenomena attending Human Bodies*, Vol.1 (London, 1730), iii.

²⁰⁸ *Ibid.*, 120-136.

²⁰⁹ *Ibid.*, 140.

²¹⁰ *Ibid.*, 132.

²¹¹ *Ibid.*, [n.p.]

²¹² Broughton's contrary position that Hume "completely disavows any ambition to explain our sense-impressions" is inexplicable and in direct defiance of textual evidence. See "Impressions and Ideas," *The Blackwell Guide to Hume's Treatise*, ed. Saul Traiger (Malden: Blackwell Publishing, 2006), 43. The second book of the *Treatise*

our perceptions are dependent on our organs, and the disposition of our nerves and animal spirits” (1.4.2.45).

VII. Paradigms of Reflection: Neurological Constructions within Philosophical Models

The basic cognitive process of reflection is specifically physiological. It would be counterproductive to deny reflection as a description of thinking in Hume, which it clearly is, but several issues problematize the easy assumptions surrounding what reflection means. To clarify Hume’s reflection it becomes necessary to understand its historical origin as a term, the basic schematics of its operation, and its role in processing impressions and in creating ideas. Although the *OED* credits Locke with the origin of the term (8c), the distinction lies elsewhere. Reflection originates in Willis’ theorization of the automatic reflex, which is part of the involuntary nervous system. Although the physiological context of reflection is not a strong presence in philosophy, Willis’ innovation is common knowledge within the history of the neurosciences.²¹³ Willis’

is specifically a physiological study that argues for a revolutionary precept: the passions ought to and do guide cognition. Broughton (who happens to be representative of the anti-physical position set against Hume) echoes a sentiment Peter Jones agrees with and also observes in J. H. Burton (1846): “Long ago, Burton (*Life and Correspondence*, I.94) remarked that Hume’s work is surprisingly ‘free from exploded opinions in the physical sciences,’ apart from a few references to ‘animal spirits.’” Peter Jones, *Hume’s Sentiments: Their Ciceronian and French Context* (Edinburgh: Edinburgh University Press, 1982), 18; J.H. Burton, *Life and Correspondence of David Hume*, 2 vols. (Edinburgh, 1846), 94. As for the scarcity of animal spirits in the *Treatise*, there are over thirty references in the first book alone.

²¹³ “He [Willis] argued that involuntary “permanent” movements like circulation and respiration were initiated and controlled by the cerebellum and the brainstem. In contrast, other involuntary movements with an adaptive (learned) component, like

Anatomy of the Brain posits reflex as physiological movement from the involuntary into the voluntary nervous system.²¹⁴ Willis' physiology of reflection has already been investigated in detail, but to quickly refamiliarize: when an impression, or nervous stimulus, moves into the medullary fibers then the common sensory makes an automatic response to the impression, but when an impression moves into the cortical fibres, then the imagination (from the middle of brain, the corpus callosum, to exterior hemispheres) responds with the other faculties to perform a voluntary cognitive act in response to the impression:

For indeed the sensible impression striking the streaked or chambered bodies, oftentimes, the Brain being in now wise affected, causes the Local Motions to be retorted with a reciprocal tendency of the animal Spirits ... but more often, after that the sensible Species, having past from the common Sensory to the *callous Body*, hath stirred up the Imagination, the Spirits, reflecting from thence, and flowing back towards the nervous Appendix, raise up the Appetite and Local Motions, the Executors and Performers of the same: And sometimes a certain sensible impression, being carried beyond the callous Body, and striking against the *Cortex* of the Brain it self, raises up other species lying hid there, and so induces

locomotion, were controlled by the striatum." François Clarac, "Some Historical Reflections on the Neural Control of Locomotion," *Brain Research Reviews* 57, no. 1 (2008): 14). Although the striatum does control the learned automatic response in *The Souls of Brutes*, Willis' *Anatomy of the Brain* argues that the imagination (located in corpus callosum and the hemispheres) controls and then habitualizes involuntary movements. Wallace reads Willis' reflex theory as a precursor to Newton, but he still credits Willis to be responsible for the "first expression to several fundamental pillars of modern neuroscience, including a molecular model of the nerve impulse and a theory of reflex action." Wes Wallace, "The Vibrating Nerve Impulse in Newton, Willis, and Gassendi: First Steps in a Mechanical Theory of Communication," *Brain and Cognition* 51, no. 1 (2003): 68. See also: Meyer, Alfred and Raymond Hierons. "Thomas Willis's Concepts of Neurophysiology: Part I," *Medical History* 9, no. 1 (1965): 10; Sheehan, Donald. "Discovery of the Automatic Nervous System." *AMA Archives of Neurology and Psychiatry* 35, no. 3 (1936): 1081-1115.

²¹⁴ Thomas Willis, *The Anatomy of the Brain*, 1664, trans. S. Pordage, 1681 ed. (Tuckahoe: USV Pharmaceutical, 1971), 64-67.

Memory with Phantasie, also often Appetite and Local Motion associates.²¹⁵

If an impression of sensation is forceful enough to move beyond the involuntary system of the streaked bodies where an automatic reflex would otherwise direct the stimulus, then the impression moves into the region of the callous body. Animals with lesser cerebral (gyri) complexity have a callous body that co-functions with the oblong marrow, whereas, animals with more complexity co-ordinate brain activity primarily from the corpus callosum and the hemispheres. The impression effects the faculty of imagination, the memory, or both – as integrative faculties they share the same cortex, but they have faculty allocations that correspond to either rational or sensitive acts depending upon their brain complexity (i.e., capacity for complex ideas).²¹⁶ The faculties in response to the impression *reflect* or *respond* to the stimulus by providing new direction for the animal spirits (all ideas materially consist and sensibly move *as* animal spirits). Reflection redirects the animal spirits, since the imagination responds, as a reflection, to the voluntary actions of motion or cognition. Reflection is part of the process of cognition, but it occurs only in response to sensible impressions and if the impressions

²¹⁵ Willis' later and more cited of *The Soul of Brutes* places the imagination and the memory in the corpus striata, but in the *Anatomy* imagination belongs to both the corpus callosum and the hemispheres where the memory resides. Although Willis may exclude reference to the higher brain function in this passage, he later is explicit that the brain is necessary for the nervous functions of the common sensory. The brain is part of the nervous system. See Thomas Willis, *The Anatomy of the Brain*, 1664, trans. S. Pordage, 1681 ed. (Tuckahoe: USV Pharmaceutical, 1971), 58. Comparison with the *Souls of Brutes* emphasizes the sensitive soul rather than rational soul, as it is, under Willis' own admission, the principle purpose of that work. See Thomas Willis, *Two Discourses concerning the Souls of Brutes, which is that of the Vital and Sensitive of Man*, 1672, trans. S. Pordage, 1683 ed. (Gainesville: Scholars' Facsimiles, 1971), 59.

²¹⁶ Thomas Willis, *The Anatomy of the Brain*, 1664, trans. S. Pordage, 1681 ed. (Tuckahoe: USV Pharmaceutical, 1971), 75.

move beyond the automatic involuntary reflex into the central part of the brain where the imagination resides.

It is a mistake to credit Locke with the origin of reflex memory, as it ignores Willis' precedence of the physiological reflex. Following Willis, Locke argues for the conversion of sensible impressions into ideas. Ideas originate with sensation:

For since there appear not to be any *Ideas* in the Mind, before the Senses have conveyed any in, I conceive that *Ideas* in the Understanding, are coeval with *Sensations*; which is such an Impression or Motion, made in some part of the Body, as produces some Perception in the Understanding. (*Essay* 2.1.23.26-30)

Locke does not speak in the anatomical context of Willis' faculties. He shifts his inquiry away from the explicit physiological paradigm of reflexion and focuses upon the acquisition of ideas. For Locke, sensation and understanding are coeval and co-temporal. Locke states explicitly that sensation *is* the idea. Although not overtly physiology, it conforms to a Willisian standard of impressions determining the lucidity of the animal spirits (as ideas).

Locke's *reflex* act of cognition reinvigorates stored memories that stimulate the voluntary faculty to react. He divides this reflex act into two distinct modes of thinking: "Thus the first Capacity of Humane Intellect, is, That the mind is fitted to receive the Impressions made on it; either, through the *Senses*, by outward objects; or by its own Operations, when it *reflects* on them" (*Essay* 2.1.24.6-9). Sensible impressions create ideas;²¹⁷ an impression is the sensation that the mind first receives and, in turn, stores as a

²¹⁷ Bradley C. Lega, "An Essay Concerning Human Understanding: How the *Cerebri Anatome* of Thomas Willis Influenced John Locke," *Neurosurgery* 58, no. 3 (2006): 573.

memory. After its storage, it becomes possible to have a voluntary *reflection* on the stored content of memory. This reflection is a retrieval of ideas *in memory*. In fact, reflection is the first critical step “towards the discovery of anything” (*Essay* 2.1.24.10). Cognition, as reflex, is not strictly a voluntary act. The “*Understanding* is merely passive” (*Essay* 2.1.25.1) because it cannot escape the foundation of the impression that gives the idea to the faculty; “it stirs not one jot beyond those *Ideas*, which *Sense* or *Reflection*, have offered for its Contemplation” (*Essay* 2.1.24.16-7). Locke develops a philosophical model of memory and understanding out of Willis’ physiological reflexes and cognitive reactions to involuntary impressions. Sensible impressions are inseparable from ideas – memory, as a causal order of succession, is strictly a theoretical model that extends from the reflex capacity to form memories as revived impressions. For Locke, reflection is never simply voluntary, however, for cognitive act of control over the sensations from impressions and the content from memories are passive.

In the modern sense of the act, Hume’s reflection is often synonymous with the contemplation of an idea. This is indisputable. However, how he understands the act of cognition, how ideas form in relation to impressions, and how his model of reflection generates and frames thinking is “notoriously obscure.”²¹⁸ Impressions are either from sensation or from reflection (1.1.2.1.). Sensible impressions are first sensations of pleasure or pain, and then after the “impression ceases” it remains as a copy, “and this we call an idea” (1.1.2.1.). Following Locke to a large but not an exact degree, Hume’s ideas of pleasure and pain are secondary responses to the original impression. These emotive

²¹⁸ Christine M. Korsgaard, *The Constitution of Agency: Essays on Practical Reason and Moral Psychology* (Oxford: Oxford University Press, 2008), 266.

feelings generate “new impressions of desire ... which may properly be called impressions of reflection, because derived from it” (1.1.2.1.) Despite scholarly declarations to the contrary, Hume’s reflection derives from impressions of original sensation: “the impressions of reflection are only antecedent to their correspondent ideas; but posterior to those of sensation, and deriv’d from them” (1.1.2.1.).

In one of the most abused lines from the *Treatise*, and in opposition to Hume’s work as a whole, Hume’s claim to leave sensation to the “anatomists and natural philosophers” (1.1.2.1.) is only a partial quotation. In its full context, he does not denounce sensation. He only says it “shall not at present be enter’d upon” (1.1.2.1). Hume’s intention is to reverse traditional philosophical methods: sensation makes reason, not the reverse. For Hume, pleasure and pain motivate cognitive reflection as a reaction. Reflection is only possible after the formation of an idea; the acts of imagination are initially little more than physiological responses. Sensation is an original impression that “without any antecedent perception arise in the soul, from the constitution of the body, from the animal spirits, or from the application of objects to the external organs” (2.1.1.1). Hume traces the origin of reflection to the passions, and finds the constitution of the passions occurs because of the formation of the self (2.1.3.2). The formation of the self is a natural response to sensation, arising from the indirect passions of pride and humility (2.1.1.4). It is not strictly speaking innate, since it is a reactionary formation to the immediate passions of pain and pleasure. In contrast to Hume’s construction of identity, as an extension of custom, that obfuscates succession and establishes the sentimental belief of permanence, the construction of the self is a “primary impulse”

(2.3.1.2). In book one, identity forms from the denial of temporal succession. The theory of the self, from book two, although also illusory, relies on the secondary sensations of pride and humility. Hume defines the original passions as moral (the context, incidentally, for his moral inquiry): “By direct passions I understand such as arise immediately from good or evil, from pain or pleasure” (2.1.1.4). Good or evil *is* pleasure or pain, respectively. Morality becomes explicitly a theory of sensations. The direct passions occur from sensible impressions of sensation. Original impressions are coeval with the sensation of pleasure and pain. These direct passions produce a response, an indirect passion of either pride or humility that corresponds with pain or pleasure. The indirect passions have one object: the self, “or the succession of related ideas and impressions, of which we have an intimate memory and consciousness” (2.1.1.2). The self is a consequence of pleasure and pain, and despite the frequent declamations to the contrary, “’tis impossible it can be their cause” (2.2.1.3), but the self also, strangely, has for its object pride and humility. Pride and humility are “plainly *natural*” but “not *original*” (2.3.1.5). Not to be confused with *identity*, pride and humility are circumstantial consequences of “caprice,” and occur as responses to the original sensations of pleasure or pain. Along with the original or direct passions, the self is also “determin’d by an original and natural instinct” (2.1.5.3). These two principles appear to contradict the formation of the other, since the natural constitution of the self occurs through the advent of indirect passions, but the indirect passions need the self to affirm the sensation. Hume finds that “the true system” requires both the self, as an indirect passion, and the original

sensations of pleasure and pain. Both must mutually reinforce each other as a physiological reflex between impressions and cognitive reactions (a Willisian principle).

For Hume, sensation creates the self, but the natural inclination that generates from within the *self* must have the instinctive potential capacity to receive a sensation: “That cause, which excites the passion, is related to the object, which nature has attributed to the passion; the sensation, which the cause separately produces, is related to the sensation of the passion: From this double relation of ideas and impressions, the passion is deriv’d” (2.1.5.5). In one of Hume’s more infamous conceptual models, the cause is the original sensation that excites the secondary passions of humility and pride. The object of the self, which is the expression of pride or humility, needs the original sensation for its formation, but the emergent principle of the self continually develops in response to its experiences of pride and humility. Far from contradicting Hume’s earlier critique (in book one) against the *absolute* belief in identity, the reciprocal reflections of the self to sensation perpetuate the probabilistic and relative premise (i.e., the empirical constitution of the self continues to develop through successive sensations). This double relation between idea and impression is a physiological model of reflection. At the simplest level of expression: sensation inspires the formation of the self. The self copies the sensible impression as an idea. The pleasure or pain is the original passion, but cognition’s reflex response to the impression creates a natural belief of either pride or humility. As a response to the original impression, pride and humility anticipate subsequent impressions as either painful or pleasurable. It is from the basis of anticipatory induction, from the reactive or habitual experiences of pride and humility,

that memory can become an impression lively enough (1.3.4.1) to fabricate the self.²¹⁹ Causal repetitions can perpetuate the belief in identity, but the self, at its original precondition as a capacity for ideas, needs sensations and ideas for mutual reciprocation in order for a causal co-relationship to constitute the parameters for pride and for humility. The self's experience of pleasure and pain is necessary for the formation of the indirect passions that gradually constitute the self. The construction of the self is a mutually reciprocating *reflection* between the impression of sensation and the development of the self: "the one idea is easily converted into its cor-relative; and the one impression into that, which resembles and corresponds to it" (2.1.5.5). In order to form and to perpetuate the identity of the self, there is the need for an empirical recognition between the impression and the idea. That people are often mistaken, subject to faulty reasoning, influenced by strange beliefs, and can only define occurrences with probabilistic certainties, are all consequences that occur only after the formation of *self*-extends its fabrication of identity unto temporality; however, one first needs an identity to be later mistaken of it. It should not go unobserved that Hume shifts from *identity* in book one to the *self* in book two. This marks a change from identity's perpetuation of causal beliefs (suggesting atemporality), initially discussed in the first book, into a construction of the *self* that forms from a "primary constitution of the mind, ... and of whose actions

²¹⁹ The faculties deal not just with ideas but also impressions. The reciprocating reflection process between the passions and the self challenges the conventional separation of the cognition and the passions. Although Capaldi is one of Hume's more sympathetic readers, he observes such a strict delineation. See Nicholas Capaldi, "Hume's Theory of the Passions," *Hume: A Re-Evaluation*, ed. Donald W. Livingston and James T. King (New York: Fordham University Press, 1976), 184.

and sentiments each of us is intimately conscious” (2.1.5.3). The variant terminology is a critical distinction between identity-as-experience and self-as-sensation.

The self *is* a physiological construction. It is a consequence of the brain: “we must suppose, that nature has given to the organs of the human mind, a certain disposition fitted to produce a peculiar impression or emotion, which we call *pride*: To this emotion she has assign’d a certain idea, *viz.* that of *self*, which it never fails to produce” (2.1.5.6). The basic physiological order of the brain has a disposition towards a type of impression, or a natural tendency to feel the particular emotion of pride. This sentiment, or indirect passion, is the experience of pride. From the physiological capacity to feel pride, the habitual constancy of this pleasurable experience develops into the idea of self. Although this suggests a number of curious directions, I wish only to draw attention to the conflation of the indirect passion of pride and the idea-copy of this *passion* – the *self*, proper. This describes, however, only half of the reflex act, since the idea of self, as a sentiment of pride,²²⁰ requires an original impression. The formation of self from the reflexive reciprocity between sensation and idea parallels several of Hume’s other physiological processes:

The nerves of the nose and palate are so dispos’d, as in certain circumstances to convey such peculiar sensations to the mind: The sensations of lust and hunger always produce in us the idea of those peculiar objects, which are suitable to each appetite. These two circumstances are united in pride. (2.1.5.7)

²²⁰ Sentiment is a difficult and often inexact term in eighteenth-century culture. I follow Hume’s usage of defining sentiment in relation to the passions and emotions. As a mode of probable reasoning, sentiment is “species of sensation. ’Tis not solely in poetry and music, we must follow our taste and sentiment, but likewise in philosophy” (1.3.8.12).

The brain's reflex act mediating impressions and ideas are similar to other physiological nervous interrelations. Hume places the natural formation of the self to be no different from cranial nerves conveying their sensible impressions to the brain. Those sensations of lust and hunger produce a want for a particular object, which the rational (rather than instinctive) appetite – responsive to the volitions of imagination in Willis' *Anatomy* – seeks to satisfy. It is this complex of mutually contingent, but reinforcing relationships between sensation and idea, from which the self, as an expression of pride, finds form.

The reflection between sensation and concept and the consequent secondary passions of pride and humility that constitute the self collectively reiterate other reciprocal cognitive dynamics. The imagination unites disparate ideas and multiple impressions. The *gentle force* (1.1.4.1) perpetuates these imaginative syntheses, presenting a dynamic model of physiological compulsion and a synthetic construction of unity among ideas. The two-fold theory of *reflection* is a constant presence for all imaginative processes. As a reflex act, it correlates impressions into ideas. Belief and passion are subject to the same reflex process. They perpetuate vivacity and pleasure in order to invigorate the imagination's associations: "As belief is almost absolutely requisite to the exciting our passions, so the passions in their turn are very favourable to belief" (1.3.10.4). In a reciprocal reflex act, the assent to an idea occurs from belief's sentimental attachment for it. The vivacity of belief augments the imagination's synthesis of ideas. The greater vivacity allows for a heightened attention in imagination, and this increases the conjunction between ideas. The habitual conjunctions, in turn, augment the degree of force for that particular series of impressions or ideas: "belief not only gives

vigour to the imagination, but that a vigorous and strong imagination is of all talents the most proper to procure belief and authority” (1.3.10.8). Hume’s discussion of this cognitive reflex from book one is a precursor to the reciprocation of sensation and its reflection as an idea in the second book. Belief and imagination’s co-reliance follows the paradigmatic reflex function before the foundational reflex explanation of the self and the secondary passions. Hume’s purpose in this, I believe, was to provide a rational reflex process before he gave what would be the more contested physiological model (in an attempt to avoid undue censure from traditional metaphysicians, which he nonetheless received). Belief-as-sentiment and imagination-as-idea represent a parallel application to the reciprocal reflections necessary for all cognitive associations, since the process of imagination itself, along with belief and every indirect passion, are natural consequences of a physiological reflex to think and to feel. Associative relations, social affinities from custom, and sentimental responses to sympathy, all follow a reflexive model: “All these relations, when united together, convey the impression or consciousness of our own person to the idea of the sentiments or passions of other, and makes us conceive them in the strongest and most lively manner” (2.1.11.6). The liveliness of sympathy is an extension of an individual’s imagination that fabricates the unity. Sympathy is simply a species of the imagination’s model of association, originating, as a physiological term, from the pathetic correlations within the nervous system. The hypothesis of imagination and memory’s co-reliance formulates the faculties as sharing a spectrum of “common degrees” (1.1.1.1), which provides a foundation for the interplay between memory and imagination within the context of a physiological model of reflection.

Through a reformulation of cognitive processes, Hume's faculties challenge the conventional boundaries ascribed to associative conjunctions. Although there is a constant reciprocity in all sensory and faculty processes, the combination of an impression and idea produces the expectation of particular habits (i.e., the fabrication of permanence defining an otherwise only probable relation). Depending upon the regularity of the impressions or the circumstances of culture, the creation of habit, as an outgrowth of belief's vivacity, may augment or decrease the capacity to concentrate. The force and vivacity from belief may cause memory to "degenerate to such a degree, as to be taken for an idea of the imagination" (1.3.5.5), or the reverse may also occur. The degree of *assent* to a conjunction determines the viability of the idea. If there are shifts in attention, the vivacity alters memory's retention of circumstances or the unity of an association.

These vivacious states have a physiological foundation. The brain predicates the formation of pride through the response to original impressions of sensation. This physiological reflex response is "the nature of *relation*," and "'tis the very principle, which gives rise to pride, and bestows motion on those organs, which being naturally dispos'd to produce that affection, require only a first impulse or beginning to their action" (2.1.5.8). Hume's introduction of relation into the initial formation of the *self* relies upon the natural constitutional ability to associate. The associative structure of the imagination is part of the compulsion to cognate, but the drive behind imagination is the desire to feel pride, which is an active engagement to experience pleasure. Cognition strives to form ideas, and its purpose, as an experiential indirect passion, is to feel pride:

“nature has bestow’d a kind of attraction on certain impressions and ideas, by which one of them, upon its appearance, naturally introduces its correlative” (2.1.5.10). This hypothesis, Hume interjects, is an application of belief’s conditioning of vivacity in order for attention to have any interest in the causal process and induce further associations: “the present impression gives a vivacity to the fancy, and the relation conveys this vivacity, by an easy transition, to the related idea. Without the present impression, the attention is not fix’d, nor the spirits excited” (2.1.5.11). The reflective correlation between impressions and ideas follows the same pattern that all associations between ideas do. An impression of sensation produces an intense vivacity, and the act of association bridges one idea into another relation. The present intensity of an original impression focuses the attention, and the animal spirits, as the physiological expression of cognition, account for the lucidity and the subsequent clarity in the attention (i.e., animal spirits are the chemical and physiological substrate of an attentive mode of cognition).

The reflex act is the physiological basis for the imagination’s propensity to continually form associations. It coordinates the conjunction between ideas and impressions. Imagination, however, by its very nature alters ideas. Associations build ideas *and* then they disperse. The degradation of association is a principle of attention’s temporal constancy. Integral to imagination, belief is a disposition to *attend*. Attention depends on the constitution of the animal spirits (i.e., the Willisian principle of cognition):

As the spirits are more or less elevated, and the attention more or less fix’d, the action will always have more or less vigour and vivacity. [...] Now ’tis evident the continuance of the disposition depends entirely on the objects, about which the mind is employ’d; and that any new object

naturally gives a new direction to the spirits, and changes the disposition; as on the contrary, when the mind fixes constantly on the same object, or passes easily and insensibly along related objects, the disposition has a much longer duration. (1.3.8.2)

Hume parallels the elevation of spirits, the degree of attention, and the vivacity of an impression to be co-expressions of the same process. The physiological movement of spirits determines and *is* expressly the strength of the impression, which, in turn, is also the duration of a lively attention. As a physiological disposition, the continuation of attention depends upon the natural affect an impression has upon directing or redirecting animal spirits. The sensible impression of an object moderates the affective intensity and the degree of assent that attention directs upon an object, a concept, or an associative relation.

The associative process breaks down, ideas shift, or attention degrades when the intensity of belief's sentimental prejudices no longer adequately influence the direction of imagination's associative engagements. The subject of engagement under attention will then begin to shift and alter. The imagination cannot continually focus, and, depending on one's constitution, the attention can become overtly "forc'd and unnatural" (1.4.1.10). Causal trains and contingent probabilities "influence the imagination" and eventually lessen the vivacity of the thought (1.4.1.10). When objects are not extremely pronounced, as they are in sensible impressions, the imagination will not "feel a sensation" to the same degree (1.4.1.10). If the imagination is perpetually under the strain to associate, then "the attention is on the stretch: "The posture of the mind is uneasy; and the spirits being diverted from their natural course, are not govern'd in their movements by the same laws, at least not to the same degree, as when they flow in their usual channel" (1.4.1.10).

Attentions strain and associations break when the mind moves in unfamiliar trains of imagination. Without recourse to the habitual patterns of association, the animal spirits move into unfamiliar pathways. In this state, the imagination does not achieve the same easy relations between impressions and ideas. To forsake habitual ideas for new associative trains causes the imagination to strain beyond its normal capacity of association. If act of association becomes too laborious, there is a lack of attention. New thoughts are often difficult. Irregular pathways contort the inclination to attend to, or proceed upon, an association. It is easier for the mind to pass from one familiar idea to another (1.4.7.8), to slip into the habitual and customary beliefs, a state in which the imagination “perceives not the change without a strict attention” (1.4.7.8). Habitual customs are easier for continued attentions. Although the continuation of one causal train of attention is a natural habit, the imagination must be sceptical of these causal beliefs in order to pursue alternative possibilities and develop new probabilities.

Hume’s scepticism challenges those casual associations that arise from customary beliefs, but a lack of attention also naturally disrupts the associative patterns (2.1.4.3). The imagination is subject to associative limitations: “’Tis impossible for the mind to fix itself steadily upon one idea for any considerable time; nor can it by its utmost efforts ever arrive at such a constancy” (2.1.4.2). The degree of attention is an extension of the imagination’s capacity to form various types of ideas. The principles of association unite ideas while breaking old associative habits. The associative act does not rely on a simple cause and effect theory of causality (not surprising, given Hume’s refutation). The imagination can follow multiple directions and can survey a multiple set of ideas

simultaneously. The sensations of pleasure generate pride, and through the pleasure of pride, the self and other habitual patterns develop. These pleasures find an affinity with the self, creating the appearance of regularity. The imagination assents to these habitual conjunctions out of a *natural* necessity. The assumptions of habit conflate impressions and ideas. These conjunctions can become affirmed with such vehemence that the assumptions of constant relations deride the potential for new associations and obstruct the discovery of alternative conjunctions. The same pattern-building processes that constitute the self, out of a natural necessity to understand pleasure and pain, can obstruct the advent of new critical inquiry. However, even the assumptions of constant conjunctions dissolve from a lack of attention to the idea.

The process of disassociation suggests an alternative reading to the traditional affirmation of Hume's scepticism. His scepticism seeks to intrude upon the illusions of identity, to confront the prejudices of belief, and to pursue knowledge within the limitations of probability. He challenges the belief in "continu'd and uninterrupted existence" of perceptions (1.4.2.50). Instead of the near ubiquitous standard of Hume's mitigated scepticism, I suggest an alternative framework for the dispositions of attention and inattention.²²¹ In a discussion of the virtues and the dangers of philosophy, Hume

²²¹ In a recent coincidence, John Sutton recently published, March 2010, a very comparable account in March of 2010. See John Sutton, "Carelessness and Inattention: Mind-Wandering and the Physiology of Fantasy from Locke to Hume," *The Body as Object and Instrument of Knowledge: Embodied Empiricism in Early Modern Science*, Ed. Charles T. Wolfe and Ofer Gal (Dordrecht: Springer, 2010), 243-264. A portion of his work corresponds to inattentive mind wandering in a conference he gave during 2009 in Australia and one I also gave during 2009 at the CSECS in Ottawa. Although there are considerable differences between our two works, the similarity over a state of cognitive attention instead of scepticism are worth considering in light of new physiological

suggests that cognition's associative patterns break from the intensity of philosophy's sceptical trains. These inattentive breaks in imagination's associations save Hume from the universal scepticism that occurs from all acts of philosophizing.²²² Associations premise dispositions: "As long as our attention is bent upon the subject, the philosophical and study'd principle may prevail; but the moment we relax our thoughts, nature will display herself, and draw us back to our former opinion" (1.4.2.51). Associative attentions can only last for so long. Philosophical attentions have limits. The moment attentions break and imagination ceases its associative processes, the mind relaxes and the natural opinions of belief that affirm the *self* return. These states of *philosophical attention* – not Hume's retreat from them – lead to the melancholy sickness of scepticism. Hume is not proposing a re-articulation of mitigated scepticism (which would hardly be a new direction for philosophy); rather, he suggests a break from all philosophy to counter the consequences of over-study brought about by his scientific-scepticism. His scientific probabilities are a means to question the regularities of nature that are inherited (uncritically) through cultural beliefs, but this methodology comes at a cost and can cause much mental strain.²²³ Luckily, there is within the imagination a natural provision to rest

research on Hume that suggests a common eighteenth-century undercurrent to cognitive states of attention. It may also help correct Hume's characterization as a sceptic.

²²² Although the conclusions I propose vary from previous interpretations of carelessness, two works were instrumental in developing the theoretical contrasts of my position: Henry A. Allison, "Hume's Philosophical Insouciance: A Reading of *Treatise* 1.4.7," *Hume Studies* 31, no. 2 (2005); and Annette C. Baier, *A Progress of Sentiments: Reflections of Hume's Treatise* (Cambridge: Harvard University Press, 1991).

²²³ Garrett suggests that Hume's inattention is an abandonment of scepticism. He calls this the Title Principle and considers it Hume's foundation for a normative epistemology and scientific statements. Donald Garrett, *Cognition and Commitment in Hume's Philosophy* (New York: Oxford University Press, 1997), 237-41. This study,

from the associative process: “Carelessness and in-inattention alone can afford us remedy” (1.4.2.57). For Hume, associations are natural, but just as natural are the dispositions to meander intellectually in order to rest and to be able to regain focus.

however, suggests that Hume’s scepticism and probability are integral to his scientific method.

Part 3. The Origin of Careless Aesthetics

Hume's *Treatise* as the Missing Link in Scottish Aesthetics

The cognitive theories of the *Anatomy* initiate an alternative set of parameters for the *Treatise*. Although largely unrecognized, his intercommunicative system on the nervous system and the reflex act of the imagination contributes to the formation of British materialistic philosophy. The faculty processes in the *Treatise* use the rudiments of Willis' physiology as an edifice in order to systematize cognitive functions and substantiate a philosophical foundation for the associations. In a broad sense, the *Treatise* is an attempt to build a philosophy out of a physiological foundation.

With the aid of Willis' *Anatomy*, this study's reading of the *Treatise* frames a now obscure Scottish line of aesthetics. Although Hume receives recognition for his selective influence upon Scottish philosophy, the variable methodology in this study suggests that the *Treatise*'s impact upon eighteenth-century aesthetic history is more substantial. Among the pre-eminent aesthetic authors of the eighteenth century, Alexander Gerard and Lord Kames follow Hume's model for association. Contemporary approaches to aesthetics have worked but a little on this historical line. This eighteenth-century aesthetic paradigm is, however, still recoverable through the historical reconstruction of Willis' neurology and Hume's psychophysiology.

I. The Transition from Philosophy to Aesthetics: Hume to Gerard and Kames

Hume's influence upon Alexander Gerard may seem at first counterintuitive.

Gerard was a member of the Philosophical Society of Aberdeen that collectively sought to challenge Hume's irreligious principles and sceptical conclusions. Its notable members included Thomas Reid, George Campbell, David Skene, John Stewart, Robert Trail, John Gregory, and James Beattie.²²⁴ According to Elizabeth Larsen, they were the intellectual contingent of a Scottish tradition that "wrote in response" to Hume.²²⁵ Gerard's early aesthetics works find themselves outside of the Society's usual antithesis to Hume. This is in part a matter of historical timing. Gerard did not join the society until after the first edition of his *Essay on Taste* had already been written and won the award for best essay 1756 by the Edinburgh Society. Hume, who was one of the judges, helped edit and secure publication of the *Essay* in 1759.²²⁶ In the *Essay*, Gerard references the *Treatise* (Gerard 1756, 21, i), and builds upon its associative framework for the foundation of taste. Not until the 3rd edition of 1780 would Gerard's *An Essay on Taste* incorporate a context to challenge Hume's perceived sceptical probabilities. The unfavourable literary and

²²⁴ Henry Home Kames, *An Enquiry Concerning the Principles of Morals: A Critical Edition*, ed. Tom L. Beauchamp, Introduction by Tom L. Beauchamp (Oxford: Oxford University Press, 1998), lxxv.

²²⁵ Elizabeth Larsen, "Re-Inventing Invention: Alexander Gerard and 'An Essay on Genius,'" *Rhetorica* 11.2 (1993): 184.

²²⁶ James Fieser, ed., "Alexander Gerard," *Early Responses to Hume's Essays, Moral, Political, and Literary*, 2 vols., 2nd rev. ed., (Bristol: Thoemmes Press, 2005), 365; Jonathan Friday, ed., "Alexander Gerard," *Art and Enlightenment: Scottish Aesthetics in the Eighteenth Century* (Exeter: Imprint Academic, 2004), 103-115. Hume became Joint Secretary of the Edinburgh Society in 1752, ed. Sidney Lee, "Adam Smith," *Dictionary of National Biography*, Vol. LIII (London, 1898), 5.

political climate that gradually mounted against Hume between 1760 and 1780 pushed Gerard to distinguish himself from Hume's irreligious and skeptical arguments. Gerard's aesthetics had to adapt to the moral orthodoxy, which, presumably, arose from the philosophical antagonisms that Hume faced from the Scottish Common Sense School. This adaptation appears to have begun early. Alongside Thomas Reid's more adamant denouncements from *An Inquiry into the Human Mind on the Principles of Common Sense* against Hume over the exclusion of external objects,²²⁷ and one of primary reasons Hume is regarded as a skeptic, Gerard, shortly after the publication of *An Essay on Taste*, delivered a sermon on 8 April 1760 that contended with Hume's "Of National Characters" (1748). Gerard's sermon was published under *The Influence of the Pastoral Office on the Character Examined; with a View, Especially, to Mr. Hume's Representation of the Spirit of that Office*, and was vehement response to Hume's characterization of the clergy and, more generally, Hume's moral theory.²²⁸ If historical circumstances were enough to divest Gerard's *Essay* with any interaction with Hume's *Treatise*, then there should be little affinity between them. This would be reasonable, but, at the simple level of ideas, Gerard's *An Essay on Taste* fundamentally builds upon the imaginative faculty of association from *A Treatise of Human Nature*.

²²⁷ See the Hume-Reid correspondence and "Thomas Reid: an Abstract for the *Inquiry* (undated)," both of which were prior to the 1764 publication of *An Inquiry into the Human Mind on the Principles of Common Sense*. Thomas Reid, *An Enquiry Concerning the Principles of Morals: A Critical Edition*, ed. Tom L. Beauchamp (Oxford: Oxford University Press, 1998), 257-258.

²²⁸ Henry Home Kames, *An Enquiry Concerning the Principles of Morals: A Critical Edition*, ed. Tom L. Beauchamp, Introduction by Tom L. Beauchamp (Oxford: Oxford University Press, 1998), lxxi.

Gerard's *An Essay on Taste* (1756) and *An Essay on Genius* (1774), as well as Lord Kames' *Elements of Criticism* (1762) all substantively use the *Treatise's* method of association, imagination over judgment, belief and vivacity, passion and habit, and associative attentions. Far from a rejection of Hume's philosophy, the criticism of Gerard and Kames incorporate the central tenets of Hume's philosophy and realign it to their own aesthetic ends. This redirection of method allows their aesthetic theories to serve as a corrective to Hume's less exact applications and skeptical (because simply probable) conclusions. Despite their different philosophical directions, Kames and Hume shared an intimate correspondence in their early philosophical careers. Kames' relationship with Hume was even more familiar than Hume's relationship with Gerard. Kames and Hume's family estates were but ten miles apart in Berwickshire.²²⁹ Their first extant correspondence dates from 1737, and details Hume's apprehension with the draft of the *Treatise* and Kames' request to read it,²³⁰ but it is uncertain if this request met with success.²³¹ Hume trusted Kames enough to let him "read the narrative on miracles that he [later] suppressed from the *Treatise*,"²³² demonstrating Kames' probable influence upon Hume's selection of content. After Hume's failure and humiliation to secure an

²²⁹ Arthur E. McGuinness, "Hume and Kames: The Burdens of Friendship," *Studies in Scottish Literature* 6 (1969): 4.

²³⁰ Ian Ross argues against Arthur McGuinness (1969), and suggests that despite Kames "prevailing on Francis Hutcheson to read the first two books of the *Treatise* in 1739 ... Kames' own reading of the *Treatise* with some understanding should be pushed forward to 1741, at least." Ian Ross, "Hume and Kames – A Rejoinder," *Studies in Scottish Literature* 6 (1969): 186-87.

²³¹ M.A. Stewart, "Hume's Intellectual Development, 1711-1752," *Impressions of Hume*, ed. Marina Frasca-Spada and P.J.E. Kail (Oxford: Oxford University Press, 2005), 41.

²³² *Ibid.*, 42; David Hume, *The Letters of David Hume*, ed. J.Y.T. Greig, vol. 1 (Oxford: Clarendon Press, 1932), i. 24.

appointment as a Professor of Ethics and Pneumatical Philosophy at Edinburgh, Kames came to his aid for which Hume was thankful.²³³ Some scholars believe their relationship shifted from friendship into cordial respect after Hume's 1748 publication of "On Miracles."²³⁴ In 1751, Lord Kames published anonymously *Essays on the Principles of Morality and Natural Religion*, and two other editions in 1758 and 1779, each more adamantly against Hume than the last. These editions were increasingly elaborate attacks upon Hume's apparent "moral and epistemological scepticism, and his artificial account of justice,"²³⁵ as well as Hume's "account of belief, the causal relation and the idea of power, and the self and personal identity."²³⁶ Under this rubric of antithetical objections, Kames would offer an orthodox rejection of Hume's philosophy, and the Scottish Common Sense School took many of their principal objections to Hume from Kames.²³⁷ In the biographical history of Kames, and the evidence that his ideas sharply diverged from the applications of Hume's philosophy, it is tempting to follow Boswell's

²³³ Arthur E. McGuinness, "Hume and Kames: The Burdens of Friendship," *Studies in Scottish Literature* 6 (1969): 11. See also, Roger L. Emerson, "The 'Affair' at Edinburgh and the 'Project' at Glasgow: the Politics of Hume's Attempts to Become a Professor," *Hume and Hume's Connexions*, ed. M.A. Stewart and John P. Wright (University Park: Pennsylvania State University Press, 1995), 1-22.

²³⁴ Henry Home Kames, *An Enquiry Concerning the Principles of Morals: A Critical Edition*, ed. Tom L. Beauchamp, Introduction by Tom L. Beauchamp (Oxford: Oxford University Press, 1998), lxxiii.

²³⁵ *Ibid.*, lxxiii.

²³⁶ *Ibid.*, lxxiii, footnote 189. For the correspondence between Hume and Kames' respective versions of personal identity during 1747, see Albert Tsunga, "David Hume and Lord Kames on Personal Identity," *Journal of the History of Ideas* 22.3 (1961): 398-403.

²³⁷ Henry Home Kames, *Essays on the Principles of Morality and Natural Religion*, 1779, *Several Essays Added Concerning the Proof of a Deity*, ed. Mary Catherine Moran, Introduction by Mary Catherine Moran, 3rd ed. (Indianapolis: Liberty Fund, 2005), [n.p.]. <http://oll.libertyfund.org/title/1352/66196/>.

questionable characterization of Kames' attitude towards Hume in 1778: "He said [sic.] he Never did think as David does in that *Treatise*."²³⁸ The biographical evidence, however, is largely too circumstantial to ascertain definitive intellectual influences. All that can be said with certainty is that their relationship, once intimate, began to cool. At the level of philosophical beliefs, Kames seems to have more an affinity with the orthodox or Whig position of Common Sense than with Hume's more radical propensities. Their respective philosophical methodologies, however, suggests Kames was deeply indebted to Hume's associative framework. Kames took Hume's central premises from the *Treatise* into a different philosophical application, but this does not negate the textual evidence through which he builds the *Elements of Criticism* (1762). For both Gerard and Kames, and despite their divergent proclivities, their aesthetic works, I hold, are extrapolations and applications of Hume's core arguments on the imagination and the passions.

Part of the challenge in reconsidering Gerard and Kames, once two foundational thinkers of the eighteenth century, is that they have now become virtually lost in contemporary scholarly analyses – and their theories will continue to seem irrelevant unless their aesthetics are read through Hume. Hume develops a thinking process that is foreign to most contemporary standards of philosophy and historical reviews. He emphasizes: pleasure as the physiological framework for cognition; the tentative shifts in conceptualizing; and the prejudicial biases inherited from culture that calls for a scientific methodology to critique the too readily held beliefs of philosophy. Hume looks to a

²³⁸ James Boswell, *Private Papers of James Boswell from Malahide Castle*, ed. G. Scott and F.A. Pottle, Vol. XV (New York: priv. ptd, 1931), 274.

thinking process of connections, of associations – the imaginative foundation to cognition as the essential means to form and reform ideas. His faculty of imagination, as the primary foundation of association, is distinct from alternative eighteenth-century contexts that use reason or judgment for their primary faculty. The alternative Hume, as I present him, explains variable inquiries that seek not truth, but, instead, pose a direction of investigation and provide a means to question the construction of eighteenth-century imagination and sensation. I have tried to situate Hume's imagination as a coherent faculty within the unified structure of the *Treatise* in order to suggest a new line of probability that links habit and careless inattention as essential components to the association process; this Humean premise establishes the context for later aesthetic systems to emerge within the associative tradition of philosophy. Gerard and Kames do not otherwise have an adequate foundation to base their theoretical formulations, because a critical approach without the foundation of Hume's *Treatise* lacks insight into their integrated aesthetic methodology deriving from Hume's philosophy. *But* Hume's *Treatise* is also a problem, since its overall meaning has undergone fragmentation from its initial unity, and, without the reconstitution of the imagination, and without the literal constitution of physiology defining the passions, his arguments have become models of nominal and unsystematic ventures promoting skepticism. Hume *may* be a skeptic, but he is *not only* a skeptic. To use a modern analogy and, perhaps, court an anachronism, Hume's skepticism follows perpetual and conditional hypotheses in which modern science also finds its ideal.

That Gerard and Kames must follow Hume could seem a quixotic, if not arbitrary, claim. The *Treatise* is not usually read for its theoretical application to aesthetics, but the whole line of psycho-physiology thought, as an anti-idealist, anti-analytic, and anti-rationalist philosophy, has been abandoned as an archaism of critical history. Once prominent, even dominant, the aesthetics of psychophysiology were a crucial formation in the aesthetic tradition. Just as Willis' neurological physiology came to influence Hume's passions and the faculty of imagination, so too does Hume's philosophy influence Gerard and Kames' associative sentiments in art. From neurology to philosophy to aesthetics, I seek a neglected interrelationship within eighteenth-century scholarship; and this work may help explain, in a broader context, the considerable animosity between the material imaginative-faculty school and the immaterial judgment-faculty theorists during the eighteenth century. In the absence of recognizing Humean degrees of separation between Alexander Gerard and James Beattie,²³⁹ the trajectory of psycho-physiology must find rearticulation through the eighteenth-century context that seamlessly united neurology, philosophy, and aesthetics. These shared disciplines presuppose associative principles and reject the mind's immateriality – nor do they conflate the imagination with fancy. This physiological philosophy of the body must be resurrected from history.

This study identifies the central arguments from the material tradition and explains the processes in each disciplinary application for the first time. Hume's

²³⁹ A reading proposed by Paul Guyer. See Paul Guyer, "Humean Critics, Imaginative Fluency, and Emotional Responsiveness: A Follow-Up to Stephanie Ross," *British Journal of Aesthetics* 48, no. 4 (2008): 445-456; Also see: Stephanie Ross, "Humean Critics: Real or Ideal?" *British Journal of Aesthetics* 48, no. 1 (2008): 20-28.

philosophy, as I have presented it, finds reiteration through the sublimation of its tenets in Gerard and Kames' criticism surrounding narrative and metaphoric relations. I believe the principal reason for the *Treatise's* lack of recognition within aesthetics are two-fold. First, Hume's primary arguments have become obscure and realigned to fit into an alternative history of philosophy that divides physiology from cognition and changes the definition of imagination as a faculty coeval with fancy. Second, the aesthetics of Gerard and Kames have become obscure, and, even, purposefully abandoned in twentieth-century's revisionist approaches to eighteenth-century aesthetic history. It is curious that the foundation of English literature as a discipline rejected physiology and sought, simultaneously, to restructure imagination through German philosophy and Coleridge. If Gerard and Kames' "canonical fortunes have diverged sharply" since the eighteenth century, as Maureen Harkin suggests,²⁴⁰ then critical propensities are the reason.

At the origin of English as a discipline in academia, the discipline insulated its position, as a necessity, against other disciplines. T.S. Eliot, I.A. Richards, and R.F. Leavis hold much of the blame in refashioning and condemning previous intellectual history (primarily, psychological and physiological) that stood outside their own agendas, but most of the subsequent critical disregard for the entire tradition of associative psychophysiology comes from the influence of M.H. Abrams' *The Mirror and the Lamp*. What he set aside in intellectual history in order to place Coleridge at the forefront of English imagination may come as a surprise: for Abrams, the definitive statements of imagination

²⁴⁰ Maureen Harkin, "Theorizing Popular Practice in Eighteenth-Century Aesthetics: Lord Kames and Alexander Gerard," *Aesthetic Subjects*, ed. Pamela R. Matthews and David McWhirter (Minnesota: University of Minnesota Press, 2003), 175.

and taste in eighteenth century are those of Gerard: “By 1774, Alexander Gerard had published his *Essay on Genius*, which remained for a century the most comprehensive and detailed study devoted specifically to the psychology of the inventive process.”²⁴¹ Gerard, and his predecessors Hume and Hobbes (going back to Francis Bacon) may have set the standard for the eighteenth- and nineteenth-century aesthetics,²⁴² but this was, for Abrams, a false standard. Abrams’ position causes these associative thinkers to become inconsequential in comparison to Coleridge’s Germanic criticism: “Coleridge’s theory of the mind, like that of cotemporary German philosophers, was, as he insisted, revolutionary.”²⁴³ Wherever else this debate may lead, the origins of English criticism’s rejection of intellectual traditions other than Coleridge should give alarm. Abrams’ judgment on the viability of the historical positions in the past becomes a preference for one line of metaphysics that determined what thinking should be and should focus upon (i.e., Germanic influences upon Coleridge established English’s disciplinary framework), and this is what English criticism largely became both canonically and institutionally.

Alternative eighteenth-century critics like Gerard and Kames were disparaged as substandard, and, after Abrams, no longer worth serious consideration. The foundation of English criticism, as anti-physiology criticism, became a Germanic-Coleridgean methodology through which language, imagery, and metaphor ought to be studied. At the foundation of English as a discipline, the incorporation of Coleridge’s revisionist project for an organic, vitalist imagination *ex nihilo* (linking it to Galenic, Biblical, and Kantian

²⁴¹ M.H. Abrams, *The Mirror and the Lamp: Romantic Theory and the Critical Tradition* (New York: W.W. Norton Company, 1953), 157.

²⁴² *Ibid.*, 156-57.

²⁴³ *Ibid.*, 158.

models), became the historical precedent to reestablish an English tradition away from the associative aesthetics so prominent during the eighteenth century. In order to explain why the preceding version of Hume and his influence upon Gerard and Kames might seem out of place, I wish to add another of Abram's rejections of physiology – one that still resonates in contemporary criticism and reaffirms the contention that the eighteenth-century Scottish fields of aesthetics and philosophy were in sharp division: "The Scottish philosopher, Dugald Stewart, followed the initiative of Thomas Reid in objecting to the tendency, from Locke through Hume, to disintegrate all of mental content into mere sequences of sensations and ideas, and in stressing instead the concept of mental faculties and 'powers.'"²⁴⁴ In this context, Reid and Stewart are predecessors to Coleridge (Abrams also links them to William Wordsworth), and they, as an antithetical Scottish line to Gerard and Kames, reject sensations and associations for those mental faculties with more curtailed functions that presuppose (by simplification) a more complete command of content. Where the association faculties involve the tentative and changing stimuli from empirical sensations, mental *powers* (as a category) have unchanging abstractions and incorruptible faculties in order to correct the messy business of empirical observations.

The empirical aesthetics of association needs to recuperate the eighteenth-century theoretical frameworks for sensation and association in order to approach and find meaning in the now largely critically foreign contexts of Kames and Gerard. They have been significantly overlooked in historical retrospectives, but together they wrote two of

²⁴⁴ Ibid., 161.

the most seminal and popular works of eighteenth-century criticism. Although Kames was gently ridiculed by Samuel Johnson and Oliver Goldsmith (illustrating the divide between English and Scottish criticism),²⁴⁵ the *Elements of Criticism* went through “eight authorized British editions along between 1762 and 1805,” and it “has a special status among midcentury [sic.] [eighteenth-century] works on aesthetics as one of the most widely circulated treatises of its day;”²⁴⁶ it also went through thirty-two North American editions.²⁴⁷ Gerard’s *An Essay on Taste* won the gold medal for best essay on taste from The Edinburgh Society in 1756 (reposted from 1755) (Gerard 1759, i) and went through three editions, the first in 1759, then 1764 and 1780, with an American edition in 1804. The 1780 edition included a fourth part, “Of the Standard of Taste.” *An Essay on Genius* had only one publication of 1774, but its length and detail made it definitive on the subject of genius and the imagination during the eighteenth century, and it would influence G.H. Lewes and George Eliot, among others working in the psycho-physiological tradition.

If Hume’s *Treatise* fell dead from the press, it was reborn in Gerard and Kames’ aesthetic theories, and between them an account of a physiology of the imagination can be developed away from Coleridge’s now standard version of the imagination, which

²⁴⁵ “Johnson proceeded: ‘The Scotchman has taken the right method in his *Elements of Criticism*. I do not mean that he has taught us anything; but he has told us old things in a new way.’ ... Goldsmith. ‘It is easier to write that book, than to read it.’” James Boswell, *Boswell’s Life of Johnson*, 16 October 1769, ed. John Wilson Croker (London, 1876), 205.

²⁴⁶ Maureen Harkin, “Theorizing Popular Practice in Eighteenth-Century Aesthetics: Lord Kames and Alexander Gerard,” *Aesthetic Subjects*, ed. Pamela R. Matthews and David McWhirter (Minnesota: University of Minnesota Press, 2003), 180.

²⁴⁷ Ian Simpson Ross, *Lord Kames and the Scotland of his Day* (Oxford: Clarendon Press, 1972), 290.

gained prominence only through the later critical antitheses of English as an emerging discipline during the early twentieth century. There is a problem in this characterization of history, however, for although Gerard and Kames did indeed implement the Humean philosophical model, they were careful to condemn Hume's more radical philosophical premises; they divest themselves of the more controversial arguments by re-contextualizing Hume's associative premises into more moral and philosophically orthodox traditions. Gerard's *Essay on Taste* includes, in the prefatory stages, a reference to Hutcheson (Gerard 1759, 2-3), but it actually implements Hume's model of association and standards of imagination.²⁴⁸ Gerard conforms with the more commonplace form of eighteenth-century aesthetics by including the faculties of *judgment* and *moral sense*: these two faculties were bywords for orthodox values and were significantly opposed to the materialistic line of eighteenth-century philosophy. The additional fourth part of 1780 edition did not functionally change Gerard's aesthetic methodology; it only heightened his allegiance to Common Sense. Gerard's absolute foundation for taste is a corrective effort to distance himself from Hume's *conclusions*, particularly his denial of external objects.²⁴⁹ Gerard's new aesthetic directives seek "a fixed and objective standard" for taste,²⁵⁰ and the additional section marks an aesthetic shift away from the controversial

²⁴⁸ For an alternative reading of Hutcheson's influence on Gerard, see Peter Kivy, *The Seventh Sense: Francis Hutcheson and Eighteenth-Century British Aesthetics*, 1976, 2nd rev. ed. (Oxford: Oxford University Press, 2003), 182-191.

²⁴⁹ For Hume: "All sentiment is right; because sentiment has a reference to nothing beyond itself, and is always real ... But all determinations of the understanding are not right." David Hume, "Of the Standard of Taste," 1757, *Essays: Moral, Political, and Literary*, ed. Eugene F. Miller, rev. ed., (Indianapolis: Liberty Fund, 1987), 230.

²⁵⁰ James Fieser, ed., "Alexander Gerard," *Early Responses to Hume's Essays, Moral, Political, and Literary*, 2 vols., 2nd rev. ed (Bristol: Thoemmes Press, 2005), 365.

Humean method that did not reference the external object beyond an original sensation.²⁵¹ Gerard affirms the legitimacy of the external object in order to validate perception, but perceptions and judgments are still relative.²⁵² It is Hume's associative premise of the imagination, however, that gives Gerard's *An Essay of Taste* and *An Essay on Genius* their foundation. Kames, likewise, seems to deny a critical alliance with Hume because of Kames' recourse to the divine, but religion rarely gets in the way of his *sensible* expressions. Kames may very well have believed in God, but his references to religion are not the primary impetuses within his aesthetic explanations or theoretical models that rely specifically on association and the sensitive passions. Gerard and Kames place the associative principles of the imagination within culturally sanctioned eighteenth-century moral premises. They use and assimilate Hume's imagination, while tempering the more radical material and physiological elements by including them within a conventional framework of morality and rationality.

²⁵¹ Gerard cites Hume's rejection of the external object: "Sentiment, it is said, has not, like judgment, a reference to any thing beyond itself, nor represents any quality inherent in the external object." Alexander Gerard, *An Essay on Taste: to Which is Now Added Part Fourth, Of the Standard of Taste*, 3rd ed. (Edinburgh, 1780), 212.

²⁵² *Ibid.*, 204. For Gerard, individual tastes and judgments vary widely. Following the precepts of Common Sense, the absolute standard of taste comes from the reality of the external object. The standardized object counters sentimental opinions.

II. Alexander Gerard's relation to Hume:

Imagination, the Role of Belief, and the Physiology of Taste

Following Hume's premise of belief defying causal change in order to fabricate a permanence of identity (1.4.3.3.),²⁵³ Gerard defines association as a principle that unites ideas so indivisibly they become one (Gerard 1759, 20). The affinities linking ideas generate meaning, and the associative process joining two ideas builds patterns.²⁵⁴ Gerard defines taste as "an aggregate of many" associative powers, "which, by the resemblance of their energies, and the analogy of their subjects, and causes, readily associate and combine" (Gerard 1759, 148). These three associative relations of resemblance, analogy, and cause derive from Hume's standard principles in the imagination: "The qualities, from which this association arises, and by which the mind is after this manner convey'd from one idea to another, are three, viz. RESEMBLANCE, CONTIGUITY in time or place, and CAUSE and EFFECT" (*THN* 1.1.4.1). The basic structure of associative criticism that frames Gerard's concept of taste is largely Humean in nature. The elements of association that define taste are relations found through the mental functions of Hume's *physiological* imagination. Nor does Gerard skirt the issue of physical

²⁵³ "'Tis evident, that as the ideas of the several distinct successive qualities of objects are united together by a very close relation, the mind, in looking along the succession, must be carry'd from one part of it to another by an easy transition, and will no more perceive the change, than if it contemplated the same unchangeable object."

²⁵⁴ George Dickie (1996) does not see Hume, or anyone, in Gerard's theory of associative unity: "So far as I know, the notion that ideas can coalesce is a genuinely new conception, appearing for the first time in the history of thought in Gerard's essay. George Dickie, *The Century of Taste: The Philosophical Odyssey of Taste in the Eighteenth Century* (Oxford: Oxford University Press, 1996), 32.

parameters for association in taste. He claims that “a gentle exertion of the mind” (Gerard 1759, 49) is the physiological impetus for making conceptual comparisons. This movement reiterates Hume’s *gentle force* guiding associative acts of the imagination: “This uniting principle among ideas is not to be consider’d as an inseparable connexion; for that has been already excluded from the imagination ... but we are only to regard it as a gentle force, which commonly prevails” (1.1.4.1). Gerard and Hume justify the perpetual act of association with a physiological foundation. The *gentle force* progresses associative acts, not in their content but through the compulsion to think.

Gerard calls the artistic process that constructs ideas (in a different sense from the now standard critical definition) *sublime*: “this quality is chiefly owing to our being led by the exactness of the imitation to form ideas and conceive images of sublime originals” (Gerard 1759, 22). The similarity between ideas link associations through a mimetic process, and this perpetuates meaning through the transference of affinities. Hume presents several salient principles that help clarify Gerard’s aesthetics. The basic distinction between ideas and impressions is the vivacity of belief, or the intensity distinguishing the idea from the impression (*THN* 1.3.5.7). Ideas are copies of impressions, and they are representations of the original sensations (1.3.7.5), but these representations find variation “in the degrees of force and liveliness with which they strike upon the mind” (1.1.1.1). The vivacity of an idea is an expression of force, and this is the primary and initial determinant in belief (1.3.7.5).²⁵⁵ The degree between the

²⁵⁵ “Belief does nothing but vary the manner, in which we conceive any object, it can only bestow on our ideas an additional force and vivacity. An opinion, therefore, or

sensible impression and copied idea is the vivacity or liveliness of the sensation, and this defines the extent in which belief rests in an idea. Gerard's primary distinguishing element between idea and sense is, following Hume, intensity: "Thought is a less intense energy than sense: Yet ideas, especially when lively, never fail to be contemplated with some degree of the same emotion, which attends their original *sensations*; and often yield almost equal pleasure to the reflex sense, when impressed upon the mind by skillful imitation" (Gerard 1759, 22). Building upon Hume's distinction of impressions and ideas as copies (of varying quality), ideas are, for Gerard, generally less intense copies of impressions, but, as they have the same origin, they share a similar degree of emotion:

As we can form no simple *idea*, till its correspondent *sensation* has been first perceived; so, with respect to many of our ideas, we are confined to the precise *degree*, of which we have had experience, and cannot by any means enlarge them. Our thoughts can scarce be raised to a distinct conception of higher pleasure or pain, than we have actually felt. (Gerard 1759, 116)

Gerard affirms that ideas cannot escape their sensory origin and are less intense than impressions of sense, but the degree of similarity between them marks the lively retention of an impression as an idea.

Hume's explanation on belief's erasure of causal succession in order to construct a constant identity parallels Gerard's associative proliferation of meaning that builds literary connections, since Hume requires a causal order of necessary relations to form identity and Gerard requires the perpetuation of associative relations in order to substantiate how narration gains cohesion. These constructions, however, are mere

belief may be most accurately defined, a lively idea related to or associated with a present impression" (*THN* 1.3.7.5).

fabrications of the sensible, since they erase causal differences in order to substantiate permanent identities or too cogently unify narration by denying sequential differences. The apparent constancy in causal associations creates the degree in which belief becomes invested in these associations. For Hume, belief determines the emotional vivacity that joins causal relations, which seems to justify an apparent correlation between associations, but, in Gerard's system, extrapolating sense from causality is simply an extraction of evidence from passion's directed attentions.

Gerard also follows the theoretical conflation of emotions with sensations. Emotion attends the sensation as the feeling of the sensation converts into idea-as-representation, which becomes the intelligible affect of physical experience from the initial sensation – Hume called this vivacity.²⁵⁶ For Hume, imagination can separate and build ideas (i.e., the constant conjunctions of belief) previously formed through association. If the imagination questions the associative basis for an idea, then this diminishes the degree of vivacity substantiating an idea of belief; or the inverse act can build vivacity by further substantiating the idea.²⁵⁷ In a parallel theoretical stance, Gerard provides circumstances for ideas to alter and go beyond the “precise *degree*” of

²⁵⁶ “Thus it appears, that the belief or assent, which always attends the memory and senses, is nothing but the vivacity of those perceptions they present; and that this alone distinguishes them from the imagination. To believe is in this case to feel an immediate impression of the senses, or a repetition of that impression in the memory.” (1.3.5.7)

²⁵⁷ “And as an idea of the memory, by losing its force and vivacity, may degenerate to such a degree, as to be taken for an idea of the imagination; so on the other hand an idea of the imagination may acquire such a force and vivacity, as to pass for an idea of the memory, and counterfeit its effects on the belief and judgment. This is noted in the case of liars; who by the frequent repetition of their lies, come at last to believe and remember them, as realities.” (1.3.5.6)

experience, or the Humean copy principle: habit is able to, potentially, lessen vivacity (Gerard 1759, 101);²⁵⁸ and “sentiments of taste” that “depend on association” find “custom must augment them ... by adding a new principle of union, render[ing] the connection more intimate” (Gerard 1759, 112), which affects the associative formations and increases taste’s vivacity.²⁵⁹ Custom’s propensity to “augment” (Gerard 1759, 112) imagination’s attention in these new associations causes “painful and pleasurable” intensities that build new complex ideas. This investment in the vivacity of pleasure and pain in forming associative connections has a social component in custom, yet, more prominently, the “sensibility of taste arises chiefly from the structure of our internal senses and is but indirectly and remotely connected with the soundness or improvement of judgment” (Gerard 1759, 113). Taste is a sensibility circuitously responsive to the more rational considerations of judgment, but taste is primarily a feature of sensory sensibilities that are united in the *internal reflex sense* of the imagination.

²⁵⁸ For habit lessening sensations, see Joseph Butler: “Thoughts, by often passing through the mind, are felt less sensibly.” *The Analogy of Religion to the Constitution and Course of Nature*, 1736, (London: The Religious Tract Society, [n.d.]), 91. See also John P. Wright, “Butler and Hume on Habit and Moral Character,” *Hume and Hume’s Connexions*, ed. M.A. Stewart and John P. Wright (University Park: Pennsylvania State University Press, 1995), 105-118.

²⁵⁹ A point on which, Gerard and Hume’s “Of the Standard of Taste” find congruence: “The finer touches pass unnoticed and disregarded. Where he is not aided by practice, his verdict is attended with confusion and hesitation.” David Hume, “Of the Standard of Taste,” 1757, *Essays: Moral, Political, and Literary*, ed. Eugene F. Miller, rev. ed. (Indianapolis: Liberty Fund, 1987), 241.

III. Distinguishing the Faculties: Judgment and Imagination in the Eighteenth Century

Gerard diminishes the role of judgment and this counters several contemporary objections that predominantly use the faculty of judgment as the preeminent means to define and to control rationality. There is a historical division between Gerard's framework of the senses and the critical censures of sense in favour of judgment. George Dickie and Elizabeth Larson promote the latter with post-Kantian readings of Gerard. Dickie and Larson separate judgment from the emotions, but use it for understanding the passions, the senses, and sensible impressions. In current critical practices of philosophy, judgment is the foundation of reason, and, subsequently, it marks out the teleological logic in sensations (i.e., thought precedes and guides sensation).

Alternatively, Gerard's eighteenth-century paradigm of association uses sensations to determine taste and other minor rational acts like judgment. Larson's reading of Gerard, however, defies the prominent status of the imagination in eighteenth-century theories of taste. She exchanges imagination with judgment, and claims judgment is "a separate power of the mind."²⁶⁰ Such a position would align Gerard with philosophical articulations that divided the faculties into separate functions but retained an immaterial and indivisible mind for their unity (i.e., the position of Mayne, Beattie, and Reid). Gerard has conditionally rejected the division of the faculties: "It must be owned that the vulgar division of our faculties are generally superficial and inaccurate" (Gerard 1759, 159). In an example on the formation of harmony, Gerard shows the

²⁶⁰ Elizabeth Larsen, "Re-inventing Invention: Alexander Gerard and 'An Essay on Genius,'" *Rhetorica* 11, no. 2 (1993): 191.

associative basis of the imagination to be fundamentally interdependent: “Sense, memory, and imagination, are thus conjunctively employed, in exhibiting to the interior organ a succession of sound” (Gerard, 1759, 62). From these contexts, Larson’s claim that judgment makes “useful” connections²⁶¹ – and not the imagination – arises from conflating imagination with *phantasy* (i.e., *fancy* deriving from a post-Coleridgean content). Gerard’s textual evidence notwithstanding, Larson reduces the imagination to a simple faculty process of “arranging” and augments the role of judgment as the faculty to qualify taste (Gerard 1759, 191). Gerard’s *An Essay on Taste*, in point of fact, establishes taste as an expression of “human nature” that occurs “either from the general laws of *sensation*, or from certain operations of the *imagination*. Taste therefore, though itself a species of sensation, is, in respect of its principles, justly reduced to imagination” (Gerard 1759, 160). As a cultivated principle of artistic determination, taste, surprising, is not a subspecies of judgment. Instead, taste derives from sensation and imagination – both of which are physiological expressions, since the “internal sense” of the imagination moderates all sensations through a physiological reflex. Gerard’s qualification of faculty interrelations positions imagination over judgment, and diminishes the role of the latter in the cognitive and creative processes. In Gerard’s context, however, the faculties are not strictly separate, as this would deride the imagination’s ability to situate and connect all associative content. Cognitive acts rely primarily on associative connections of the imagination.

²⁶¹ Ibid., 191.

Judgment occurs *after* the reception of sensible impressions *and* the associative processes of the imagination. Although Gerard's judgment brings a capacity for qualifying conceptual relations, he argues that too pronounced a faculty of judgment is detrimental to good taste:

But taste often prevails where genius is wanting; they may judge, who cannot themselves perform. The operations, that depend on the imagination, may be vigorous enough to form a high relish, though it be destitute of that brightness and extension, which is necessary for a comprehensive genius. ... And soundness and strength of judgment may be possessed without considerable genius; but must always, if joined with any degree of the internal senses, produce acuteness and justness of taste. (Gerard 1759, 179)

Taste may be possible through judgment as a mode of assessment, but it will never partake of genius' *invention*, "which consists in an extensive comprehensiveness of imagination, in a readiness of associating the remotest ideas, that are in any way related" (Gerard 1759, 173). The operations of judgment are not separate faculty functions; they must *still rely* on the imagination in order for taste to feel artistic appreciation. In an earlier passage on the role of judgment and the internal senses of the imagination (Gerard 1759, 96), George Dickie complains that Gerard's concept of judgment must be wrong. His criticism oscillates between rejection and revision: "he [Gerard] should say that both acuteness of the internal senses and accuracy of judgment are necessary conditions to 'determine justly.'"²⁶² Dickie does not consider the historical context of Gerard's *An Essay on Taste*; he disengages from a philosophical exegetical analysis in order to judge Gerard's use of *imagination* as a conceptual failure. In another obfuscating principle,

²⁶² George Dickie, *The Century of Taste: The Philosophical Odyssey of Taste in the Eighteenth Century* (Oxford: Oxford University Press, 1996), 49.

Gerard gives precedence to sensation before cognition;²⁶³ on this point, Dickie situates cognition within an antithetical philosophical model: “One must have a perception of or an understanding of an object of taste before one can be pleased or displeased by it; judgment is a necessary condition for taste.”²⁶⁴ Cognition before sensation is not part of eighteenth-century aesthetic physiological models that position imagination as an amalgamation and consequence of sensation.

In *An Essay on Genius*, Gerard distinguishes imagination from judgment, diminishing the latter’s authority: judgment’s “business is, to perceive the connexion or force of the proofs, after they are discovered and arranged; and from the whole train of them to infer a just conclusion” (Gerard 1774, 35). For Gerard, judgment is a subsidiary act of cognition; it is an act of recognition that does not substantively make concepts, which, in this sense, follows Hume’s *belief* that neither adds to the content nor alters the connection. Where Hume’s vivacious-beliefs accent concepts by mediating their intensity in memory, Gerard’s judgment only participates in the recognition of intellectual material. It may alter the emphasis of the concept, but judgment cannot change the complexity of the idea:

It implies, not genius, but mere capacity; and is daily accomplished by multitudes who are not able to make any original discovery in the sciences. Indeed, without this, no invention in science can be *completed*

²⁶³ “As fancy has an indirect dependence both on sense and memory, from which it receives the first elements of all its conceptions, so when it exerts itself in the way of genius, it has immediate connexion with judgment; which must constantly attend it, and correct and regulate its suggestions” (Gerard 1774, 37). Again, Gerard’s judgment replicates Hume’s belief as a quality of assent.

²⁶⁴ George Dickie, *The Century of Taste: The Philosophical Odyssey of Taste in the Eighteenth Century* (Oxford: Oxford University Press, 1996), 49.

[sic.]; but without an imagination capable of finding and ordering the proofs, no invention could be even *begun*. (Gerard 1774, 35)

The early history of the faculty of imagination is something very different from twenty-first-century paradigms. The historical role of the imagination in the eighteenth-century psycho-physiological tradition of aesthetics and philosophy seeks out, arranges, and defines the constraints of intellectual relationships and conceptual proofs. The imagination finds and builds the idea, whereas reason or judgment, in Gerard's model, ascertains the degree of connection among ideas: "A person may be able to perceive, with the greatest ease and certainty, the connexion and force of proofs which are presented to him in due order, who could not have contrived or arranged these proofs. He may possess reason in perfection, and yet be totally destitute of invention, originality, and genius" (Gerard 1774, 36). Judgment can appreciate the force that joins ideas together, but it can neither arrange nor connect any ideas in the way the imagination can create new and original connections: "genius of every kind derives its immediate origin from the imagination" (Gerard 1774, 36). But if a thought borders on the extravagant, in reveries where judgment is lacking, such invention is mere fancy (Gerard 1774, 36).²⁶⁵ Gerard follows eighteenth-century faculty distinctions for imagination and fancy. Genius creates viable ideas out of pure acts of fancy by combining factual ideas and sensory impressions:

As fancy has an indirect dependence both on sense and memory, from which it receives the first elements of all its conceptions, so when it exerts itself in the way of genius, it has immediate connexion with judgment;

²⁶⁵ Reveries are not transcendent moments; rather they are ideas of imagination without strict reference to empirical facts.

which must constantly attend it, and correct and regulate its suggestions.
(Gerard 1774, 37)

From its origin as an unsubstantiated idea, imagination requires the physiological tributary of sense and the contextual apparatus of memory in order to build an empirically grounded idea. Judgment *attends* ideas not to modify their connections but, if necessary, to moderate their veracity in terms of accuracy.²⁶⁶

IV. Degrees of Attention: The Vivacity of Belief as an Extension of Custom

If there is a correlation between Hume's theory of belief and Gerard's faculty of judgment, as I am suggesting, it is that judgment augments or diminishes the importance of connections between ideas by modifying their vivacity. Just as belief alters the vivacity of ideas in Hume, judgment cannot change an idea of fancy, but it can contribute to the investment in or *attention* upon the concept. The degree of attention to an idea is a product of custom: "Objects impress us more or less, according to the degree of *attention*, which we bestow upon them. Custom enables us to apply our minds more vigorously to objects, than we could at first" (Gerard 1759, 111). Custom moderates the intensity of ideas through the propensities and directives of habit; this allows ideas that receive direct address to become more familiar, allowing the train of ideas to neither meander nor habitually lose their connective pathways. Where repetition may decrease the intensity of

²⁶⁶ The peculiar linguistic functions of Gerard's aesthetic model (i.e., *attend*, fancy as imagination, and judgment as belief) are explicit derivatives of Hume: "Thus it appears, that the belief or assent, which always attends the memory and senses, is nothing but the vivacity of those perceptions they present; and that this alone distinguishes them from the imagination" (1.1.5.8).

a response to a similar sensation over time, habitual acts of custom can improve the aesthetic act of taste.

Taste undergoes diminishment or augmentation because of custom's influence (Gerard 1759, 110). For Hume, custom is the social foundation for individual belief that develops out of sentimental and uncritical prejudices.²⁶⁷ Hume's conflation of belief with sentiment establishes the conceptual framework for Gerard's concept of liveliness in the development of taste, since taste works through habit to gradually refine critical capacities. Hume's belief, in contrast, may provide taste with a structural formation (i.e., in its contribution to habits), but belief leads away from the pursuit of probabilistic inquiry through its affirmation of causal certainties. In the *Treatise*, belief and imagination reinforce each other through vivacity and associate repetitions.²⁶⁸ Their interaction augments the causal connection. If *belief* is the negative result of custom, *taste* is custom's positive consequence.²⁶⁹ Taste is "a faculty of a derivative kind" (Gerard 1759, 110), and it emerges into clarity and perfectibility through habit. Taste is a refinement of habit that finds its origin in the physiological reflex of imagination's response to sensation. This unrecognized origin to the historical foundation of taste

²⁶⁷ "Now as we call every thing CUSTOM, which proceeds from a past repetition, without any new reasoning or conclusion, we may establish it as a certain truth, that all belief, which follows upon any present impression, is deriv'd solely from that origin." (*THN* 1.3.8.10)

²⁶⁸ "Belief not only gives vigour to the imagination, but that a vigorous and strong imagination is of all talents the most proper to procure belief and authority" (1.3.10.8)

²⁶⁹ For Hume, the habit of comparison improves taste by revealing the vagrancies or excellencies between works of art. David Hume, "Of the Standard of Taste," 1757, *Essays: Moral, Political, and Literary*, rev. ed., ed. Eugene F. Miller (Indianapolis: Liberty Fund, 1987), 238. Taste must distinguish itself from the prejudices of custom to form unbiased aesthetic determinations: "Where he lies under the influence of prejudice, all his natural sentiments are perverted" (*Ibid.*, 241).

provides the mechanism and the rationale for eighteenth-century aestheticians' placement of taste as an activity brought about by incremental acquisition and a betterment of one's initial, often uncultivated (because too overtly passionate) reactions to external – or literary – impressions.

Taste is derivative of the *internal sense*:

Taste consists chiefly in the improvement of those principles, which are commonly called *the powers of imagination*, and are considered by modern philosophers as *internal* or *reflex senses* (a) [sic], supplying us with finer and more delicate perceptions, than any which can be properly referred to our external organs. (Gerard 1759, 1-2)²⁷⁰

The imagination unifies the external senses as a sensory complex and amalgamates sensible impressions. Taste contributes to imagination's synthesis of pleasurable and painful sensations (Gerard 1759, 3). Taste is functionally synonymous with the imagination, but, as a specialized sub-process, it serves to refine sensory stimuli. Taste helps reproduce the liveliness of a sensation for the internal sense after the original impression: "ideas, especially when lively, never fail to be contemplated with some degree of the same emotion which attends their original sensations; and often yield almost equal pleasure to the reflex senses, when impressed upon the mind by a skillful imitation" (Gerard 1759, 22). Gerard establishes the faculty of imagination on Hume's principle that ideas mimetically reiterate as fainter copies from the original sensible impressions (1.1.1.1). The force of the impression determines the intensity of the idea. Those ideas that have greater impressions are more memorable. In the context of art,

²⁷⁰ The first footnote (a) references Francis Hutcheson's reflex sense as a temporal moment of reflection, but Gerard does not limit reflection to a temporal recasting of content; he specifically uses Hume's paradigm of the "double impulse" to explain the reflexive interplay between sensation and cognition.

associations are more dramatic if the force of the “imitation” strives for complete accuracy. Imitation does not begin as an idea. Taste reflects upon the mimetic impression originating from the pleasure or pain that resonates because of the representation. There is a difference between a rational aesthetic reaction and Gerard’s sensorium of taste. For Gerard, the associative acts of taste can only find a foundation through pleasure and pain. These sensations, the basis for the passions, are conjunctive necessities in the formation of all ideas.

Taste is a reciprocal act between the internal senses and the passions: “delicacy of passion must be united with vigorous internal senses, in order to give taste its just extent” (Gerard 1759, 89). Taste needs both the passions and the imagination to examine the quality of ideas and to make aesthetic distinctions. Taste emerges from a habitual engagement that learns to tender crude original sensations into complex ideas: “When an object is presented to any of our senses, the mind conforms it self to its nature and appearance, feels an emotion, and is put in a frame suitable and analogous; of which we have a perception by consciousness or reflection” (Gerard 1759, 164-65). This physiology of taste is structurally similar to Hume’s notorious double reception of ideas. A sensible impression affects the external senses, and the imagination responds to this impression by imitating the force of the sensation. Emotion causes a reflex in cognition to respond with an idea.²⁷¹ This particular reaction to sensation depends upon the pleasure or pain in the impression:

²⁷¹ Hume’s reflex of taste from “Of the Standard of Taste” emphasizes the initial sensory confusion from objects that need adjudication from contextual experiences: “When objects of any kind are first presented to the eye or imagination, the sentiment,

Thus difficulty produces a consciousness of a grateful exertion of energy: facility of an even and regular flow of spirits: excellence, perfection, or sublimity, begets an enlargement of mind and conscious pride; deficiency [sic] or imperfection, a depression of soul, and painful humility. This adapting of the mind to its present object is the *immediate* cause of many of the pleasures and pains of taste; and, by its *consequences*, it augments or diminishes many others. (Gerard 1759, 165)

The regular flow of animal spirits produces a sublime enlargement and the critic feels pride from a participatory involvement with the artistic work of excellence. If the work is difficult, or lacking in clarity, there is pain in the humility of grasping for those connective associations that are, or ought to be, the objects of taste's discernment. The mind's adaptation to and natural propensity for engaging with the immediate cause occurs through pleasure and pain, and these associative sensations in taste determine the ideational trains that imagination can follow. As a historical marker, Gerard's configuration of the passions to define imaginative processes in terms of *pride* and *humility* places him in the tradition of Hume and Hobbes, who both use these indirect passions to describe the consequences of pain and pleasure in relation to the self.

VI. Gerard's Moral Sense of Taste

Reflection is a voluntary reaction to physiology's involuntary transmission of sensible impressions to the faculties. Taste as a *reflex act* tempers the initial inundation of emotion first generated by a work of art: "A critic must not only *feel*, but possess that

which attends them, is obscure and confused.... But allow him to acquire experience in those objects, his feeling becomes more exact and nice." David Hume, "Of the Standard of Taste," 1757, *Essays: Moral, Political, and Literary*, rev. ed., ed. Eugene F. Miller (Indianapolis: Liberty Fund, 1987), 237.

accuracy of discernment, which enables a person to *reflect* upon his feelings with distinctness, and to explain them to others” (Gerard 1759, 181). Taste is a reflex act in imagination – it is a sensitive response of cognition to the sensation. It is not reducible to a rational form of imagination, since, as part of an established process of aesthetic discernment, its correlative principles include the passions in the formation of ideas (Gerard 1759, 199). The co-relation between cognition and sensation reiterates schematically Hume’s *double impulse*.²⁷² Taste has a natural and a reflexive foundation in the passions. Gerard combines the reflex of taste with a Neo-Platonic (or Hutchesonian) *moral sense*, and the conflation of the morally good with virtuous pleasures and the morally bad with vulgar and vicious pains significantly distinguishes him from Hume’s more subversive morality (2.1.1.4):

Taste and the moral sense are distinct powers, yet many actions and affections are fit to gratify both. . . . A man, whose taste is uncultivated, has no motive in these cases but what arises from the moral principle. A person of improved taste, not only has this in it’s [sic] greatest strength, but is capable of additional motives derived from taste; and having thus a double impulse, must be more strongly prompted than the other. (Gerard 1759, 206-207)

Although the double impulse originates from Hume’s physiological model, Gerard introduces a moral propensity to complement the sensitive reactions at the most basic level of taste. Moral sense is initially rudimentary and only gradually improves through the incremental refinement of taste. Gerard may not actively separate the faculties (Gerard 1759, 205), but claims that “taste and the moral sense are distinct powers”

²⁷² “That cause, which excites the passion, is related to the object, which nature has attributed to the passion; the sensation, which the cause separately produces, is related to the sensation of the passion: From this double relation of ideas and impressions, the passion is deriv’d” (2.1.5.5).

(Gerard 1759, 206). This positions Gerard's faculties within a hierarchy — imagination/taste are subsumed under moral sense/rationality. Gerard synthesizes Hume's faculty of imagination to define his principles of taste, but he carefully rejects, even in the 1757 edition of *An Essay on Taste*, the overarching meaning of Hume's philosophy. For Gerard, taste may be derivative of the imagination and it may require Humean constructs of sensation and association, but the imagination's prominence finds encapsulation within eighteenth-century orthodox philosophical paradigms. Gerard's judgment and moral sense may not have an overtly dominant role as a theoretical premise, but *moral sense* provides an innate faculty in aesthetics; a passive acknowledgement to religious propensities on Gerard's part, but it is a position that Hume purposely neglects.

VII. Henry Home, Lord Kames' relation to Hume

Although Kames' *Elements of Criticism* does not copy Hume's philosophy in every respect, Kames reiterates the primary ideas of association and the lesser-pronounced physiology from Hume's *Treatise*. In his day, Kames was one of the most influential aesthetic and rhetorical British theorists of the eighteenth century, but his reputation and critical method have suffered from neglect. Of the few articles written on Kames over the last fifty years — the time during which English criticism has standardized its theoretical stance towards aesthetics — there is a propensity to read Kames through traditional forms of rhetorical analysis or through modern analytic and linguistic

philosophical positions. These recent approaches, however, are to the detriment of Kames. Bryan C. Short, to a lesser extent, and Ian Thomson, to a greater, both consider Kames through a model of tropes and modern critical presuppositions.²⁷³ They emphasize how language, not physiology, engages the emotions, but the modern method, quite simply, does not engage with the prevalent physiological, not just empirical, model of aesthetics in the eighteenth century.

To understand Kames, Gerard, and a crucial premise in eighteenth-century aesthetics, the parameters of the now foreign dynamic between physiology and imagination must be contextualized. In the few modern sources that attend to Kames, there is a propensity to link the *Elements of Criticism* to classical rhetoric,²⁷⁴ the French tradition,²⁷⁵ and the origins to College English;²⁷⁶ however, there is a general consensus to position him within the empirical tradition.²⁷⁷ Wilbur S. Howell called this the “New Rhetoric”²⁷⁸ – an aesthetics based on human nature from the empirical sciences.²⁷⁹ This

²⁷³ See: Bryan C. Short, “Figurative Language in the Scottish New Rhetoric,” *Language Sciences* 22, no. 3 (2000): 251-264; Ian Thomson, “Rhetoric and Passions, 1760-1800,” *Rhetoric Revalued: Papers from the International Society for the History of Rhetoric*, Ed. Brian Vickers (Binghamton: Center for Medieval and Early Renaissance Studies, 1982), 133-142.

²⁷⁴ Arthur E. McGuinness, *Henry Home, Lord Kames* (New York: Twayne Publishers, 1970), 93.

²⁷⁵ Bryan C. Short, “Figurative Language in the Scottish New Rhetoric,” *Language Sciences* 22, no. 3 (2000): 251.

²⁷⁶ Beth Innocenti Manolescu, “Traditions of Rhetoric, Criticism, and Argument in Kames’s *Elements of Criticism*,” *Rhetoric Review* 22.3 (2003): 225.

²⁷⁷ Arthur E. McGuinness, *Henry Home, Lord Kames* (New York: Twayne Publishers, 1970), 59; Ian Simpson Ross, *Lord Kames and the Scotland of his Day* (Oxford: Clarendon Press, 1972), 261.

²⁷⁸ Wilbur Samuel Howell, *Poetics, Rhetoric, and Logic: Studies in the Basic Disciplines of Criticism* (Ithaca: Cornell University Press, 1971), 536-76.

version of human nature has been prominently excluded from English criticism; I.A. Richards characterized Kames as an “imperceptive rationalist”²⁸⁰ and in “*The Philosophy of Rhetoric* (1936) considers *Elements* to be part of the ‘old rhetoric.’”²⁸¹ Recent versions of aesthetics and modern retrospective criticism (after Richards) suggest Kames’ *Elements* has been superceded as an archaic aesthetic endeavor, but the dismissal of Kames’ relevance preemptively excludes further inquiry into his intellectual reliance on the *Treatise* and eliminates further investigation into a major trajectory of eighteenth-century aesthetics that merged philosophy, physiology, and aesthetics. The twentieth-century rejection of Kames’ criticism could actually be a result of English’s disciplinary origins, when I.A. Richards sought to distinguish his theory of aesthetics from the dominant eighteenth- and nineteenth-century strain of empirical and physiological philosophy. As Beth Manolescu contends, the critical inattention to Kames may be a result of “disciplinary angst.”²⁸²

²⁷⁹ William C. Lehmann, *Henry Home, Lord Kames, and the Scottish Enlightenment: A Study in National Character and in the History of Ideas* (Hague: Martinus Nijhoff, 1971), 223.

²⁸⁰ Ian Simpson Ross, *Lord Kames and the Scotland of his Day* (Oxford: Clarendon Press, 1972), 276.

²⁸¹ Beth Innocenti Manolescu, “Traditions of Rhetoric, Criticism, and Argument in Kames’s *Elements of Criticism*,” *Rhetoric Review* 22, no.3 (2003): 228; I.A. Richards, *The Philosophy of Rhetoric* (London: Oxford University Press, 1936), 3. 98-109.

²⁸² Beth Innocenti Manolescu, “Traditions of Rhetoric, Criticism, and Argument in Kames’s *Elements of Criticism*,” *Rhetoric Review* 22, no.3 (2003): 226.

VIII. A Measured Influence: Hume and Kames' Theory of Association and Sensation

The *Elements of Criticism* may have different critical ends than Hume's *Treatise*: Kames' larger philosophical considerations are not irreligious (Kames 1762, 133);²⁸³ Hume's did not work in service to religion (1.4.5.34).²⁸⁴ Kames' humans are superior to animals because of their rational propensity for religion and morality (Kames 1762, 233); Hume felt animals and humans were both rational, and rejected the binary and hierarchal ordering of nature (1.3.16.1-2). Kames places the affect of fiction above historical readings (Kames 1762, 66); Hume does the opposite (1.3.7.8).²⁸⁵ Kames references both physiological *vibrations* (Kames 1762, 60, 323) and brain fibres (Kames 1762, 217) to explain brain function; Hume uses animal spirits.²⁸⁶ Kames follows Gerard by suggesting moral sense and taste are interdependent; Hume does not subscribe to an innate morality or absolute theory of beauty. Despite these differences, the *Elements* takes the *Treatise*'s associative rules for its methodology. Kames structures the aesthetic components of the *Elements* through Hume's work, but Kames' application varies through the colouring of his differences that aligns him with another cultural and critical context outside of Hume's sceptical science.

²⁸³ Arthur E. McGuinness, *Henry Home, Lord Kames* (New York: Twayne Publishers, 1970), 106.

²⁸⁴ For the centrality of irreligion within the *Treatise*, see Paul Russell, *The Riddle of Hume's Treatise: Scepticism, Naturalism, and Irreligion* (Oxford: Oxford University Press, 2008).

²⁸⁵ On Hume's use of fiction, see Marina Frasca-Spada, "Quixotic Confusions and Hume's Imagination," *Impressions of Hume*, ed. M. Frasca-Spada and P.J.E. Kail (Oxford: Clarendon Press, 2005), 171-75.

²⁸⁶ See Hume: "all our perceptions are dependent on our organs, and the disposition of our nerves and animal spirits" (1.4.2.45).

For Kames, the associative act is an unrelenting physiological sensation that defines cognition: “A man while awake is conscious of a continued train of perceptions and ideas passing in his mind. It requires no activity on his part to carry on the train: nor can he at will add any idea to the train” (Kames 1762, 21). The train of associations is cognition; it is a conscious irresistible movement in thinking, and parallels Hume’s “gentle force.” Following Hume’s three basic associative distinctions for the imagination, Kames incorporates Hume’s associative framework into a methodology that emphasizes the sensations in contrast: “Cause and effect, contiguity in time or in place, high and low, prior and posterior, resemblance, contrast, and thousand other relations, connect things together without end. Not a single thing appears solitary and altogether devoid of connection” (Kames 1762, 22). Just as it was for Hume, all ideas are comparable, contrastable, and, consequently, associatively connectable. The associative elements of contiguity, causality, and resemblance guided by a physiological compulsion, become with Kames a framework of association that looks towards relationships in context. He privileges the relative perspective of high or low and prior or posterior to situate the associative order. The *Elements* explains how to increase the degree of connectivity between associations, and it suggests how to improve the transitions between ideas in order to better unify narration.

Kames considers his project through an empirical model, charting the sensory and physical rules that join causal connections. It is not a historical process leading from a particular cause to a particular effect, but a scientific process that finds the effect and then determines the cause (Kames 1762, 25). In the tradition of logic, this *analytic* (not

synthetic) method reverses inductive causality, and allows Kames to follow the particular to theorize on the general. The conceptual movement into the general provides “a gradual dilatation or expansion of mind, like what is felt in an ascending series, which is extremely pleasing” (Kames 1762, 25). Kames’ “expansion” refers to the connectivity in associating, which gives pleasure “to the imagination (Kames 1762, 26). The feeling of building ideas, of finding connections, is the pivotal physiological sensation for Kames’ aesthetics of cognition. The “swell of the mind “ (Kames 1762, 350), the elevating joy (Kames 1762, 298), or the “mounting upward” (Kames 1762, 26) of an imaginative synthesis is the sensation of a building impulse in sublime acts (i.e., sublimity is an experience of connectivity, not the now common meaning associated with Burkean transcendence).

The imaginative act is an impulse first, cognition second: “We have daily and constant experience for our authority, that no man ever proceeds to action but by means of an antecedent desire or impulse” (Kames 1762, 37). Following the eighteenth-century empirical standard of self-observation, an impulse of desire determines subsequent action. In contradistinction to most twentieth-century schools of philosophy and recent readings of eighteenth-century empiricism, the philosophical trajectory of Hume, Gerard, and Kames place the sequence of action and cognitive reaction to come from the passions and appetites. Cognition is an affect, and appetite is the motive to reason. The impulse of desire is essential to Kames’ human nature: “It is a law in our nature, that we never act but by the impulse of desire; which in other words is saying, that passion, by the desire included in it, is what determines the will” (Kames 1762, 131). The *sensitive* is the

impulse for imaginative associations. In this context, the passions belong to the physiological tradition of sensation and impulse.

IX. The Interplay of Sensation and the Cognitive Faculties

In Kames' *Elements of Criticism*, the faculties and impulses are not separate categories as they are in the tradition of dualism. Although sensation may initiate an impulse and stimulate the associative process, physiology and cognition are interdependent: "So intimately connected are the soul and body, that every agitation in the former, produceth a visible effect upon the latter" (Kames 1762, 296). Kames introduces a theory of natural signs between physical actions and cognitive acts. At the level of physiological affect, Kames contends that there are affinities between sensible impressions and the corresponding irresistible, because automatic, reactions. Kames' theory of "natural signs" (Kames 1762, 297-300), and perhaps physiognomy in general, is a position of correspondences between sensations and associative reactions; it is a formal categorization of physiological expressions and thoughts.

Natural signs are a particular application of Kames' more general theory of instinct determining automatic impulses:

Self-preservation is a matter of too great importance to be left entirely to the conduct of reason. Nature hath acted here with her usual foresight. Fear and anger are passions that move us to act, sometimes deliberately sometimes instinctively, according to circumstances; and by operating in the latter manner, they frequently afford security when the slower operations of deliberate reason would be too late: we take nourishment commonly, not by the direction of reason, but by the impulse of hunger and thirst. (Kames 1762, 62)

The instinctive impulses can determine reactions at a purely non-voluntary level.

Instinctive propensities explain basic physiological functions, and this compulsion shows a *natural associative* relationship between hunger and nourishment, but it is also an indication of a larger relationship that unites sensation, cognition, and action:

“Considering how intimately our perceptions, passions, and actions, are mutually connected, it would be wonderful if they should have no mutual influence” (Kames 1762, 112). The passions influence “perceptions, opinions, and belief” (Kames 1762, 112), so cognition itself becomes an involuntary passion. Just as the “gentle force” of the *Treatise* and Kames’ propensity to associate are natural, the passions extensively influence voluntary actions and cognitive acts.

X. Pleasure and Sublime Attention

Although Kames is neither as critical as Hume nor as detailed as Willis, Kames takes the critical heritage of involuntary, voluntary, and instinctual or automatic associations as a scientifically probable foundation from which to understand the connective principles in narration. The instinctual and involuntary actions have their origin in painful and pleasurable sensations, which are foundational in “the nature of man, considered as sensitive being capable of pleasure and pain” (Kames 1762, 18). It is natural to act upon these sensations: “Now, the gratification of every passion must be pleasant; for nothing can be more natural, than that the accomplishment of any wish or desire should affect us with joy” (Kames 1762, 46). Whereas the satisfaction of a passion

finds pleasure, its denial causes pain; together, pain and pleasure encompass the basic parameters for sensations (Kames 1762, 34), and they are necessary to stimulate self-preservation (Kames 1762, 192). To seek out pleasures in order to satisfy basic needs is necessary for preservation, and Kames applies this natural physiological principle to narrative causality: “the vigour of a passion depends on the impression made by its cause; and a cause makes its deepest impression, when, happening to be the single interesting object, it attracts our whole attention” (Kames 1762, 84). The more vigorous the passion happens to be, the more intense the impression. A single impression creates a more intense sensation, and attention becomes heightened because of the pleasurable impression. Under these constraints, the easily associable impressions from pleasurable sensations create uniform conjunctions linking ideas because of the similarity between the associations.

Kames may understand incongruent temporal sequences from an absolute perspective, but the philosophical belief in temporal uniformity commonly defines sequential perceptions:

In a strict philosophic view, every single impression made even by the same object, is distinguishable from what have gone before, and from what succeed: neither is an emotion raised by an idea, the same with what is raised by a sight of the object. But such accuracy not being found in common apprehension, is not necessary in common language. (Kames 1762, 84)

Kames did recognize (without believing) the absolute arguments for time and memory as constants, but he counters that the *common* perception of things generally influences how ideas form unities. The denial of causal succession may be a rejection of temporal progression, but this is precisely the point of Hume’s “theory of belief” that posits belief

to uncritically associate multiple causal moments in order to form coherent identities and uniformity in time (1.4.3.3.). In an application of philosophy upon aesthetics, Kames takes Hume's *belief* of causal connectivity that defies difference as the essential feature to narrative coherence – connections appear unified because of the passionate investment in the associative conjunctions (1.3.7.5; 1.3.5.7).

If associations are possible, then thinking is pleasurable: “we are framed by nature to relish order and connection. When an object is introduced by a proper connection, we are conscious of a certain pleasure arising from that circumstance” (Kames 1762, 26). The more ideas readily connect, the more pleasurable the experience of understanding a train of perceptions, “pleasure is [in] proportion to the degree of connection” (Kames 1762, 26), which predicates the greater and more proper the arrangement joining ideas, like those in narrative sequences, the more substantial the associative pleasure. With the same import as Hume's physiological impetus driving imaginative comparisons, Kames explains associative acts to be a physiological necessity to engage with sensible objects: “nature hath providently superadded curiosity, a vigorous propensity, which never is at rest. This propensity attaches us to every new object; and incites us to compare objects” (Kames 1762, 197). Combining the language of Aristotle's *wonder* with Hume's *gentle force*, Kames' perpetual curiosity discovers lively associations to build the connectivity between associations. The liveliness in an idea corresponds to the degree of pleasure or pain from an impression:

In a word, an agreeable or disagreeable object recalled to the mind in idea, is the occasion of a pleasant or painful emotion, of the same kind with that produced when the object was present: the only difference is, that an idea being fainter than an original perception, the pleasure or pain produced by

the former, is proportionably fainter than that produced by the latter.
(Kames 1762, 35-36)

XI. Degrees of Attention: The Intensity of Impressions and Narrative Success

Kames incorporates another series of Hume's physiological principles to explain the associative capabilities of the faculty of imagination: the original impressions are painful or pleasurable and retained in the mind as ideas of memory (*THN*1.1.2.1). These ideas are fainter than the original impressions (1.1.3.4; 1.3.8.2). The strength of "original sensation" from the initial impression determines the degree of the secondary passion in the idea (2.1.1.1).²⁸⁷ Kames takes these Humean precepts and creates an applied model of physiological attention and narrative construction. He terms the state of reading to be an "ideal presence" that replicates, in reading practice, the qualities of memory formation:

I proceed to consider the idea of a thing, I never saw, raised in me by speech, by writing, or by painting. That idea, with respect to the present subject, is of the same nature with an idea of memory, being either complete or incomplete. A lively and accurate description of an important event, raises in me ideas no less distinct than if I had been originally an eye-witness: I am insensibly transformed into a spectator; and have an impression that every incident is passing in my presence. (Kames 1762, 68-69)

For Kames, fiction can function at the same level of intensity as a memory. Written narrative creates memories through accurate and lively descriptions. Extensive imagery

²⁸⁷ See Hume: "Original impressions or impressions of sensation are such as without any antecedent perception arise in the soul, from the constitution of the body, from the animal spirits, or from the application of objects to the external organs. Secondary, or reflective impressions, are such as proceed from some of these original ones, either immediately or by the interposition of its idea. Of the first kind are all the impressions of the senses, and all bodily pains and pleasures: Of the second are the passions, and other emotions resembling them." (2.1.1.1)

and clarity of expressions are easier to follow than a series of abstract theorizations:

“lively images are needed in works of art to sustain trains of ideas in the mind;”²⁸⁸ “the mind is pleased with those impressions and ideas which are liveliest or most immediate, and by those which are most intimately and easily associated.”²⁸⁹ Narration works on the same principals as sensible and original impressions contributing to the production of ideas. The properly constructed narration can be just as lively as sensory impressions, to such an extent that sensations of readership and spectatorship share comparable cognitive attentions. If there are weak associations to link narrative content, then the “slight or superficial narrative produceth but a faint and incomplete idea, of which ideal presence makes no part.”²⁹⁰ When a weak narration produces few associations, the attentive state necessary for reading does not readily occur. Lively narrations allow for an attentive engagement with the descriptive details, and extensive reflection or noticeable disruptions do not hamper the narrative process.

Kames’ aesthetics is foremost a mode of attention to the associative sequences that constitute the cohesion within narrations. Intense sensations generate a strong concentration and allow for comprehensive unity in a literary text. Sensations directly move the reader into a state of concentration: “the reader’s passions are never sensibly moved, till he be thrown into a kind of reverie; in which state, forgetting that he is reading, he conceives every incident as passing in his presence” (Kames 1762, 69).

²⁸⁸ Ian Simpson Ross, *Lord Kames and the Scotland of his Day* (Oxford: Clarendon Press, 1972), 269.

²⁸⁹ Arthur E. McGuinness, *Henry Home, Lord Kames* (New York: Twayne Publishers, 1970), 63. See also, Gordon McKenzie, *Lord Kames and Mechanist Tradition*, Vols. 13-14 (Berkeley: University of California, 1944), 105.

²⁹⁰ *Ibid.*, 69

Reading is a kind of passionate reverie that occurs from absorbed attention to narrative details. David Hartley had previously defined *reverie* in its associative context: “A reverie differs from imagination only in that the person being more attentive to his own thoughts, and less disturbed by foreign objects, more of his ideas are deducible from association and fewer from new impressions.”²⁹¹ For Kames, reverie does not literally mean that reading displaces reality (Kames 1762, 68), but he suggests that the reading presence creates connections necessary for attention to closely follow narrative content.

The ability to attend to content is a slow skill to develop; the practice of building associations belongs to the pattern-building propensity that develops out of the reiteration of emotions. Even the most lively impressions may not have a lasting affect, if the sensible impression is too much of a novelty:

Seldom is a passion raised to any height in an instant, or by a single impression ... our passions, those especially of the sympathetic kind, require a succession of impressions; and for that reason, reading and acting have greatly the advantage, by reiterating impressions without end.
(Kames 1762, 72)

The development of sympathetic responses emerges from repetitive impressions that gradually build cognitive and emotive tendencies. If a passion does not originate from a substantial idea, as Hume notes, the duration of attention is shorter, since the emotion to support the idea has not become significantly intense through repetition:

²⁹¹ David Hartley, *Observations on Man: His Frame, His Duty, and His Expectations*, 1749, 4th ed. (London, 1801), 383. For the context of Hartley’s use association, see Barbara Bowen Oberg, “David Hartley and the Association of Ideas,” *Journal of the History of Ideas* 37, no. 3 (1976): 441–454; and Robert B. Glassman and Hugh W. Buckingham, “David Hartley’s Neural Vibrations and Psychological Associations,” *Brain, Mind, and Medicine: Essays in Eighteenth-Century Neuroscience*, ed. Harry A. Whitaker, C.U.M. Smith, and Stanley Finger (New York: Springer, 2007), 177–90.

Now 'tis evident the continuance of the disposition depends entirely on the objects, about which the mind is employ'd; any new object naturally gives a new direction to the spirits, and changes the disposition; as on the contrary, when the mind fixes constantly on the same object, or passes easily and insensibly along related objects, the disposition has a much longer duration. (1.3.8.2)

Hume argues that there is an interrelationship between emotional disposition, object impression, and attentive duration. For Hume, sensible impressions influence the patterning sequences in associative responses, and Kames takes this basic principle of emotional engagement with an object to create attention as a foundation for successful narrations.

XII. Attentive Habits and Memory Degradation

In the *Elements*, the passions create associative patterns that allow for predictable reactions to stimuli: “A chain of imagined incidents linked together according to the order of nature, finds easy admittance into the mind; and a lively narrative of such incidents, occasions complete images, or in other words ideal presence” (Kames 1762, 76). The ease of associative relations corresponds to the natural order generally found in commonplace observations. If narration imitates the regularity of most circumstances, then the narration creates a lively intensity – the reader is attentive or wholly absorbed in the process of reading because emotion depends on its cause (Kames 1762, 84). The associative standards allow for narrative sequences to build meaning; there are habitual expectations between associations, and their connectivity corresponds to the anticipatory

habits linking sequences in a narration. The same associative order that connects ideas also creates their decay:

Even while a passion subsists, it seldom continues long in the same tone, but is successively vigorous and faint: the vigour of a passion depends on the impression made by its cause; and a cause makes its deepest impression, when, happening to be the single interesting object, it attracts our whole attention: its impression is slighter when our attention is divided between it and other objects; and at that time the passion is fainter in proportion. (Kames 1762, 84)

The associative train of ideas is unrelenting in its natural propensity to link ideas. The passions, however, are as transitory as their causal impressions. Ideas in an associative train begin to lose their liveliness even as they build – because they build ideas. The associative relations between ideas change and dissolve; cognition is not stable, but associations create regulatory structural patterns for intellectual acts that provide stability to concepts. A forceful impression develops a corresponding intensity of passion, and this creates the degree of continuity between sensation and the reaction; however, even those ideas that most consume the attention still dissolve – all ideas falter with time.

Attention is strongest if the ideas build upon their affinities. It is possible to address many impressions, but this scatters the attention and makes less dramatic literary associations. In the same respect, discord between ideas prevents immediate unions: “When two such passions [love and resentment] coexist in the same breast, the opposition of their aim prevents any sort of union” (Kames 1762, 102), and they will remain incongruent until finding “balance” as a *complex* idea (Kames 1762, 89) or one passion becomes dominant. The facility to attend to particular cognitive patterns, rather than others, depends upon the development of habitual associative pleasures; for example,

The good qualities of a person raise in me a pleasant emotion; which, by reiterated views, is swelled into a passion involving desire of that person's happiness: this desire, being freely indulged, works gradually a change internally, and at last produceth in me a settled habit of affection for that person, now my friend. (Kames 1762, 86)

The particulars of this example aside, Kames describes the relationship between impressions and passions as a reiteration of influence to establish long-lasting affections. A continual causal influence develops into a habit, and, if pleasant, the pleasure of familiarity reciprocates the feeling and creates a desire for the perpetuation of the impression causing the pleasure. The sensible impressions create habitual ways of feeling and thinking; the sense of pleasure only finds its continued meaning and its causal impression through repetition of an impression that slowly becomes familiar. Cognition does not rule associative relations; sensations determine connective relationships.

For Kames, cognitive ability and meaningful ideas are slowly developed. The imaginative propensities of association and sensation occur through their mutual reciprocation: "the practice of reasoning upon subjects so agreeable, tends to a habit; and a habit, strengthening the reasoning faculties, prepares the mind for entering subjects more intricate and abstract" (Kames 1762, 15). The propensity to associate is natural, so too is the progression of ideas, but the associative connections that develop out of these physiological propensities occur from habitual and pleasurable activities. The habits of the mind, the finer distinctions of associative ability, take practice and time: "Thus, by proper discipline, every person may acquire a settled habit of virtue: intercourse with men of worth, histories of generous and disinterested actions, and frequent mediation upon them, keep the sympathetic emotion in constant exercise, which by degrees introduceth a

habit” (Kames 1762, 51). Verbal discourse and reading provide not only habits of virtue but also the more general habits of cognition. The repetition of sympathy slowly creates relations that increase the degree of familiarity between the ideas until the sensation becomes a habitual idea. These habitual acts develop the associative bonds and the attentive abilities. Attention to content alters from the intensity of the impressions and the duration of attention to recall elements of narrations over periods of time:

Here we must distinguish between a train of perceptions, and a train of ideas: real objects make a strong impression, and are faithfully remembered: ideas, on the contrary, however entertaining at the time, are apt to escape a subsequent recollection. Hence it is, that in retrospection, the time that was employ'd upon real objects, appears longer than that employ'd upon ideas. (Kames 1762, 124)

Time, as a durable cognitive period, is relative.²⁹² The strength of the impressions determines the degree of attention, and the retention of ideas – the duration of attention – depends on the ability to maintain the strength and vivacity of the associations. Although ideas and impressions have a considerable degree of variation in their respective intensity, which allows sensory impressions to be more lively than ideas of the imagination, both are subject to (different rates of) decay (Kames 1762, 84).

²⁹² Hume’s influence upon Kames’ concept of duration is explicit: “I know there are some who pretend, that the idea of duration is applicable in a proper sense to objects, which are perfectly unchangeable; and this I take to be the common opinion of philosophers as well as of the vulgar. But to be convinc’d of its falsehood we need but reflect on the foregoing conclusion, that the idea of duration is always deriv’d from a succession of changeable objects, and can never be convey’d to the mind by any thing stedfast and unchangeable. For it inevitably follows from thence, that since the idea of duration cannot be deriv’d from such an object, it can never-in any propriety or exactness be apply’d to it, nor can any thing unchangeable be ever said to have duration. Ideas always represent the Objects or impressions, from which they are deriv’d, and can never without a fiction represent or be apply’d to any other” (1.2.3.11).

Kames places several caveats upon attentive engagement, idea retention, and temporal durations. The ability to attend to ideas and retain them may be transitory, even relative, but they find augmentation through habit. In all ideas, a train of associations needs vigorous impressions, but habit manipulates the rate of decay and allows involuntary reactions to become deliberate cognitive responses. Social behaviors and individual responses are gradual constructions of refined influences. Custom's repetition of influence is a perpetual alteration that precipitates the continual development of associations and actions. Although custom generally qualifies as social, Kames defines the evolution of habits as the control over physiological appetites:

The appetites that respect the preservation and propagation of the species, are formed into habit in a peculiar manner: the time as well as measure of their gratification are much under the power of custom; which by introducing a change upon the body, occasions a proportional change in the appetites. (Kames 1762, 288)

Custom works as a gradual acquisition of control over the body; custom tempers the appetites and moderates the passions through their delay. Habits control the instinctual appetites, and immediate pleasures become subject to postponement.

XIII. Instinctual Pleasures and the Social Refinement of Taste

Custom prolongs and resists the immediate gratification of pleasure. And through the prolongation of pleasure, Kames justifies the gradual refinement of taste, especially those “pleasures of the internal senses ... children have scarce any sense of these pleasures; and men very little who are in the state of nature without culture: our taste for

virtue and knowledge improves slowly; but is capable of growing stronger than any other appetite in human nature” (Kames 1762, 282-83). The more subtle pleasures of the imagination take time to acquire and to appreciate. The desire to engage in intellectual activity can supplant immediate gratifications, since the habits for imaginative pursuits modify the appetites. Instinctual first responses find control through custom, and habit allows for social refinements and intellectual pursuits. The moderating effect of habit upon the internal sense of imagination develops into a standard of taste. The impulses of immediate sensations and the instinctual inclinations to respond to them are displaced through habitual acts of cognition. Taste becomes a refined appetite that moderates the immediate sensations and prolongs the gratification of pleasure.

Taste, as a species of the internal senses, is a cognitive process that takes immediate sensible impressions and situates them in the larger context of memory. Taste functions under the general rubric of the physiological reflex sense, since it responds and redirects moderate sensations:

That nature, which gave us passions, and made them extremely beneficial when moderate, intended undoubtedly that they should be subjected to the government of reason and conscience. It is therefore against the order of nature, that passion in any case should take the lead in contradiction to reason and conscience: such a state of mind is a sort of anarchy. (Kames 1762, 324)

Political metaphors and religious ethical justifications aside, cognitive acts come to temper the natural inclinations of the passions in order to delay pleasure and to displace immediate reactionary responses. Although the passions are not strictly antithetic to cognitive acts, they are more involuntary than voluntary. The first involuntary responses of the passions can overwhelm all other actions, and for this reason cognition must

interject in order to alter involuntary behaviours. The associative process builds habits to satisfy the need for regulated responses and to develop a context for rationality; otherwise, the irrationality of the immediate passions would guide all actions and functionally replace the reflex acts of imagination. Association trains prolong the immediate passions and promote sympathetic affinities. Cognition learns to intervene in immediate reactions of pleasure by taste extending the duration of the association, and this changes the immediate involuntary pleasure into a voluntary pleasure of cognition. This gradually acquired recognition of impressions impinging upon the self is also a crucial reiterative principle because of its contribution to social dynamics.

Taste tempers the passions and contributes to socialization (Kames 1762, 15). Associative habits cultivate cognitive sympathies allowing the instinctual pains and pleasures to find new connections. In a variation of Hume's double impulse (2.1.5.5), the primary sensation produces a secondary pleasure that associatively reflects the sensation back upon the source of the original impulse, and the "secondary emotion may readily swell into a passion for the accessory object" (Kames 1762, 55). This interplay creates a social circuit between object recognition and object predilection. The cause of pleasure promotes self-love, and the individual comes to desire the cause *as* the object of pleasure. This refractive dynamic defines the catalyst for imaginative associations by linking the original sensation to self-love, and, then, to the pleasurable object-origin as a secondary pleasure. Taste is a species of this socialization process (i.e., as a form of sympathy), since it curbs selfish desires and demonstrates a gradual transfiguration of the immediate pleasures (Kames 1762, 82-83).

For Kames, the habits of taste develop through a spectrum of associative refinement, starting from the low passions that contract the mind to those of high taste that expand it; *contraction* and *expansion* are physiological expressions of the associative process in terms of direct immediate pleasures and associative-sublimity (Kames 1762, 158-59). Kames does not, however, let taste remain a physical appetite: the “appetite ... reigns chiefly among persons of a mean taste, who are ignorant of refined and elegant pleasures” (Kames 1762, 191); in fact, he believes, the higher sentiment of “taste is too deep for any cause purely corporeal” (Kames 1762, 295). Unlike Hume who rejects the transcendental because it is anti-empirical, Kames’ virtues of high taste transcend the corporeal in order to place the rational above the sensitive. In this respect, Kames has aesthetic sympathies with Alexander Gerard. Taste escapes its corporeal origins and its associative processes, so that their aesthetics does not exclusively, even if primarily, belong to the physiological associations of the imagination.

XIV. Gerard and Kames’ Physiology of Attention:

A Methodology of Associative Affects

Lord Kames and Alexander Gerard address the cognitive principles behind attention, the limits and duration of attention, and the relationship between narrative structure and potential inattentions while reading. In David Hume’s *A Treatise of Human Nature*, the associative constraints in a comparison define the duration of attention. These imaginative unities are the outcome of associations, but, through the constant

physiological drive to compare, attention can either increase focus or lose its conceptual train in careless associative drifts. The parameters of Hume's *careless* associations serve as a theoretical cornerstone for narration's successful transitions in both Lord Kames' *Elements of Criticism* and Alexander Gerard's *An Essay on Taste*. Kames and Gerard explore how narrative conjunctions can break associative trains of attention or unite in classically (anti-Burkean) sublime moments – and, during the eighteenth century, this form of sublimity had a physiological basis. They focus on the qualities that contribute to strong narrations: on the one hand, successful narrations ensure attention's continuance by linking congruent associations; on the other, incongruent associations are detrimental to attention and, therefore, disrupt the narrative sequence. Using the *Treatise's* terminology and Hume's premise for inattention's effect on association, these *inattentive* relations can subvert the habitual associations found in familiar transitions, which diminishes cognition's attention and disrupts the pattern-building processes linking ideas and uniting narrations.

XV. The *Treatise* as Predecessor: The Temporal Constraints of Attention

Gerard and Kames rely upon the *Treatise's* temporal duration as a mode of attention, imagination's rules for association, as well as a theoretical interplay between *carelessness* and *scepticism*. In the *Treatise*, the natural inclination to perpetually build associations also has a natural tendency to degrade connective relations: "Tis impossible for the mind to fix itself steadily upon one idea for any considerable time; nor can it by its

utmost efforts ever arrive at such a constancy” (2.1.4.2). The imaginative connections are subject to limitations in the duration of attention. Associations rapidly succeed each other, and the imaginative disposition necessary in linking these ideas is contingent upon the duration of the idea and its ability to form more ideas:

Now 'tis evident the continuance of the disposition [towards an idea] depends entirely on the objects, about which the mind is employ'd; and that any new object naturally gives a new direction to the spirits, and changes the disposition; as on the contrary, when the mind fixes constantly on the same object, or passes easily and insensibly along related objects, the disposition has a much longer duration. (1.3.8.2)

Associative dispositions and the duration of the attention are subject to the degree of familiarity with an object. Objects with constant affinities become regular cognitive habits in the associative process. Habit, however, can become antithetical to imagination's attempt to discover new concepts, since belief in constancy displaces the recognition of comparative differences in succession. To confront the denial of associative difference (i.e., the belief in identity) becomes the purpose of Hume's much-maligned "scepticism." The pattern-building processes that constitute the self can obstruct new critical inquiry; belief can supplant empiricism and deny the progress of science through its rejection of new associative trains. Hume's sceptical methodology questions prejudicial beliefs in order to explore alternative possibilities. Scepticism works as a critical means to determine scientific probability. It is not a method to dismiss the viability of all knowledge; rather, it targets the assumptions of absolute knowledge that belong to causal and temporal uniformity. Scepticism counters the "continu'd and uninterrupted existence" of perceptions (1.4.2.50). Hume's method of investigation does not seek the same ends that Academic Scepticism does. There is an alternative purpose

and context: the dispositions of attention and inattention guide how far a sceptical inquiry can proceed. Associative processes that determine the success of inquiry depend on the degree of attention in the sceptical engagement.

For Hume, one of the greatest dangers of philosophy comes from an overexertion of attention. An exhaustion of focus occurs when abstract associations become too intense. The continuance of an association proceeds because of the attentive disposition: “As long as our attention is bent upon the subject, the philosophical and study’d principle may prevail; but the moment we relax our thoughts, nature will display herself, and draw us back to our former opinion” (1.4.2.51). Critical attentions have temporal limits. Associative attentions can only last for so long – when the mind relaxes its focus, the attentive train is lost. As attentions rupture, the associative process loses its focus and the succession of ideas ends. After the mind relaxes, the natural opinions of belief that affirm the *self*, as a constant, return. The sceptical attentions that dissect the illusions in causal constancies may, however, lead to melancholy, stopping sceptical engagements and all other abstract philosophical inquiry. Hume has little interest in the outcomes of mitigated scepticism, except insofar as it is means, not an end, to consider causal probabilities. As a salve to the weary mind, he suggests a rest from sceptical inquiry in order to give a reprieve to the affects of philosophical over-study: “Carelessness and in-attention alone can afford us remedy” (1.4.2.57). This rest occurs naturally as a provision to complement mental exhaustion – the disposition necessary to associate becomes problematic from the inability to clearly focus. Associations are natural, but just as natural are the dispositions

to meander intellectually, and it is precisely this inattentive reprieve, the rest from study, that allows cognition to once again regain attention.

XVI. Attention's Stretch and Affect of Sublimity

Hume's *carelessness* is a theory of breaking points in associative practices. It marks the exhaustion of inquiry. This critically important, but overlooked, philosophical component in the *Treatise* informs the criticism of Alexander Gerard and Lord Kames who define strong writing through narration's conjunctive successes. From Hume's starting point, Gerard and Kames consider the effect of association extending beyond its sustainable and attentive focus – when “attention is on the stretch: The posture of the mind is uneasy; and the spirits being diverted from their natural course, are not govern'd in their movements by the same laws, at least not to the same degree, as when they flow in their usual channel” (1.4.1.10), and animal spirits move outside of their habitual cognitive pathways. This physiological premise has its origin in Thomas Willis' *Anatomy of the Brain* that explains faculty physiology through animal spirits' *stretching* from one faculty to another faculty or to an adjacent physiological system: “For it seems, that the Imagination is a certain undulation or wavering of the animal Spirits, begun more inwardly in the middle of the Brain, and expanded or stretched out from thence on every side towards its [the hemispheres'] circumference” (Willis 1664, 58).²⁹³ Following the

²⁹³ See also: “To wit, that the Spirits flowing into it [the medullary substance of the Callous Body] on every side, might be stretched out as in their proper Sphere, and begin to exercise the acts of the animal Faculties” (Willis 1664, 61).

physiological justifications of Willis, Hume refers to the stretching of faculties beyond their attentive sustainable ability. The aesthetics of Gerard and Kames apply the stretching beyond cognition's conjunctive capability to the context of narration perpetuating or losing the reader's attention.

To explain sublime experiences and associations, Gerard uses the expression of "stretching and expanding the mind in" conceptualizing a sublime idea (Gerard 1759, 19-20).²⁹⁴ This mental amplitude complements the sublime sensation of pleasure:

Any new object will, in this situation [of a familiar boredom], be agreeable; it frees us from the pain of satiety and languor; it gives an impulse to the mind, and puts it in motion. This is always pleasant, but its pleasure is greatly augmented by the uneasiness from which it has relieved us. (Gerard 1759, 7)

Boredom ends from the introduction of new and interesting occupations of pleasure. The imagination needs pleasures to appease its pursuit of associations; a lack of engagement will not absorb the attention, and the propensities to focus critically will become listless.

Similar to Gerard, Kames' sensible pleasures have a building impulse, or "mounting upward" sensation, and are common to all *imaginative* acts (Kames 1762, 26). Natural impulses drive comparative acts and construct patterns, but they are also subject to decay. This degradation of ideas occurs more rapidly if the variety from multiple demands on the mind become too great in number, causing attention to stretch beyond its natural degree of comfort: "Actions again create uneasiness when excessive in number or

²⁹⁴ Dickie does not contextual the physiology of Gerard's sublime, and conflates sensation with metaphor: "When he speaks of the mind's difficulty in spreading itself to the dimensions of its object and enlivening the mind, I take him to be speaking in a metaphorical way about the difficulty of conceiving of the object and the pleasure this mental exertion gives." *The Century of Taste: The Philosophical Odyssey of Taste in the Eighteenth Century* (Oxford: Oxford University Press, 1996), 34.

variety, though in every respect pleasant ... and the mind suffers grievously by being constantly upon the stretch” (Kames 1762, 223). A complex narrative sequence, however, can retain its associative integrity, if, in the aggrandizing moments, there is a pleasurable identification with the sublime:

Every man must be sensible of a more constant and sweet elevation, when the history of his own species is the subject ... he accompanies these heroes in their sublimest sentiments and most hazardous exploits, with a magnanimity equal to theirs; and finds it no stretch, to preserve the same tone of mind, for hours together, without sinking. (Kames 1762, 162)

The *stretching* of the imagination or its *enlargement* is a conceptual reference to associative ability and the limits of cognitive attention. It involves two historical components: it affirms the physiological movement of the imaginative faculty (expressed in the materialism of animal spirits); and it relates to Hume’s sublime affinities that assist attention with associative conjunctions.

XVII. The Other/Classical Sublime

The physiological state of sublime pleasure is unrecognizable in Burke’s inverse model on the sublime, which produces an awful retraction of horror, and, problematically, is generally cast as the definitive statement on the sublime in the eighteenth century: “For fear being an apprehension of pain or death, it operates in a manner that resembles actual pain” (*Philosophical Enquiry* 2.1). Even Hugh Blair, a critic who agrees with Burke, contends with his characterization of sublime pain at the exclusion of pleasure:

It is indeed true, that many terrible objects are highly sublime; and that grandeur does not refuse an alliance with the idea of danger. But though this is very properly illustrated by the author, (many of whose sentiments on that head I have adopted,) yet he seems to stretch his theory too far, when he represents the sublime as consisting wholly in modes of danger, or of pain.²⁹⁵

Burke's definition is a significant perversion of what the sublime had historically meant from its classical meaning to its conventional usage during eighteenth-century rhetoric:

There is a marked tendency in eighteenth-century British versions of the sublime, from Addison through Baillie, Burke, and Blair, to reformulate the classical concept and category of the sublime, transforming it from a rhetorical and social event into an intense but solitary experience of relationship between self and external nature.²⁹⁶

The sublime's apparent eighteenth-century shift in meaning emphasizes a change from a social into an individual experience, which, although right as a critical observation, misrepresents the complexity of the classical sublime that provides both unity with nature and heightens the individual through pleasure.

Following Terry Eagleton's Marxist characterization of the classical sublime as a bourgeois sentiment because of its sympathetic principles, Harkin further politicizes the classical sublime by situating it as relevant only for a "privileged group of viewers" (Harkin 175). The binary she creates between classical sublimity and Burke's sublime is neither laudatory to the classical position nor historically accurate for the eighteenth century. Burke's rejection of sympathy, "as the antisublime sentiment of the mob, the death of difference and individuation," is set in contrast with Harkin's characterization of

²⁹⁵ Hugh Blair, *Lectures on Rhetoric and Belles Lettres*, 1783 (Philadelphia, 1860), 37.

²⁹⁶ Maureen Harkin, "Theorizing Popular Practice in Eighteenth-Century Aesthetics: Lord Kames and Alexander Gerard," *Aesthetic Subjects*, ed. Pamela R. Matthews and David McWhirter (Minnesota: University of Minnesota Press, 2003), 174.

Burke's sublime as accepting individual difference, since it embraces "the aesthetic experience of a variety of subjects beyond the educated and leisured class" (Harkin 175). Her characterization demonstrates a fundamental misunderstanding of the genesis of sublimity as a physiological principle of association and pleasure. First, Burke's aesthetics of sublimity complements his political theory, august terror and subservience go hand-in-hand; Burke is foremost a proponent of suffering and anti-individualism – the pain of the sublime destroys the impetus to act rationally and to engage with objects.²⁹⁷ Burke's aesthetics function better in the political hierarchies of monarchy and religion. Second, Kames and Gerard do see pride and pleasure as elevating and noble, but pride, following Hume and Hobbes, is also the basic constitution for self-worth and self-preservation. Pride generates the conception of the self through pleasure in order to create a workable empirical model to navigate *all types* of interactions; the reflex process of pride that augments the self to stimulate higher cognition, instead of instinctual impulses, is unequivocally individual and constitutionally applicable to all people. For Kames and Gerard, the sublime does not find its primary context in the social; rather, the sublime qualifies the degree of lively sensations in associations.

Kames and Gerard work with the earlier, now neglected, sublime of pleasure, not pain, and their aesthetics cultivate the former. The sublime of pleasure has its origin in Longinus who had a particularly pronounced influence upon Kames and Gerard's

²⁹⁷ In contrast to the desire for clarity to augment association, Burke's exegesis of affect disengages association. See Burke's analysis of Milton: "In this description all is dark, uncertain, confused, terrible, and sublime to the last degree" (*Philosophical Enquiry* 2.3).

description of sublimity, explanation of pleasure, and construction of attention's continuance:

You see, by true sublimity our soul somehow is both lifted up and – taking on a kind of exultant resemblance—filled with delight and great glory, as if our soul itself had created what it just heard. 3. [sic.] Whenever a man of sense, experienced in speeches and writings, hears something very often but does not have his soul uplifted ... you will see that it falls into a state of withering underdevelopment and is not a true sublimity inasmuch as it is held in the mind only while it is heard. (*On the Sublime* §7)

Before Burke, the ancient version of the sublime was an expression of pride, glory, exultance, and, ultimately, a feeling of pleasure. Its purpose was to elevate – to lift the individual into a state of self-inspired worth, not cower in horror. Longinus' sublime is an extension of nobility and dignity, and it augments cognitive clarity through the *retention* of ideas, which extends the temporal duration in associative sequences. Pride brings an elevation necessary for the self to achieve intellectual development.

The sublime captivates the mind and the pleasure of the elevation secures the attention. Longinus' sublime influences Hobbes and Hume's feeling of sublimity from a heightened sense of pride:

Any great elevation of place communicates a kind of pride or sublimity of imagination, and gives a fancy'd superiority over those that lie below; and, vice versa, a sublime and strong imagination conveys the idea of ascent and elevation. Hence it proceeds, that we associate, in a manner, the idea of whatever is good with that of height, and evil with lowness. (*THN* 2.3.8.7)

Despite the contention of Walter John Hipple,²⁹⁸ Kames' aesthetics has a precedence in Longinus and Gerard, as well as Hume's associative philosophy: "a beautiful object

²⁹⁸ Hipple believes Kames has few influences: "Although Kames must have been familiar with the books of Addison, Hutcheson, Hume, Hogarth, Burke, and Gerard, the

placed high, appearing more agreeable than formerly, produces in the spectator a new emotion, termed *the emotion of sublimity*” (Kames 1762, 154). Kames finds sublimity in elevated pleasures. Identifying with objects at a great height enhances pleasure: “When the sublime is carried to its due height and circumscribed within proper bounds, it enchants the mind and raises the most delightful of all emotions: the reader engrossed by a sublime object, feels himself raised as it were to a higher rank” (Kames 1762, 177). When the sublime does not court sensations of excess, it promotes attention and produces pleasure, allowing the reader to more intently follow the narrative. Kames promotes a universal desire to feel “exalted and honoured” in order to “raise us above others, and command submission and deference” (Kames 1762, 164). These desires for grandeur are neither exclusively nor even primarily social; part of “our attachment to things grand and lofty, proceeds from their connection with our favourite passion” (Kames 1762, 164), for the social is too trivial to explain the sensation of sublimity (i.e., in the context of Kames’ example, it is a species of self-worth). The sensation of pleasure resonates through sublime experiences and is a constitutional part of human nature: “This sentiment [the sublime], constant and universal, must be the work of nature; and it plainly indicates an original attachment in human nature to every object that elevates the mind” (Kames 1762, 165). Kames is not promoting an innate nobility. He suggests that human nature naturally tries to achieve pleasure in order to augment the self, which Hume terms *pride* and posits as necessary for self-preservation.

aesthetic doctrines of these writers are nowhere canvassed in the *Elements*. Kames writes as if he owed no debts and anticipated no objections.” Walter John Hipple, *The Beautiful, the Sublime, and the Picturesque in Eighteenth-Century British Aesthetic Theory* (Carbondale: Southern Illinois University Press, 1957), 113.

The sublime propensity to naturally seek out and maximize pleasure complements cohesive descriptive arrangements and clearly related narrative content. To achieve a sublime associative affect, narration must “present those parts or circumstances only which make the greatest figure, keeping out of view every thing low or trivial” (Kames 1762, 165). Sublime figures heighten concentration. In narrative sequences, the content must have strong affinities. It must relate in theme and tone, careful not to combine elevated speech or sentiments with low subjects or topics (otherwise the epic becomes satire):

Where figurative expression is indulged beyond a just measure: the opposition between expression and sentiment, makes the discord appear greater than it is in reality. At the same time, figures are not equally the language of every passion: pleasant emotions, which elevate or swell the mind, vent themselves in strong epithets and figurative expression; but humbling and dispiriting passions affect to speak plain. (Kames 1762, 350)

If the elements of figurative expression become too overwrought, too grand for the context of the speech, the delivery of the expression or the progression of the narrative reduces the sentimental investment – the literal attentive interest – in the characters and the narration. Figures and descriptions vary in how they affect the passions. Sublime emotions elevate the mind through the delivery of strong figurative expressions, grand rhetoric, and narrative descriptions, and must create a concord between theme, content, and purpose. The unpleasant emotions, Kames’ version of the *anti-sublime*, require simple and obvious elements between all the components of narration or they become grotesque.

XVIII. Conjunctive Elements: Parts and Wholes

Gerard provides the precedent for Kames' conjunctive principles. For Gerard, there must be a congruency between the parts and whole of narration. The degree of pleasure felt corresponds with the extent of sublimity in the conjunction: "Tho' the sentiment of sublimity fills, and almost exceeds the capacity of the mind, we can yet receive along with it other pleasurable feelings, which will increase it by conjunction" (Gerard 1759, 81). Associative continuity produces pleasure; it allows for sublimity – the lofty sentiment from cognitive activity finding pleasure in the connection of ideas becomes a reflection of mental capacity. In associative aesthetics, art seeks continuity and connectivity. Art forms that show the "variety of its parts may amuse us, and keep us from attempting to comprehend the whole ... But still proportion is necessary for perfecting the beauty, and fully gratifying a correct and improved taste" (Gerard 1759, 37-8). The imaginative process tries to merge ideas; it emphasizes cohesiveness between ideas by eliminating the disjuncture from excessive variety.

Gerard and Kames argue that narrations should complement the natural associative rules in cognition. Cognitive processes try to situate the parts of a concept into a semblance of order to make a whole. The whole, as a unified narrative moment, helps cognition to engage in the particular parts, but the overall context decides the degree of attention to the narration. The imaginative process is "averse to enter into a minute consideration of constituent parts, till the thing be first surveyed as a whole" (Kames 1762, 24). A point on which Gerard concurs,

Every art has a whole for it's [sic.] object ... the merit of the parts arises, not so much from their separate elegance and finishing, as from their relations to the subject: and therefore, no true judgment can be formed, even of a part, without the capacity of comprehending the whole at once, and estimating all its various parts. (Gerard 1759, 152-53)

The artwork as a whole provides the purpose and premise for its parts. It allows for a unified frame to ground the imaginative associations and to contextualize the parts in the act of reading.

The complexity of parts and the narration as a whole depend upon successful associations among multiple objects. The imagination continually joins two ideas in order to form a new complex ideational unity, and this entire temporal period in an associative act is the framework for every comparison. Eighteenth-century associative models argue that cognition can survey multiple objects at once and retain a diverse set of ideas simultaneously. The multiplicity of association further locates the aesthetic eighteenth-century divisions between Burke and that of Hume, Kames, and Gerard. Burke's version of the mind reduces ideas to simple moments in a linear sequence:

The mind in reality hardly ever can attend diligently to more than one thing at a time; if this thing be little, the effect is little, and a number of other little objects cannot engage the attention; the mind is bounded by the bounds of the object; and what is not attended to, and what does not exist, are much the same in effect. (*Philosophical Enquiry* 4.10)

In Burke's tradition of cognition, a single idea is the measure and limit of cognitive attention. The mind cannot focus on multiple objects, since the multiplicity would fragment the premise of faculty unity and complicate the simplicity of sequential temporality. For the mind to engage with multiple objects, the imagination would be capable of faculties inter-functioning in unison.

Burke proposes that in order for the mind to have unity, thinking must only survey one idea at a single moment. In opposition to Burke, both Gerard and Kames argue that the imagination can focus upon and unify many objects during an act of association. The problem Kames has with multiple objects is that complexity can produce confusion: “A multitude of objects crowding into the mind at once, disturb the attention, and pass without making any impression, or any distinct impression: in a group, no single object makes the figure it would do apart, when it occupies the whole attention” (Kames 144). Gerard provides the earlier aesthetic premise: “Objects endued with these qualities [simplicity and uniformity] enter easily into the mind: they do not distract our attention, or hurry us too fast from one scene to another: the view of a part suggests the whole, and, impelling the mind to imagine the rest, produces a grateful exertion of its energy” (Gerard 1759, 31-32). Gerard and Kames contrast with Burke and represent a variation in not just attention but also in the foundation for associations. Because of Hume’s associative basis to Gerard and Kames’ aesthetics, they recognize the implicit multiplicity in every association. Extremely complex ideas, however, can lead to disruptions in attention that adversely affect the narrative process. To counter attention’s confusion from an over-stimulation of parts, narration works best when it uses *lively* figures in order better connection ideas.²⁹⁹

²⁹⁹ Hume’s vivacity of belief effectively eliminates causal difference through repetition (1.3.5.7; 1.3.8.10; 1.3.9.17).

XIX. Habits of Association

Kames and Gerard implement a Humean application of continuity in content, uniformity in resemblance, and causality in succession. Narrative sequences have coherence because they are lively associations that try to eliminate the discrepancies between the conjunctive elements of resemblance, continuity, and causality. The imagination joins ideas through both customary habits and associative principles – the result of these imaginative syntheses “sometimes *presumes* that ideas have these relations, when they have them not” (Gerard 1759, 168; also see, Kames 1762, 280). Although custom and apparent relations are often illusory versions of evidence, the imagination forms an “almost inseparable” connection. The imagination can eliminate the difference between ideas and sensible impressions, and these syntheses determine the strength between ideas:

The mind takes in a long train of related ideas with no more labour than is requisite for viewing a single perception; and runs over the whole series with such quickness, as to be scarce sensible that it is shifting its objects. . . . it [the imagination] even combines them into a whole, and considers them as all together composing one perception. (Gerard 1759, 168-169)

The imagination’s unification of multiple ideas in succession creates a complex perception. In Hume’s philosophical context, the imagination establishes the appearance of identity by fabricating unity out of causal succession; and, in Gerard’s narrative theory, the imagination promotes the semblance of cohesion between ideas. For Gerard, the associative process transforms natural succession into a seamless narrative relationship that forms a complete line of thought. In a comparative model, Kames admits

that close conjunctions between ideas in succession create the conceptual whole necessary for a complex idea (Kames 1762, 76). Ideal presence engages with the narrative process as a cohesive form that absorbs the attention. The natural appearances of common successions produce belief, and there is a concentration of intensity in following the narration; the imagination builds patterns and forms complete images through descriptions. Attention's continual investment in a successive train can, however, be a problem, since "it seldom continues long in the same tone, but is successively vigorous and faint" (Kames 1762, 84).

XX. The Pleasure of Attention

To secure the attention, there must be an elevation of pleasure (Gerard 1759, 3; Kames 1762, 26), and the natural propensity to associate must find a complement in the ideas. The size of the object and the theme will help create sublimity by fully engaging the attention so that there is intent concentration (Gerard 1759, 13). A sublime impression of magnitude will "prevent the attention from wandering upon other objects, the impression it makes will be so much the deeper" (Kames 1762, 151). The motion felt as the associative process must relieve the careless boredoms of inattention, but the synthesizing pace must also be sustainable and conceptually substantial in order to maintain pleasure in reading:

The mind can bear a quick succession of related ideas; but an unrelated idea, for which the mind is not prepared, takes time to make an impression; and therefore a train composed of such ideas, ought to proceed with a slow pace. (Kames 1762, 218)

Reading is a state of physiological attention. The ability to attend to content depends upon the type of material and the degree of connective accessibility. Objects with an obvious relation will speed the process of assimilation; objects with difficult abstract premises or discordant juxtapositions are harder to understand. Imaginative constructions have a natural governance in the pace of succession of ideas. The creation of ideas, or the attention to narration, comes with a gradational system of conceptual depth;³⁰⁰ as a physiological response, the intensity of the attention measures the accessibility of the narrative content. Those ideas of memory and imagination that are more substantial, literal, and applicable, have an easier, more familiar means through which to establish pleasurable sensations in order to motivate imagination's assent to the succession of ideas.

Ideas are neither equal nor are all concepts equally relevant. The imagination's ability to associate and the contextual apparatus to assimilate narrations belong to cognition's pace of concentration in literary engagements: "Hence an epic poem, a play, or any story connected in all its parts, may be perused in a shorter time, than a book of maxims or apothegms, of which a quick succession creates both confusion and fatigue" (Kames 1762, 218). Literary genres (and other intellectual engagements) have different rates of succession in reading because cognitive associations and passionate identifications occur at variable rates to stimulate the attention. There has to be recognizable patterns, conceptual viability, and identifiable content in order for attention

³⁰⁰ For the physiological context, the concept of aetherial rarification gives a sense of weight or depth of meaning to the faculties, see Willis 1664, 58.

to find imaginative engagement, but narrative uniformity still needs a degree of variety in order to continually stimulate the attention. If the variety of content becomes too great, then the pleasure of imagination degrades from an incomplete association, and the imagination cannot situate each of its parts into the context of the whole:

Were the variety indeed boundless, the mind would be fatigued and pained with continual shifting from part to part ... it would be displeased and disgusted, when it found that, after numberless efforts to conceive an object, the endless dissimilitude and perplexed composition of the parts still baffled its endeavours. (Gerard 1759, 35)³⁰¹

The imagination fatigues if associative connections are too rapid. The narrative complexity and the capacity to associate determine the rate of succession from idea to idea. Associative acts depend upon the narrative relationships to bridge ideas. If the connection between parts is too discordant, too defiant to the order of identity, then the variety of narrative content overwhelms the attentive process and the association fails.

Narrative content needs to stimulate the passions to associatively attend to the material, and this *reflex of taste* dictates the pace of assimilation. Even the constitutional temper plays a role: “a man of calm and sedate temper, admits not willingly any idea but what is regularly introduced by a proper connection: one of a roving disposition embraces with avidity every new idea, however slender its relation be to those that preceded it” (Kames 1762, 218-19). Predating Kames, Gerard links temper and succession: “Hence the mighty efficacy, which perceptions acquire, in poetry or eloquence, by being introduced in a proper order, and with due preparation. Hence the influence of an habitual

³⁰¹ Kames’ unease concerning the infinite follows Gerard’s disposition: “An unbounded prospect doth not long continue agreeable: we soon feel a slight uneasiness, which increases with the time we bestow upon the prospect” (Kames 1762, 208).

and prevailing temper or turn of mind, in enlivening congruous perceptions” (Gerard 1759, 166). An individual’s disposition determines the capacity for cognitive engagements. Automatic reactions and original passions provide a rudimentary method to first scrutinize narration, but the habits to direct the imagination and stimulate the more sophisticated passions need cultivation. Disposition, as a quality of temper, will often determine the degree of exertion that will be put into a critical analysis. Even those temperaments that complement attention may only make concrete associations; those with “roving dispositions” (Kames 1762, 219), or under a prevailing passion, may employ the imagination more freely.

To sustain engagements that elevate the attention, the narration must balance its uniformity with variety: “uniformity, when perfect and unmixed, is apt to pall upon the sense, to grow languid, and to sink the mind into an uneasy state of indolence. It cannot therefore alone produce pleasure, either very high, or of very long duration. Variety is necessary to enliven it” (Gerard 1759, 33). Kames is in agreement with Gerard: “nothing can be more happily accommodated to the inward constitution of man, than that mixture of uniformity with variety” (Kames 1762, 232). Variety in narrative progression, stylistic flourishes, descriptive contrasts, and momentous actions, create interest – continue the sublimity of attentive associations. Too much narrative uniformity causes a dispositional boredom and inattention. If the literary elements of variety that create successive and produce descriptive contrasts do not occur, the reader’s pleasure diminishes.³⁰² For

³⁰² Joseph Priestley’s *Oratory and Criticism* (1777) follows in the tradition of Gerard and Kames; for Priestley, variety, too, augments attention: “We are not fond of pursuing any uniform track long without interruption: so that the natural connexions of

attention to have duration, narrative uniformities must develop variety – change from one form into another complex idea, so that engagements of pleasure can continue to sustain interest.

XXI. Disinterestedness vs. Inattention: Variable Models of Attention

Interruptions of attention constantly encroach upon the association process. One of the problems with critically situating the eighteenth-century theory of attention, besides the lack of physiological study in modern analyses, is that *attention* has been subsumed in another understudied, but still recognizable, aesthetic state, the *disinterestedness* of Shaftesbury's *Characteristics*. In current critical practice, disinterestedness has become a form of attention: "The discourse of disinterestedness most obviously constructs the aesthetic subject through a process of exclusion: disinterested contemplation, or the aesthetic attitude, is a special mode of attention defined as excluding any practical state in the existence of the object."³⁰³ The disengagement of disinterestedness and attention's assent to associative constructions are, however, antithetical aesthetic analyses. The disinterested gaze divorces itself from the

ideas not quite foreign to the subject, with others which occur in the course of a narration, may, in the hands of judicious historian, give occasions to digressions from his principal subject, which will greatly relieve the attention, please the imagination, and refresh and assist the memory." Joseph Priestley, *A Course of Lectures on Oratory and Criticism* (London, 1777), 35.

³⁰³ Elizabeth A. Bohls, "Disinterestedness and the Denial of the Particular: Locke, Adam Smith, and the Subject of Aesthetics," *Eighteenth-Century Aesthetics and the Reconstruction of Art*, ed. Paul Mattick (Cambridge: Cambridge University Press, 1993), 16.

object. For Shaftesbury, disinterestedness is a Christian virtue that renounces interest in world, but still acts because of duty:

He is not so tied to the affairs of this life, nor is he obliged to enter into such engagements with this lower world as are of no help to him in acquiring a better. His conversation is in heaven. Nor has he occasion for supernumerary cares or embarrassments here on earth as may obstruct his way or retard him in the careful task of working out his own salvation.³⁰⁴

Although disinterestedness is a historical aesthetic model, its use needs to be carefully distinguished from lively attentions of the imaginative faculty that came to figure prominently after Hume's concept of inattention.³⁰⁵ Modern theorists must mark the difference between *inattention* and *disinterestedness* when determining, on the one hand, the breakdown in the associative process, or, on the other, the lack of personal motivation defining action and thought.³⁰⁶

For the aesthetics of Gerard and Kames, inattention defines a shift in the associative process; it posits the dissolution of an associative train of ideas. The end of a

³⁰⁴ Lord Anthony Ashley Cooper Shaftesbury, "Sensus Communis, an Essay on the Freedom of Wit and Humour," *Characteristics of Men, Manners, Opinions, Times*, 1711, ed. Lawrence E. Klein (Cambridge: Cambridge University Press, 1999), 47. Gerard and Kames, alternatively, find motivation directly from physical pleasure.

³⁰⁵ For a parallel twentieth-century context, Gary Kemp situates variable modes of attention that suggest components of associative premises through the comparative unity of object and associative drive: "Where attention is motivated or even guided by a purpose, there is no reason to say that the purpose must be held consciously before the mind, in such a way that there is, as it were, not enough room in consciousness for both the purpose and the object." Gary Kemp, "The Aesthetic Attitude," *British Journal of Aesthetics* 39, no. 4 (1999): 397.

³⁰⁶ Miles Rind provides a recent discussion on the principals of disinterestedness, but he conflates the disinterestedness of Shaftesbury with those who feel pleasure during the attention. Archibald Allison needs reconsideration within the tradition of disinterestedness, especially Essay 1 in *Essays on Taste*. See Miles Rind, "The Concept of Disinterestedness in Eighteenth-Century British Aesthetics," *Journal of the History of Philosophy* 40, no. 1 (2002): 67-87.

lively idea sets the length for the duration of an entire critical effort. Inattention occurs when the imagination fails:

When reason is weak, it loses itself in a long and intricate demonstration; it cannot retain the connection of the whole; it sees nothing, but confusion; and obtains neither conviction nor delight. In like manner, in matters of taste, judgment, when rude and unimproved, is bewildered amidst the complexness of its object, or lost in its obscurity; and by being baffled excites disgust. (Gerard 1759, 121)

Underdeveloped associative abilities have a greater propensity to miss a complex association. The necessary oversight of the whole, instead of merely the fragmentation of sequential parts, obscures associative clarity, and, with the uncertainty of meaning, confusion sets in upon the imagination. With neither order nor the ability to contextualize the whole, narratives do not produce pleasure, which is necessary for attentive engagements. As an exercise in the pursuit of fine taste, a habitual act can surmount inattention and improve the ability to associate to a point where the appreciation of complex trains of ideas becomes possible (Gerard 1759, 101; 121-22). Custom establishes habits for taste to gradually develop critical abilities, and, with acquired appreciation, attention to context allows association to form and engage with narrative patterns that have greater complexity. As a substrate of the imagination, taste is an amalgamation of developing aesthetic habits that augments associative pleasures and further motivates attention.

In the associative aesthetic practitioners during the eighteenth-century, pleasure, association, attention, and imagination each has a particular application to help situate a critical act, but their collective intertwined meaning defines an aesthetic practice. Kames' *inattention* occurs from unbounded objects, scattered ideas, and excessive descriptions;

the inattentions that occur from associative disjunctures disrupt narrative succession.

Imaginative conjunctions fail to formulate associative relationships if the literary sentiments are too sublime or have unrealistic descriptive events:

The reader's imagination cannot keep pace with that of the poet; the mind, unable to support itself in a strained elevation, falls as from a height; and the fall is immoderate like the elevation: where the effect is not felt [in the description], it must be prevented by some obscurity in the conception, which frequently attends the description of unknown objects. (Kames 1762, 162)

The imagination cannot assimilate transcendent descriptions into associative sequences.

Ideas of the unknown, the obscure, the infinite, and the indefinite, cannot sustain their sublime sentiments, since the intangible ideas do not inspire feelings of pleasure; the infinite is not sublime, for it does have a constitutional basis in association. Although Kames counters that habit can build an appreciation for abstractions, these sublime categories are not naturally accessible forms (Kames 1762, 15; 288). Even after attention cultivates a habit for understanding complex forms in succession, sublime pleasures belong to more immediate identifications. Sublime sensations are not, however, common: "minute and low circumstances ... scatter the thought and make no impression" (Kames 1762, 166). To scatter narration with many trivial objects causes a strain in the directional focus of cognition. The disruptive relations stretch association and limit the attention. There are attentive limits particular to each of the sister arts and for each narrative genre.

XXII. Eighteenth-Century Aesthetics and Its Overlooked Influence

The associative lapses of attention into inattention are pivotal to understanding one of the most prominent lines of eighteenth-century aesthetics. Attention is the catalyst to associative success; it defines the *lively belief*, the *vivacious impression*, and *degree of assent* to ideas. Attention is the method to accomplish narrative engagements; from a combination of habit and imagination, attention contributes to narrative conjunctions by enhancing the ability to concentrate on the synthesis ideas. Presently, there is a critical lack of engagement with eighteenth-century attention; however, the prevalence of attention and inattention, of lively assent, and of the faculty of imagination's associative processes largely come to define aesthetic theory between 1750-1800 through the figures Hume, Gerard, Kames, Allan Ramsay, Joseph Priestley, and Archibald Allison.³⁰⁷

³⁰⁷ The associative aesthetics of the psycho-physiological tradition would come to dominate nineteenth-century British aesthetics through the figures of J.S. Mills, Alexander Bain, G.H. Lewes, George Eliot, and Herbert Spencer.

Coda: The Fall of Aesthetic Physiology and the Rise of Literary Idealism

The abstract applications of rhetoric and philosophy in current literary scholarship came to the fore after psychophysiological criticism fell into disuse towards the end of nineteenth century. After this era, rhetorical approaches to literary criticism became the new orthodoxy in the English university system, but the present mode of criticism represents only one side of an intense rivalry spanning from 1650 to 1880. At end of the nineteenth century, the disciplinary origins of English, as a combination of literary rhetoric and philosophy, began to insulate itself from physiological inquiry and, in general, physicality. When it came time for English to define itself as a discipline (in order to be a discipline), the critical history of its own tradition rejected the physiological model, and the idealist influences on T.S. Eliot and I.A. Richards took the practice of English criticism in a new direction. Under their tutelage, the precedence of Kantian criticism in Samuel Taylor Coleridge took root as an essential part of the English tradition for aesthetics and English's critical method – though historically, Coleridge's influence and his theory of imagination during Romanticism had been marginal.

This study has formulated a variable set of interrelations and analysis to understand the effect of Willis' neurology upon imagination of Hume, and provided a context for the subsequent formation of eighteenth-century aesthetics. This brief overview of history as it impacted aesthetics is an extension of several contemporary theorists working in the reconstruction of psychophysiology's tradition. As a historical explanation, it is incomplete and hardly exhaustive, but through its generality it tries to

achieve a cohesive theory for change. In an attempt to illustrate a time-line for the debate between abstract reasoning and a philosophical physiology, I realign the common methodologies and emphasize the physiology of imagination between 1650-1880. The aesthetic and philosophical history that emerges is barely sensible in current literary practices. Following early twentieth-century critical interpretations on the philosophical role of external objects, however, the transition in aesthetics from physiological sensations to a semantic idealism finds a coherent context. One of difficulties facing contemporary criticism, which this study has moved to correct, is the misappropriation of the imagination in seventeenth- and eighteenth-century contexts. In the new sciences, the imagination had become the pre-eminent cognitive faculty, an extension of the physiology of sensation, and a definitive component in psychophysiology. This version of imagination has little to do with contemporary associations with fancy, and is largely unrecognizable because of S.T. Coleridge's theories that took prominence through T.S. Eliot, I.A. Richards, M.H. Abrams, Harold Bloom, and modernity's reinvention of imagination through Coleridgean and Kantian paradigms.

To turn to the history of imagination, that was a byword for association during the eighteenth century, John Locke's *Essay* and David Hume's *Treatise* find their sensitive philosophical principles in Thomas Willis' *Anatomy*, the founder of modern neuroscience. Willis also had intellectual influence for his characterization of cognition as primarily an associative act of physiology – defined as the faculty of imagination and which became the cornerstone for representing impressions and linking experiences. Willis had anti-Cartesian influences for his faculty of imagination from Pierre Gassendi's

Physiologia and Instituti Logica (1658) and Thomas Hobbes' *On Human Nature*, as well as, to a lesser extent, the alchemical writings on the imagination of Paracelsus, the father of chemistry.³⁰⁸ A primary feature to Willis' physiology is his method. Empirical observation offered an alternative to abstract induction, reliance on logic, and other *a priori* methods. The conflicts between abstraction and empiricism initiated a division in critical approaches in seventeenth-century medicine. Thomas Sydenham was clinical, not anatomical like Willis, and the eighteenth century saw this division continue in the debates over aether, animal spirits, and consciousness.³⁰⁹ The side of association and empiricism, or that of experimental method, had Willis, Newton, Locke, Hume, Hartley, Adam Smith, and James Mill – the foundational thinkers in science. On the other side, the abstract thinkers who denied the validity of the empiricism and the external world, and separated the passions from cognition – represented by Berkeley, Mayne, Beattie, Reid, and Dugald Stewart. The negative characterizations of the imagination, as fanciful and inexact, occur primarily in the latter. They elevated reason and judgment over what *they termed* the inexact musings of *fancy*. These two divisions had representative forms of aesthetic and rhetorical inquiry, a division that can be recognized by the promotion of abstract reasoning and language over empirical observation and sensation; incorruptible

³⁰⁸ Paracelsus, "The Archidoxies of Theophrastus Paracelsus," Vol. 2, *The Hermetic and Alchemical Writings of Paracelsus*, 2 vols., ed. Arthur Edward Waite (Berkeley: Shambhala, 1976), 7. For the alchemical context of Paracelsus' imagination, see Heinz Schott, "Paracelsus and Van Helmont on Imagination: Magnetism and Medicine before Mesmer," *Paracelsian Moments: Science, Medicine, and Astrology in Early Modern Europe*, Ed. Gerhild Scholz Williams and Charles D. Gunnoe, Jr. (Kirksville: Truman State University Press, 2002), 135-150.

³⁰⁹ For the difference between Sydenham and Willis' medical methods and their probable effect on Locke, see Robert L. Martensen, *The Brain Takes Shape: an Early History* (Oxford: Oxford University Press, 2004), 175-198.

and immaterial faculties over developmental thinking; and, in literary analysis, abstract rhetorical forms over states of attention guiding narrative and metaphor analysis.

Although historical generalizations are convenient, a strict set of precepts defining each critical trajectory was not always apparent. There was an attempt to incorporate Hume's perceived skepticism and arguments against abstract, unity, and absolute reasoning to new ends – only the more stringent thinkers of Reid's calibre sought to reject Hume's philosophical foundations outright. Adam Smith, a friend and philosophical proponent of Hume, did not follow him in every respect. His recourse to Hutcheson's objective standard in morality and Shaftesbury's spectatorship distinguished Smith's use of sympathy from Hume's social dynamics based upon a proximity of diminishing pleasure.

The same dynamic of mutual influence took place in aesthetics. There are divisions in the critical positions of immateriality and materiality, but the eighteenth century, particularly in Scotland, saw a dramatic infusion and interchange of ideas. Even a representative thinker like Hugh Blair would supplement the classic form of sublimity with Burke's reinvention of the concept, and Burke, otherwise opposed to the pleasure principle guiding associative theorists, would integrate a static theory of association into his orthodox and theologically inclined metaphysics, which transformed classic rhetoric.

Despite Hume's undesirable fame from the *Treatise's* reception, its notoriety had an influence that spread throughout the philosophical community, even if it excluded recognition from the larger populace. The response to Hume's apparent skepticism elevated the importance of the *Treatise* into a critical position that needed an adversarial

rejoinder. The barrage of texts set against the precepts of the *Treatise* helped Hume to become the definitive version of association. Contention between the common sense school and Hume's skeptical probability created two antithetical philosophical positions. Hume's imagination and physiology, as a dynamic cognitive capacity and physical foundation to sensation, would become a new form of uncompromising materiality in the second half of the eighteenth century.

The revolutions in America and France shifted the context of eighteenth-century debates from associative epistemology into political domains, historical reconstructions, and general populous movements. Jeremy Bentham's *Introduction to Principles of Morals and Legislation* (1780/1789) and *A Table of the Springs of Action* (1815), James Mill's *An Analysis of the Phenomena of the Human Mind* (1829), and, eventually, John Stuart Mill's works defined utility through pleasure while using the associative principles of the imagination to define action and cognition. Their works were only possible, however, from the historical precedents of an aesthetically driven political theory that grew out of the associative tradition from Smith, Wollstonecraft, and Paine. The strict science of Bentham's utilitarianism evolved into John Stuart Mill's reconciliation of individual pleasure and social action.³¹⁰ The imagination as a term, however, slowly fell into disuse because of the negative aspersions cast upon it from the antithetical philosophical position, but the faculty still figured prominently as a method that at its foundation intertwined sensation, passion and association. Hume's definitive system of

³¹⁰ See Adrian Johns, "The Physiology of Reading," *Books and Sciences in History*, eds. Marina Frasca-Spada and Nick Jardine (Cambridge: Cambridge University Press, 2000), 291-316.

association would continue to serve as the philosophical standard for later nineteenth-century models. The orthodox position that started in the Common Sense School continued with Stewart Duguld and his successor at Edinburgh, Sir William Hamilton. If Hume and Reid represented the two key sides of the debate between the materiality of empiricism and common sense abstraction, J.S. Mill's critique of Sir William Hamilton's rationality is the nineteenth-century parallel.³¹¹ The cognitive faculties were characterized as either developmental or innate in eighteenth-century philosophies, and this conflict continued in the divergences of social utility and Whig political sensibility. The political context supplemented the division between empirical physicality and an *a priori* foundation, and this antagonism would frame sensations as moral or immoral during the nineteenth century.

The theory of the mind was also a decidedly contested political debate with immediate social implications. Although George Grote's substantial *Review of the Work of Mr John Stuart Mill, Entitled, 'An Examination of Sir William Hamilton's Philosophy'* saw the work as a victory over abstract reasoning,³¹² T.H. Green's "Introduction" to Hume's complete works effectively set Kantian and Hegelian idealism as a justifiable alternative for and potential refutation of Hume's empiricism. Idealism, however, did not emerge as the dominant form of British philosophy until towards the end of the century.

³¹¹ Although little investigated, the nineteenth century had two very distinct and antithetical models to explain psychology and philosophy. Monck observed the general discrepancy and presented a theory of reconciliation. See W.H.S. Monck, "Two Schools of Psychology," *Mind* 7, no. 27 (1882): 427-435.

³¹² For Grote's relativism in terms of historical analysis, see Christopher Herbert, *Victorian Relativity: Radical Thought and Scientific Discovery* (Chicago: Chicago University Press, 2001), 227-236.

For most of the nineteenth-century, the extension of Hume's associative influence continued in J.S. Mill and in the public intellectuals that merged philosophy and physiology. Alexander Bain, G.H. Lewes, George Eliot, and Herbert Spencer would continue the psychophysiological tradition in the still intertwined fields of philosophy, anatomy, and aesthetics. They were not the direct successors of Willis. Willis' anatomy of the brain and nerves was the most pronounced influence on British physiology until the middle of the eighteenth century, until Hartley's *Observations on Man* (1749) merged the salient principles of Locke's association, the physiology from Willis' *Anatomy and Souls of Brutes*, and the Newtonian theory of vibrations. In the actual practice of anatomy at Edinburgh, and among Britain's most influential physiologists upon the nineteenth century, Robert Whytt's *Physiology Essays* (1755) represents the next generation of physiology. Whytt's muscle irritability figured prominently in the emergence of aesthetic sensibility.³¹³ After Hume's definitive version for associative abilities of the imagination, G.H. Lewes' "The Principles of Success in Literature" and George Eliot's "Historic Imagination" from *Leaves from a Note-book* would follow Hume's primary example of associative model for the imagination.³¹⁴ Bain and Lewes' rhetoric and aesthetics worked under the associative propensities of Gerard and, to a greater extent, Kames.

³¹³ See Jessie Van Sant, *Eighteenth-Century Sensibility and the Novel: the Senses in Social Context* (Cambridge: Cambridge University Press, 1993).

³¹⁴ For Lewes' use of imagination and sensibility, See George Henry Lewes, "The Principles of Success in Literature," Vol. 1, *The Fortnightly*, ed. G.H. Lewes (London, 1865), 185-215 and 572-589. For Lewes' understanding of the imagination and his complementary historical analysis that agrees with this studies analysis, see, for example, Hobbes in *Biographical History of Philosophy*, Vol. 2 (New York, 1892), 495-505.

Lewes, the most influential British literary critic of the mid-Victorian period, used basic eighteenth-century physiological means for artistic analysis. He stands in stark contrast with John Ruskin and Matthew Arnold's "sweetness and light" from *Culture and Anarchy* (1869); both of the latter have risen to greater eminence as mid-Victorian critical exemplars. One of John Ruskin's most famous positions, "Of the Pathetic Fallacy," is actually a direct attack upon the concept of physiological reception in terms of objectivity and subjectivity that defines, respectively, "the difference between the ordinary, proper, and true appearances of things to us; and the extraordinary, or false appearances, when we are under the influence of emotion, or contemplative fancy; false appearances, I say, as being entirely unconnected with any real power in the object and imputed to it by us."³¹⁵ Ruskin contrasts the objectivity of an object as true and rejects the subjective standard of the passions. Ruskin's false standard of interpretation occurs when the passions lead the associative method. He rejects the basis of empiricism. Ruskin's affirmation of real objects suggests that he is sympathetic with idealism, or, at least, the Common Sense School of philosophy. The Common Sense position looked at the object as a justification of the external world; the empiricism of Hume situated the object as indistinguishable from the sensible impression (the object is only known through its sensation).

Although the Common Sense affirmation of the object and external reality are different from idealism's standardization of the object through the subject's innate rational framework, these two schools share a propensity to justify the external as real.

³¹⁵ John Ruskin, *Modern Painters* (New York, 1859), III.iv.4; 157-58.

The contentions over the object between common sense, empiricism, and idealism had a pivotal role in defining the rise of English as a discipline, its historical tradition, and the eventual critical methodologies of the twentieth century. A simple representative overview of essential tenets from T.H. Green's *Prolegomena to Ethics* will help situate British idealism as it was understood in the genesis of English criticism. He explicitly relies on a division between physical sensations and consciousness: "We admit that mere feeling can no more produce the facts of feeling, than mere feeling can generate thought."³¹⁶ Green rejects that empirical impressions form sensations – sensible impressions do not stimulate cognition. Cognition's *a priori* framework organizes the basis for feeling and understanding sensation. Consciousness is a transcendental category that cannot find an explanation of its formation through external stimuli: "All mental functions may be materially conditioned; but the material conditions, being constituents of the world of experience, cannot originate or explain the conscious principle which makes that world possible."³¹⁷ Consciousness may receive affects or be influenced by objects, but consciousness' foundation defines the means that material sensations enter. Green takes one of Kant's most important propositions about the structural rigidity of consciousness in order to divide the phenomena of thought from empiricism's physiology of sensation: "The understanding 'makes' nature, but out of a material it does not make. That material, according to Kant, consists in phenomena or 'data' of sensibility, given

³¹⁶ Thomas Hill Green, *Prolegomena to Ethics*, ed. A.C. Bradley (New York: Thomas Y. Crowell, 1969), 53. Published posthumously, 1884.

³¹⁷ *Ibid.*, 13

under the so-called forms of intuition, space and time.”³¹⁸ Green believes the only way to know the phenomena of nature is through an *a priori* constitutional understanding of space and time. Consciousness is innate and does not learn to navigate space through the gradual assimilation of depth perception or touching surface areas. He sees time as an absolute – not the empirical form that measures temporality through the duration of cognition. For idealism, space and time are absolute and “objective” categories, but such terminology is misleading: “The terms ‘real’ and ‘objective,’ then, have no meaning except for a consciousness which presents its experience to itself as determined by relations, and at the same time conceives a single and unalterable order of relations determining them.”³¹⁹ The transcendent form of consciousness assumes an objective structure, and causal relations conform to an absolute law of fixed necessity in causal relations. Causality, then, is an objective standard where all conjunctions are constant. Consciousness and objectivity are synonymous terms, since objective space is unknowable outside of consciousness. These examples of Green’s idealist position clarify the British version of Kantianism. Green and Bradley’s idealism contributed to intellectual foundation of English in its early twentieth-century university origins. They caused a shift away from Hume, the larger social context of empiricism, and effectively excluded the principles of association in twentieth-century criticism.

Prior to the dominance of idealism, for most of the nineteenth century the disciplines of psychology, rhetoric, logic, physiology were co-investigated and interchangeable. English and the strict disciplinary divisions did not occur in the

³¹⁸ Ibid., 15

³¹⁹ Ibid., 17

university until the 1880s.³²⁰ Another subsequent effect on the direction of twentieth-century disciplinary evolution was that nineteenth-century academic candidacy required religious affiliations, which became an obstacle for uncompromising materialists.³²¹ The method of inquiry impacted the transmission of physiology and the acceptance of empiricism during the Victorian period. As the university system expanded and became more accessible towards the end of the Victorian era and in the beginnings of modernity, which in turn complemented the emergence of separate disciplines, those within the university promoted scholars sympathetic to orthodox theology and tradition metaphysics – theoretical positions already prominent within the academy.³²² Although hardly a nefarious conspiracy, Victorian public intellectuals did not have a pronounced influence upon the subsequent model of philosophy and the fine arts in the evolution of the university, which would become the dominant mode of transmission for aesthetic and philosophic ideas during the twentieth century. Their lack of involvement came to adversely affect the perpetuation of their ideas. At the critical inception of English at Cambridge, English criticism complemented orthodox values, innate faculties, and a

³²⁰ Rick Rylance, *Victorian Psychology and British Culture 1850-1880* (Oxford: Oxford University Press, 2000), 7.

³²¹ Alexander Bain did not take the communion, a fact he credited to be an obstacle in attaining a university post. See Andrea Lunsford, "Alexander Bain's Contributions to Discourse Theory," *College English* 44 (1982): 291. Bain was not alone, John Stuart Mill refused to attend Oxford or Cambridge because of their affiliation with Anglicanism. Nicholas Capaldi, *John Stuart Mill: A Biography* (Cambridge: Cambridge University Press, 2004), 33.

³²² Neurology was slow to find acceptance in the British university system during the twentieth century. See Peter Koehler, "The Evolution of British Neurology in comparison with Other Countries," *A Short History of Neurology: the British Contribution, 1660-1910*, ed. Frank Clifford Rose (Oxford: Butterworth-Heinemann, 1999), 58-74.

curtailed version of empiricism. The prevalence of idealism during the late Victorian period significantly affected the subsequent tradition of education. Without establishing the intellectual paradigms of psychophysiology within the disciplines of philosophy, English's initial formation was limited to theological and idealist contexts. T.H. Green and F.H. Bradley would have a much more profound influence upon later generations of thinkers than Lewes and Bain's philosophy and rhetoric. Green and Bradley's idealism gave Richard and Eliot a common philosophical edifice on which to build English criticism.

Eliot's dissertation on Bradley brought idealism into the field of English criticism.³²³ He may have been critical of Bradley's philosophy, but Eliot used Bradley's idealism as an aesthetic ideal. He effectively reformulated the English tradition of literature along a line of thought that downplayed the significance of the body, sensation, imagination as association, as well as relative or subjective considerations that question the absolute objectivity of objects and knowledge. Eliot's most famous critical points are purposely antithetical to empirical associations. Taken directly from the idealist explanations for objective causal relations, the *objective correlative* defied physiological association in its emphasis on the regular succession of objects to create emotion:

The only way of expressing emotion in the form of art is by finding an 'objective correlative;' in other words, a set of objects, a situation, a chain of events which shall be the formula of the *particular* emotion; such that

³²³ Eliot personally and in his dissertation showed some resistance to Bradley's *Absolute*. For Eliot's contentions with Bradley's philosophy, see Joseph Maddrey, *The Making of T.S. Eliot: a Study of the Literary Influences* (Jefferson: McFarland and Company, 2009), 62-63; and for a more detailed analysis: Jane Elizabeth Mallinson, "Essay I. Objects of Knowledge: T.S. Eliot's Dissertation," *T.S. Eliot's Interpretation of F.H. Bradley: Seven Essays* (Dordrecht: Kluwer Academic Publishers, 2003), 7-12.

when the external facts, which must terminate in sensory experience, are given, the emotion is immediately evoked.³²⁴

Emotion was a consequence of an objective set of facts that will necessarily lead to one particular result. It was a formula for behaviour, and provided an objective order to establish the otherwise relative emotions. This process inverted Hume's associative rules of causality – where the passion of belief, as an outgrowth of custom, dictated the cultural beliefs that make causal associations. Following the precedence of idealism, "The Metaphysical Poets" dismissed the empirical theory of sensation as a disordered influence upon cognition: "The sentimental age began early in the eighteenth century, and continued. The poets revolted against the ratiocinative, the descriptive; they thought and felt by fits, unbalanced they reflected."³²⁵ In contrast to Eliot's characterization, eighteenth-century poets and philosophers did not reject cognition; rather, they turned away from its absolute forms. The pace of their thinking may have lacked the ordered regularity that formulaic applications of logic have on directing cognition, but the point was to show that patterns and conditions for thinking are subject to change.

Eliot's *disassociation of sensibility*, in fact, attacked two hundred years of critical thinking by rejecting empiricism's primary hypothesis of sensibility influencing association. Eliot shifted the sentiments of physiology into the context of language representation: the metaphysical poets, he claimed, were "engaged in the task of trying to

³²⁴ T.S. Eliot, "Hamlet and His Problems," *Sacred Wood* (London: Methuen, 1920),

³²⁵ T.S. Eliot, "The Metaphysical Poets," 1921, Vol. 2, *The Norton Anthology of English Literature*, ed. M.H. Abrams and Stephen Greenblatt, 2 vols., 7th ed. (New York: W.W. Norton and Company, 2000), 2401-2408.

find the verbal equivalent for states of mind and feeling.”³²⁶ Sentiments were no longer found in the strength of sensations. Literary representations turned away from the subjectivity of the passions and towards a language of objectivity, and the latter imitated the subject and object conflation of idealism. Instead of using an innate *a priori* premise for objectivity, language, as an abstract equivalency, inaugurated a justification for the linguistic sign to become the foundation for objectivity, which effectively displaced the problem of the subject altogether. Eliot transformed the innateness of time and space from idealism into a transcendental belief in linguistic representations. Language represented itself, and, on an objective level, validated itself through its own system of meaning. For much of twentieth-century criticism, language became the objective standard through which to analyze art. In a large part the tradition of English at its inception as a discipline, which Eliot significantly helped to form, had already distinguished itself as an anti-physiological aesthetics.

I.A. Richards was also instrumental to the formation of English and pivotal to the justification of Coleridge’s imagination over the previous eighteenth-century associative models. Although Richards’ initial proposals in *Principles of Literary Criticism* (1924) were actually physiological in nature, *Practical Criticism* (1935) marked a shift to the “standard *topos* of Victorian criticism.”³²⁷ The period between 1910s and 1930s saw a change in the historical contexts of physiology and psychology that slowly perverted the prevalent eighteenth- and nineteenth-century standard of the imagination. The conflict

³²⁶ Ibid.

³²⁷ Nicholas Dames, *Physiology of the Novel: Reading, Neural Science, and the Form of Victorian Fiction* (Oxford: Oxford University Press, 2007), 248-54.

between idealism and empiricism's imagination was already experiencing a linguistic predilection for idealism – the *OED*, 1917 edition, referenced a translation of Kant's *Critique* as the first use for the faculty of imagination in English.³²⁸ In the early stages of modernity's conflict with imagination, Walter Libby's "The Scientific Imagination" (1922) gave the still current and standard account of the faculty in psychology, but he also registered an anxiety over the gradual shifts in the imagination's definition:

There has been an unwarranted use of terms like *imagination and conception*, regarding the denotation of which there is some approach to harmony among the recognized exponents of mental science. Among the philosophers, Wundt, Bergson and James, for example, acknowledge – each in his own way, to be sure – a close relationship between the imagination and the memory.³²⁹

As the context of imagination (once synonymous with the associative faculty) diminished from rival academic and critical contexts, psychophysiology lost the strength of its cultural relevance that previously insulated it. Its historical prevalence in the philosophy began to wane. The critical denominations of idealism and the new definitions emerging from English realigned and subverted the primary physiological context of the imagination, and obscured the tradition of psychophysiology in general.³³⁰ In the dynamic

³²⁸ Since corrected in definition 1b of the 2000 edition.

³²⁹ Walter Libby, "The Scientific Imagination," *The Scientific Monthly* 15, no. 3 (1922): 263. As Renee Tursi observes, William James saw himself as the "last word" in psycho-physiological tradition, and he followed Alexander Bain's physiological theories on the acquisition of habits, writing in a letter from 1870 diary: "I will see to the sequel" See Renee Tursi, "William James's Narrative of Habit," *Style* 33.1 (1999): 67; *The Letters of William James*, ed. Henry James, 2 vols. (Boston: Atlantic Monthly, 1920), 148.

³³⁰ For an overview of science's acceptance of the imagination in the eighteenth century to its exclusion in the twentieth-century inquiries, see Lorrain Daston, "Fear and Loathing of the Imagination in Science," *Daedalus* 134, no. 4 (2005): 16-30.

evolution of twentieth-century disciplines, Richards' seminal text on Coleridge came to further restructure English's concept of imagination.

Richard's *Coleridge on Imagination* (1934) followed traditional metaphysics, initiated a British literary foundation for idealism, and promoted an objective-language theory. His work on Coleridge was a reclamation of a not overly influential theorist in order to create a prehistory of English that was sympathetic to Richard's model of criticism. He celebrated Coleridge's rejection of the "vibrating nonsense" of Hartley and associative philosophy because it allowed for the critical inception of Kant,³³¹ and congratulated Coleridge on the anticipation of semasiology, building specifically on organicism: "Are not words, etc., parts and germinations of the plant? And what is the law of their growth? In something of this sort I would endeavour to destroy the antithesis of Words and Things: elevating, as it were Words into Things and living things too."³³² Coleridge conflated language and nature. Representation of the Word became synonymous with the external thing. Under Richards, Coleridge effectively moderated idealism's innate standard of cognition into the theological absolutism of the *Word*. Richards further aligned Coleridge's *Word* with idealism by situating Coleridge's aesthetics in terms of subject and object unity: "The subject (the self) has gone into what it perceives, and what it perceives is, in this sense, itself. So the object becomes the

³³¹ I.A. Richards, *Coleridge on Imagination*, 1934 (New York: Harcourt, Brace and Company, 1935), 12-17; M.H. Abrams would share Richards' disdain for Hartley. See *The Mirror and the Lamp: Romantic Theory and the Critical Tradition* (New York: W.W. Norton Company, 1953), 163.

³³² I.A. Richards, *Coleridge on Imagination*, 1934 (New York: Harcourt, Brace and Company, 1935), 12; quoting, "Letter to Godwin," 22 September 1800.

subject and the subject the object.”³³³ Richards supplemented experiential development (empiricism) with idealism: “The subject is what it is through the objects it has been.”³³⁴ Although the eighteenth-century imagination and the physiological emotions were not at work in Richards, the concept of empirical experience was essential to the dynamic content evolving from the co-extensive subject-object.³³⁵ Idealism’s innate faculty model shifted from a cognitive framework into a linguistic medium, and the innate principles of idealism transferred into a semantic absolutism that inaugurated a new critical method.³³⁶ Truth became transparent because language abandoned the idealist constraints of the subject-object for a unified theory of linguistic representation.

The question of imagination’s empirical validity or the rationality of general abstractions was no longer the primary debate relevant to the authenticity of ideas. Language allowed for a model of complete abstraction that even idealism could not, since semasiology functioned outside of the debates on the subject and external object. Language transparently represented itself. The abstraction of language set a precedent for the legitimacy of using Coleridge’s primary imagination. Coleridge’s transcendent Word effectively subverted the eighteenth- and nineteenth-century empirical faculty of imagination by delimiting the once predominant faculty to mere fancy.³³⁷ The *primary imagination*, as a non-empirical and transcendent form of consciousness, became a

³³³ Ibid., 57

³³⁴ Ibid., 57

³³⁵ John Paul Russo, “I.A. Richards in Retrospect,” *Critical Inquiry* 8, no. 4 (1982): 743.

³³⁶ John Whale, *Imagination Under Pressure, 1789-1832: Aesthetics, Politics, and Utility* (Cambridge: Cambridge University Press, 2000), 188-89.

³³⁷ Samuel Taylor Coleridge, *Biographia Literaria*, 1817, ed. J. Sahwcross (London: Oxford University Press, 1907), Vol. I.XIII.18-25; p. 202.

justification of creation *ex nihilo*, and imagination, in its secondary form, provided a dualistic union in its reflexion of the divine's infinite affirmation with the faculty of commonplace perceptions. For Richards, Coleridge's transcendent justification of imagination complemented his condemnation of the body for obstructing the freedom of reason:

Thus a man would be free (and derivatively responsible) if his acts were determined by laws of appropriate complexity; but not free when he is a slave to habit or subjugated by indigestion. This is the sense, I think, in which we say that an insane person has lost his mental freedom. Laws of lower order, physiological or infantile, have stepped in to the place of higher-order laws.³³⁸

Richards perpetuated Coleridge's rejection of the material. The uncontrolled sensations, non-voluntary habits, and automatic responses demonstrated the body's captivity. To escape from the passivity of physical sensation, the physiological body became relegated as a base form of intelligence. The subcontext to Richards' celebration of Coleridge and language was the rejection of his own physiological criticism. The critical shift from the *Principles of Literary Criticism* (1924) to *Coleridge on Imagination* (1934) illustrated a movement from physiological inflexions affecting the mental state³³⁹ to a moral science controlling emotive impulses.³⁴⁰

M.H. Abrams favoured Coleridge's psychology and language theory. *The Mirror and the Lamp* had its origin under the "stimulating direction of I.A. Richards,"

³³⁸ I.A. Richards, *Coleridge on Imagination*, 1934 (New York: Harcourt, Brace and Company, 1935), 62.

³³⁹ Nicholas Dames, *The Physiology of the Novel: Reading, Neural Science, and the Form of Victorian Fiction* (Oxford: Oxford University Press, 2007), 249-50.

³⁴⁰ Stephen Heath, "I.A. Richards, F.R. Leavis, and Cambridge English," *Cambridge Minds*, ed. Richard Mason (Cambridge: Cambridge University Press, 1994), 27.

establishing a line of intellectual succession that would continue with Abrams' supervision of Harold Bloom.³⁴¹ Abrams called Coleridge's imagination a foundation to Romantic and nineteenth-century critical analysis.³⁴² He conjoined modern literary criticism with Coleridge: "the development of literary theory in the lifetime of Coleridge was to a surprising extent the making of the modern critical mind."³⁴³ Abrams recognized the difference of eighteenth-century psychology before Coleridge,³⁴⁴ but counted Coleridge's recognition of Kant to be the "revolutionary" redirection of Romanticism towards modern literary criticism:

The only direct evidence in regard to the nature of the mental processes are those shadowy and fugitive items available to introspection, and these are 'modes of inmost being,' as Coleridge said, to which we 'know that the attributes of time and space are inapplicable and alien, but which yet can not be conveyed save in symbols of time and space.' Expressed in the terms of our day: mental events must be talked about metaphorically, in an object-language which was developed to deal literally with the physical world.³⁴⁵

Abrams' reconfigured the Kantian model of space and time into symbolic categories. Instead of the *a priori* foundation to consciousness to justify objective space and time, Abrams used language to establish objectivity. Language became the ultimate rationalization of the object, and it displaced the Kantian framework for consciousness. The abstractions of objective language subsume external objects, and, as cognition is

³⁴¹ M.H. Abrams, *The Mirror and the Lamp: Romantic Theory and the Critical Tradition* (New York: W.W. Norton Company, 1953), vi.

³⁴² Forest Pyle's also credits Coleridge with providing "a definitive statement of English Romantic imagination." Forest Pyle, *Ideology of the Imagination: Subject and Society in the Discourse of Romanticism* (Stanford: Stanford University Press, 1995), 35.

³⁴³ M.H. Abrams, *The Mirror and the Lamp: Romantic Theory and the Critical Tradition* (New York: W.W. Norton Company, 1953), v.

³⁴⁴ *Ibid.*, 158-59.

³⁴⁵ *Ibid.*, 158.

language, the previous metaphysical difficulties disappeared through the transparency of language's representation of the external world.

In *The Visionary Company* (1961), Harold Bloom furthered the foundational principles of his literary predecessors by rejecting the mechanical and affirming a criticism of semantic idealism. The poetic history of the eighteenth and nineteenth century transformed into a context reflecting the new tradition of criticism from Richards, Eliot, Abrams, and Bloom. These figures gave a model of literary analysis that Bloom reflected in order to further substantiate a critical tradition:

We say of Blake and Wordsworth that they are greatest of the Romantic poets, and indeed the first poets fully to enter into the abyss of their own selves, and we mean that they perform for us the work of the ideal metaphysician or therapeutic idealist, which is the role our need has assigned to the modern poet.³⁴⁶

Blake and Wordsworth assumed canonical status because their poetics could align with English's idealist metaphysics.

Bloom perpetuated earlier idealist criticism, claiming the "individual Mind and the external World are exquisitely fitted"³⁴⁷ and that *Resolution and Independence* "dissolv[es] the boundaries between objects."³⁴⁸ Bloom read, from Coleridge, the Mariner's punishment in the context of intention and consequence:

The act [for the Mariner] becomes a bracketed phenomenon, *pure act*, detached from motivation or consequences, and existent in itself. But the Mariner learns not to bracket, and the poem would have us learn, not

³⁴⁶ Harold Bloom, *The Visionary Company* (Garden City: Doubleday and Company, 1961), 3. William Blake, however, was largely unknown during the period and he had little influence on the nineteenth century (until the 1860s). See William Richey, *Blake's Altering Aesthetics* (Columbia: Missouri University Press, 1996).

³⁴⁷ *Ibid.*, 123.

³⁴⁸ *Ibid.*, 160.

where to throw our date shell, nor to love all creatures great and small, but to connect all phenomena, acts and things, in the fluid dissolve of the imagination.³⁴⁹

Bloom went a step beyond the Kantian confluences of subject and object. Bloom's revelation was an *ontic experience* of Kant's moral imperative framed within imagination's unification of Being. The bracketed act of intention exists outside of empirical consequences, and, as a pure *a priori* act, it complemented Coleridge's *organicism*.

Through Bloom, the promotion of language and the rejection of materialism became an explicit foundation for subsequent twentieth-century criticism. The notable influences of Richards, Eliot, Abrams, and Bloom's critical methods contributed to the diminishment of psychophysiology in discussions on aesthetics. There was a new standard of criticism. The proliferation of literary idealism gave shape to alternative critical directives and supplemental reconstructions of literary history, causing the aesthetic tradition of psychophysiology to fall into irrelevance and become a dead literary theory.

³⁴⁹ Ibid., 203.

Bibliography

- Abrams, M.H. *The Mirror and the Lamp: Romantic Theory and the Critical Tradition*. New York: W.W. Norton Company, 1953.
- Addison, Joseph and Richard Steele. *Addison and Steele: Selections from the Tatler and the Spectator*. New York: Rinehart, 1957.
- Akenside, Mark. "Pleasures of the Imagination." 1744. *Goldsmith and the Book of Pleasures*. New York, 1856. 121-205.
- Alison, Archibald. *Essays on the Nature and Principles of Taste*. 1790. Hildesheim: Georg Olms Verlagsbuchhandlung, 1968.
- Allison, Henry E. *Custom and Reason in Hume: A Kantian Reading of the First Book of the Treatise*. Oxford: Oxford University Press, 2008.
- . "Hume's Philosophical Insouciance: A Reading of *Treatise* 1.4.7." *Hume Studies* 31, no. 2 (November 2005): 427-456.
- Anderson, Robert Fendel. *Hume's First Principles*. Lincoln: University of Nebraska Press, 1966.
- Anselm. "Proslogion." *Monologion and Proslogion with Replies to Gaunilo and Anselm*. Trans. Thomas Williams. Indianapolis: Hackett Publishing Company, 1995.
- Arata, Stephen. "On Not Paying Attention." *Victorian Studies* 46, no. 2 (2004): 193-206.
- Arikha, Noga. "Form and Function in the Early Enlightenment." *Perspectives on Science* 14, no. 2 (2006): 153-188.
- Aristotle. "On Generation and Corruption." *The Complete Works of Aristotle*. Edited by Jonathan Barnes. Trans. H.H. Joachim. 2 vols. rev. ed. Princeton: Princeton University Press, 1984. 512-554.
- . "On the Soul." *The Complete Works of Aristotle*. Edited by Jonathan Barnes. Trans. W.D. Ross. Rev. Trans. J.A. Smith. 2 vols. Princeton: Princeton University Press, 1984. 641-692.
- Arnold, Matthew. *Culture and Anarchy*. 1859. Cambridge: Cambridge University Press, 1932.
- Baier, Annette C. *Death and Character: Further Reflections on Hume*. Cambridge: Harvard University Press, 2008.
- . *A Progress of Sentiments: Reflections of Hume's Treatise*. Cambridge: Harvard University Press, 1991.

- Bain, Alexander. *Emotions and the Will*. 3rd ed. London, 1875.
- . "The Empiricist Position." *Mind* 14, no. 55 (1889): 369-92.
- . *Mental and Moral Science: A Compendium of Psychology and Ethics*. London, 1883.
- . *Mind and Body: The Theories of Their Relation*. 2nd ed. London, 1873.
- . "On 'Association'-Controversies." *Mind* 12, no. 46 (1887): 161-182.
- . "On Feeling as Indifference." *Mind* 14, no. 53 (1889): 97-106.
- . "Pleasure and Pain." *Mind*, N.S., no. 2. (1892): 161-187.
- . *Senses and the Intellect*. 1855. 3rd ed. New York, 1879.
- Barfoot, Michael. "Hume and the Culture of Science in the Early Eighteenth Century." *Studies in the Philosophy of the Scottish Enlightenment*. Edited by M.A. Stewart. Oxford: Clarendon Press, 1990. 151-190.
- Bargeliotes, L. "David Hume: Universality, Causality, Induction, Uncertainty." *Philosophical Inquiry* 22, no. 3 (2000): 83-102.
- Barker-Benfield, G. J. *The Culture of Sensibility: Sex and Society in Eighteenth-Century Britain*. Chicago: University of Chicago Press, 1992.
- Baxter, Donald M. "Identity, Continued Existence, and the External World." *The Blackwell Guide to Hume's Treatise*. Edited by Saul Traiger. Malden: Blackwell Publishing, 2006.
- Beattie, James. *An Essay on the Nature and Immutability of Truth in Opposition to Sophistry and Scepticism*. 1770. 6th ed. London, 1778.
- . "Of Memory and Imagination." Vol.1. *Dissertations Moral and Critical*. 2 vols. Dublin, 1783.
- "Of Memory, An Essay on Truth." *Selected Philosophical Writings*. Edited by James A. Harris. Exeter: Imprint Academic, 2004.
- Beebee, Helen. *Hume on Causation*. London: Routledge, 2006.
- Bennett, M.R. and P.M.S. Hacker. "The Motor System in Neuroscience: A History and Analysis of Conceptual Developments." *Progress in Neurobiology* 67, no. 1 (May 2002): 1-52.
- Bentham, Jeremy. *Introduction to Principles of Morals and Legislation*. 1780/1789. Edited by J.H. Burns and H.L.A. Hart. Oxford: Clarendon Press, 1996.
- . *Deontology; Together with a Table of the Springs of Action; and an Article on Utilitarianism*. 1815. Edited by Amnon Goldworth. Oxford: Clarendon Press, 1983.

- Berkeley, George. "Treatise Concerning the Principles of Human Knowledge. 1710. *The Empiricists*, Garden City: Anchor Press, 1974.
- Bernard, Christopher. "Hume and the Madness of Religion." *Hume and Hume's Connexions*. Edited by M.A. Stewart and John P. Wright. University Park: Pennsylvania State University Press, 1995. 224-238.
- Bibliotheca Anatomica, Medica, Chirurgica, &c. Containing a Description of the Several Parts of the Body*. 2 vols. London, 1711.
- Biro, John. "Hume's New Science of the Mind." *The Cambridge Companion to Hume*. Edited by David Norton. Cambridge: Cambridge University Press, 1993. 34-89.
- Blair, Hugh. *Lectures on Rhetoric and Belles Lettres*. 1783. Philadelphia, 1860.
- Bloom, Harold. 1961. *The Visionary Company*. Garden City: Doubleday and Company, 1961.
- Bohls, Elizabeth A. "Disinterestedness and the Denial of the Particular: Locke, Adam Smith, and the Subject of Aesthetics." *Eighteenth-Century Aesthetics and Reconstruction of Art*. Edited by Paul Mattick Jr. Cambridge: Cambridge University Press, 1993.
- Boswell, James. *Boswell's Life of Johnson*. Edited by John Wilson Croker. London, 1876.
- . *Private Papers of James Boswell from Malahide Castle*. Edited by G. Scott and F.A. Pottle. Vol. XV. New York: priv. Ptd, 1931.
- Brissenden, R. F. *Virtue in Distress: Studies in the Novel of Sentiment from Richardson to Sade*. London: Macmillan, 1974.
- . "'Sentiment': Some Uses of the Word in the Writings of David Hume." *Studies in the Eighteenth Century: Papers Presented at the David Nichol Smith Memorial Seminar Canberra, 1966*. Edited by R.F. Brissenden. Canberra: Australian National University Press, 1968. 89-108.
- Broughton, Janet. "Impressions and Ideas." *The Blackwell Guide to Hume's Treatise*. Edited by Saul Traiger. Malden: Blackwell Publishing, 2006.
- . "The Inquiry in Hume's *Treatise*." *Hume Studies* 113, no. 4 (2004): 537-556.
- Brown, Marshall. *Preromanticism*. Stanford: Stanford University Press, 1991.
- Browne, John. *Myographia Nova: or, a Graphical Description of all the Muscles in the Humane Body, as they Arise in Dissection: Distributed into Six Lectures*. 2nd ed. London, 1705.

- Buckle, Stephen. *Hume's Enlightenment Tract: The Unity and Purpose of An Enquiry Concerning Human Understanding*. Oxford: Clarendon Press, 2001.
- . "Hume's Sceptical Materialism." *Philosophy* 82 (November 2007): 553-578.
- Buickerood, James G. "'The Whole Exercise of Reason': Charles Mein's Account of Rationality." *Journal of the History of Ideas* 63, no. 4 (2002): 639-658.
- Burke, Edmund. *A Philosophical Enquiry into the Origin of our Ideas of the Sublime and Beautiful*. 1757. Edited by James T. Boulton. London: University of Notre Dame Press, 1968.
- . *Reflections on the Revolution in France*. 1790. Edited by Connor Cruise O'Brien. London: Penguin Books, 1968.
- Burton, J.H. *Life and Correspondence of David Hume*. 2 vols. Edinburgh, 1846.
- Butler, Joseph. *The Analogy of Religion to the Constitution and Course of Nature*. 1736. London: The Religious Tract Society, [n.d.]
- Capaldi, Nicholas. *David Hume: The Newtonian Philosopher*. Boston: Twayne Publishers, 1975.
- . "Hume's Theory of the Passions." *Hume: A Re-Evaluation*. Edited by Donald W. Livingston and James T. King. New York: Fordham University Press, 1976.
- . *John Stuart Mill: A Biography*. Cambridge: Cambridge University Press, 2004.
- Chambers, Ephraim. *Cyclopaedia, or Universal Dictionary of Arts and Science*. Edited by Abraham Rees. 2 vols. London, 1728.
- Chappell, V.C. "Hume on What there Is" Vol. 3. *David Hume: Critical Assessments*. Edited by Stanley Tweyman. 6 vols. London: Routledge, 1995. 77-87.
- Clarac, François. "Some Historical Reflections on the Neural Control of Locomotion." *Brain Research Reviews* 57, no. 1 (January 2008): 13-21.
- Clarke, Edwin, and Charles Donald O'Malley. *The Human Brain and Spinal Cord: a Historical Study Illustrated by Writings from Antiquity to the Twentieth Century*. 2nd rev. ed. San Francisco: Norman Publishing, 1996.
- Clower, William T. "The Transition from Animal Spirits to Animal Electricity: A Neuroscience Paradigm Shift." *Journal of the History of the Neurosciences* 7, no. 3 (1998): 201-218.
- Coleridge, Samuel Taylor. *Biographia Literaria*. 1817. Edited by J. Shawcross London: Oxford University Press, 1907.

- . *Letters of Samuel Taylor Coleridge*. 1956-1971. Edited by Earl Leslie Griggs. 6 vols. Oxford: Clarendon Press.
- Colliber, Samuel. *Free Thoughts Concerning Souls: In Four Essays. I. Of the Humane Soul consider'd in its own Nature. II. Of the Human Soul compared with the Souls of Brutes. III. Of the supposed Prae-existent State of Souls. To which is added, An Essay on Creation ... By the Author of the impartial Inquiry, &c.* London: Printed for R. Robinson, 1734.
- Collier, Mark. "Hume and Cognitive Science: The Current Status of the Controversy over Abstract Ideas," *Phenomenology and the Cognitive Sciences* 4, no. 2 (2005): 197-207.
- Compston, Alastair. "'The Marvellous Harmony of the Nervous Parts': The Origins of Multiple Sclerosis." *Clinical Medicine* 4, no. 4 (2004): 346-54.
- Cook, John. *An Anatomical and Mechanical Essay on the Whole Animal Oeconomy; in One View. Wherein is shewn the most Wonderfull Conduct of Nature in all the Phaenomena attending Human Bodies*. 2 vols. London, 1730.
- Coventry, Angela. *Hume's Theory of Causation: A Quasi-Realist Interpretation*. London: Continuum, 2006.
- Cunningham, Andrew. "The Pen and the Sword: Recovering the Disciplinary Identity of Physiology and Anatomy before 1800 II: Old Anatomy – the Sword." *Studies in History and Philosophy of Biological and Biomedical Sciences* 34, no. 1 (March 2003): 51-76.
- Dames, Nicholas. "Wave-Theories and Affective Physiologies: The Cognitive Strain in Victorian Novel Theories." *Victorian Studies* 46, no. 2 (2004): 206-216.
- . *The Physiology of the Novel: Reading, Neural Science, and the Form of Victorian Fiction*. Oxford: Oxford University Press, 2007.
- Daston, Lorraine. "Fear and Loathing of the Imagination in Science." *Daedalus* 134, no. 4 (2005): 16-30.
- Dauer, Francis W. "Force and Vivacity in the *Treatise* and the *Enquiry*." *Hume Studies* 25, no. 1-2 (1999): 83-100.
- Debus, A. G. *Alchemy and Chemistry in the Seventeenth Century*. Los Angeles: University of California Press, 1966.
- Descartes, René. *Meditations on First Philosophy*. 1641. Trans. Donald A. Cress. 3rd ed. Indianapolis: Hackett Press Company, 1993.

- . *The Passions of the Soul*. 1649. Trans. Stephen H. Voss. Indianapolis: Hackett Press Company, 1989.
- . *The World and Other Writings*. Edited by and Trans. Stephen Gaukroger. Cambridge: Cambridge University Press, 1998.
- Dewhurst, Kenneth. *Thomas Willis as a Physician*. Los Angeles: University of California Press, 1964.
- Dickie, George. *The Century of Taste: The Philosophical Odyssey of Taste in the Eighteenth Century*. Oxford: Oxford University Press, 1996.
- Drake, James. *Anthropologia Nova: or, a New System of Anatomy*. 2 vols. London, 1717.
- Eadie, M.J. "A Pathology of the Animal Spirits – the Clinical Neurology of Thomas Willis (1621-1675): Part I – Background, and Disorders of Intrinsically Normal Animal Spirits." *Journal of Clinical Neuroscience* 10, no. 1 (2003a): 14-29.
- . "A Pathology of the Animal Spirits – the Clinical Neurology of Thomas Willis (1621-1675): Part II – Disorders of Intrinsically Abnormal Animal Spirits." *Journal of Clinical Neuroscience* 10, no. 2 (2003b): 146-157.
- Eagleton, Terry. *The Ideology of the Aesthetic*. Oxford: Cambridge Press, 1990.
- Emerson, Roger L. "The 'Affair' at Edinburgh and the 'Project' at Glasgow: the Politics of Hume's Attempts to Become a Professor." *Hume and Hume's Connexions*, Edited by M.A. Stewart and John P. Wright. University Park: Pennsylvania State University Press, 1995. 1-22.
- Elfenbein, Andrew. "Cognitive Science and the History of Reading." *PMLA* 121, no. 2 (2006): 484-502.
- Eliot, George. "Leaves from a Note-book." *Miscellaneous Essays: The Lifted Veil, Brother Jacob*. Vol. 11. New York: P.F. Collier and Son, [n.d.].
- Eliot, T.S. "Hamlet and His Problems." *Sacred Wood*. London: Methuen, 1920.
- . "The Metaphysical Poets." 1921. Vol. 2. *The Norton Anthology of English Literature*. Edited by M.H. Abrams and Stephen Greenblatt. Seventh ed. 2 vols. New York: W.W. Norton and Company, 2000. 2401-2408.
- Falkenstein, Lorne, and Welton, David. "Humean Contiguity." *History of Philosophy Quarterly* 18, no. 3 (2001): 279-296.
- Fieser, James, ed. "Alexander Gerard." *Early Responses to Hume's Essays, Moral, Political, and Literary*. 2 vols. 2nd rev. ed. Bristol: Thoemmes Press, 2005.

---. "Hume's Pyrrhonism: A Developmental Interpretation." *Hume Studies* 15, no. 1 (1989): 93-119.

Finger, Stanley. *Minds Behind the Brain: A History of the Pioneers and Their Discoveries*. Oxford: Oxford University Press, 2000.

Friday, Jonathan, ed. "Alexander Gerard." *Art and Enlightenment: Scottish Aesthetics in the Eighteenth Century*. Exeter: Imprint Academic, 2004. 103-115

Fjell, Anders M., and Kristine B. Walhovd. "Stability of Brain Potentials, Mental Abilities, and Cortical Thickness." *Cognitive Neuroscience and Neuropsychology* 18, no. 8 (2007): 725-8.

Flage, Daniel E. *David Hume's Theory of Mind*. London: Routledge, 1990.

Flew, A. "Impressions and Experiences: Public or Private?" *Hume Studies* 11, no. 2 (1985): 183-191.

Fodor, Jerry. *Hume Variations*. Oxford: Clarendon Press, 2003.

Fogelin, Robert. *Hume's Scepticism in the Treatise of Human Nature*. London: Routledge and Kegan Paul, 1985.

Ford, Jennifer. *Coleridge on Dreaming: Romanticism, Dreams, and the Medical Imagination*. Cambridge: Cambridge University Press, 1998.

Fox, Christopher. "Of Logic and Lycanthropy: Gulliver and the Faculties of the Mind." *Literature and Medicine during the Eighteenth Century*. Edited by Marie Mulvey Roberts and Roy Porter. London: Routledge, 1993.

Frank, Robert G. Jr. "Thomas Willis and His Circle: Brain and Mind in Seventeenth-Century Medicine." *The Languages of Psyche: Mind and Body in Enlightenment Thought*. Edited by G.S. Rousseau. Berkeley: University of California Press, 1990. 107-146.

Frasca-Spada, Marina. "Belief and Animal Spirits in Hume's *Treatise*." *Eighteenth-Century Thought* 1 (May 2003): 151-169.

---. *Space and the Self in Hume's Treatise*. Cambridge: Cambridge University Press, 1998.

---. "Quixotic Confusions and Hume's Imagination." *Impressions of Hume*. Edited by M. Frasca-Spada and P.J.E. Kail. Oxford: Clarendon Press, 2005. 161-186.

Fried, Michael. *Absorption and Theatricality: Painting and Beholder in the Age of Diderot*. Berkeley: University of California Press, 1980.

- Furlong, E. J. "Imagination in Hume's 'Treatise' and 'Enquiry Concerning the Human Understanding.'" *Philosophy* 36, no. 136 (1961): 62-70.
- Galen. *Galen on the Brain: Anatomical Knowledge and Physiological Speculation in the Second Century AD*. Edited and Trans. by Julius Rocca. Leiden: Brill, 2003.
- Garrett, Don. *Cognition and Commitment in Hume's Philosophy*. New York: Oxford University Press, 1997.
- . "Hume's Conclusion." *The Blackwell Guide to Hume's Treatise*. Edited by Saul Traiger. Malden: Blackwell Publishing, 2006.
- . "'A Small Tincture of Pyrrhonism: Skepticism and Naturalism in Hume's Science of Man.'" *Pyrrhonian Skepticism*. Oxford: Oxford University Press, 2004. 68-98.
- Gassendi, Pierre. *Institutio Logica*. 1658. Trans. Howard Jones. Assen: Van Gorcum, 1981.
- Gerard, Alexander. *An Essay on Genius*. 1774. Edited by Bernhard Fabian. München: Wilhelm Fink Verlag, 1966.
- . *An Essay on Taste*. 1759. Menston: Scolar Press, 1971.
- . *An Essay on Taste: to Which is Now Added Part Fourth, Of the Standard of Taste*. 3rd ed. Edinburgh, 1780.
- Gibson, Thomas. *The Anatomy of the Human Body Epitomized*. 1682. 6th ed. London, 1703.
- Ginsberg, Robert. "The Literary Structure and Strategy of Hume's Essay on the Standard of Taste." *The Philosopher as Writer: The Eighteenth Century*. Edited by Robert Ginsberg. Selinsgrove: Susquehanna University Press, 1987. 199-237.
- Gillispie, Charles Coulston, ed. "Fermentation." *Dictionary of Scientific Biography*. New York: Scriber, 1972.
- Glassman, Robert B., and Hugh W. Buckingham. "David Hartley's Neural Vibrations and Psychological Associations." *Brain, Mind, and Medicine: Essays in Eighteenth-Century Neuroscience*. Edited by Harry A. Whitaker, C.U.M. Smith, and Stanley Finger. New York: Springer, 2007. 177-90.
- Green, Thomas Hill. *Prolegomena to Ethics*. 1884. Edited by A.C. Bradley. New York: Thomas Y. Crowell, 1969.
- . "Introduction to *Hume's Treatise of Human Nature*." 1874. *Hume and Locke*. New York: Thomas Y. Crowell Company, 1968.
- Gross, Charles G. "The Discovery of Motor Cortex and its Background." *Journal of the History of the Neurosciences* 16, no. 3 (2007): 320-331.

- Grote, George. *Review of the Work of Mr John Stuart Mill, Entitled, 'An Examination of Sir William Hamilton's Philosophy.'* London, 1868.
- Guerlac, Henry. *Essays and Papers in the History of Modern Science.* Baltimore: John Hopkins University Press, 1977.
- Guyer, Paul. "Humean Critics, Imaginative Fluency, and Emotional Responsiveness: A Follow-Up to Stephanie Ross." *British Journal of Aesthetics* 48, no. 4 (2008): 445-456.
- Hakeem, Atiya Y., P.R. Hof, C.C. Sherwood, R.C. Switzer, L.E.L. Rasmussen, and J.M. Allman. "Brain of the African Elephant (*Loxodonta Africana*): Neuroanatomy from Magnetic Resonance Images." *The Anatomical Record Part A*. 287 (November 2005): 1117-1127.
- Handley, James. *Mechanical Essays on the Animal Oeconomy: Wherein, not only the Conduct of Nature, in Animal Secretion, but Sensation, and Human Generation, are Distinctly Consider'd and Anatomically Explain'd.* London, 1721.
- Harkin, Maureen. "Theorizing Popular Practice in Eighteenth-Century Aesthetics: Lord Kames and Alexander Gerard." *Aesthetic Subjects*. Edited by Pamela R. Matthews and David McWhirter. Minnesota: University of Minnesota Press, 2003. 171-189.
- Harris, James. *Three Treatises.* 1745. 2nd ed. New York: Garland Press, 1970.
- Hartley, David. *Observations on Man: His Frame, His Duty, and His Expectations.* 1749. 4th ed. London, 1801.
- Harvey, William. *The Circulation of Blood.* 1628. New York: Cosimo Classics, 2006.
- Heath, Stephen. "I.A. Richards, F.R. Leavis, and Cambridge English." *Cambridge Minds*. Edited by Richard Mason. Cambridge: Cambridge University Press, 1994. 20-33.
- Herbert, Christopher. *Victorian Relativity: Radical Thought and Scientific Discovery.* Chicago: Chicago University Press, 2001.
- Hipple, Walter John. *The Beautiful, the Sublime, and the Picturesque in Eighteenth-Century British Aesthetic Theory.* Carbondale: Southern Illinois University Press, 1957.

- Hobbes, Thomas. *Elements of Law Natural and Politic: Human Nature and de Corpore Politico with Three Lives*. 1640. Oxford: Oxford University Press, 1999.
- The Holy Bible: Containing the Old and New Testaments in the King James Version*. 1977. Nashville: Thomas Nelson.
- Howell, Wilbur Samuel. *Poetics, Rhetoric, and Logic: Studies in the Basic Disciplines of Criticism*. Ithaca: Cornell University Press, 1971. 536-76.
- Hughes, Trevor J. *Thomas Willis 1621-1675: His Life and Work*. Edited by Hugh L'Etang. London: Royal Society of Medicine Services Limited, 1991.
- . "The Early History of Myasthenia Gravis." *Neuromuscular Disorders* 15, no. 12 (December 2005): 878-86.
- Hume, David. *An Enquiry Concerning Human Understanding*. 1748. New York: Cosimo, 2008.
- . *The Letters of David Hume*. Edited by J.Y.T. Greig. 2 vols. Oxford: Clarendon Press, 1932.
- . "Of Essay-Writing." 1742. *Essays: Moral, Political, and Literary*. Edited by Eugene F. Miller. rev. ed. Indianapolis: Liberty Fund, 1987. 533-537.
- . "Of the Standard of Taste." 1757. *Essays: Moral, Political, and Literary*. Edited by Eugene F. Miller. rev. ed. Indianapolis: Liberty Fund, 1987. 226-249.
- . *A Treatise of Human Nature*. 1739-40. Edited by David Fate Norton and Mary J. Norton. Oxford: Oxford University Press, 2000.
- Hutcheson, Francis. *An Essay on the Nature and Conduct of the Passions and Affections, with Illustrations on the Moral Sense*. 1728. Edited by Aaron Garrett. Introduction by Aaron Garrett. rev. ed. of 1742. Indianapolis: Liberty Fund, 2002.
- Isler, Hansruedi. *Thomas Willis 1621-1675: Doctor and Scientist*. New York: Hafner Press Company, 1968.
- Jacquette, Dale. *David Hume's Critique of Infinity*. Leiden: Brill, 2001.
- . "Hume on Infinite Divisibility and Sensible Extensionless Indivisibles." *Journal of the History of Philosophy* 34, no. 1 (January 1996): 61-78.
- James, William. *The Letters of William James*. Edited by Henry James. 2 vols. Boston: Atlantic Monthly, 1920.
- James, Susan. *Passion and Action: The Emotions in Seventeenth-Century Philosophy*. Oxford: Clarendon Press, 1997.

- Jessop, T.E. "The Misunderstood Hume." *Hume and the Enlightenment: Essays Presented to Ernest Campbell Mossner*. Edited by William B. Todd. Edinburgh: Edinburgh University Press, 1974.
- Johns, Adrian. "The Physiology of Reading." *Books and the Sciences in History*. Edited by Marina Frasca-Spada and Nick Jardine. Cambridge: Cambridge University Press, 2000. 291-316.
- Johnson, D.M. "Hume's Missing Shade of Blue, Interpreted as Involving Habitual Spectra." 1984. Vol. 1. *David Hume: Critical Assessments*. Edited by Stanley Tweyman. 6 vols. London: Routledge, 1995. 109-124.
- Johnson, Oliver A. *The Mind of David Hume: A Companion to Book of A Treatise of Human Nature*. Urbana: University of Illinois Press, 1995.
- Jones, Peter. *Hume's Sentiments: Their Ciceronian and French Context*. Edinburgh: Edinburgh University Press, 1982.
- Kail, P.J.E. "Hume, Malebranche, and 'Rationalism.'" *Philosophy* 83, no. 325 (2008): 318-332.
- Kant, Immanuel. *Critique of Judgement*. 1790. Trans. J.H. Bernard. New York: Hafner Press, 1951.
- . *Critique of Practical Reason*. 1787. Trans. T.K. Abbott. Amherst: Prometheus Books, 1996.
- . *Critique of Pure Reason*. 1781. Trans. Norman Kemp Smith. New York: St Martin's Press, 1929.
- Kames, Henry Home. *Elements of Criticism*. 1762. Edited by Peter Jones. 2 vols. 6th ed. of 1785. Indianapolis: Liberty Fund, 2005.
- . *An Enquiry Concerning the Principles of Morals: A Critical Edition*. Edited by Tom L. Beauchamp. Introduction by Tom L. Beauchamp. Oxford: Oxford University Press, 1998.
- . *Essays on the Principles of Morality and Natural Religion*. 1779. *Several Essays Added Concerning the Proof of a Deity*. Edited by Mary Catherine Moran. Introduction by Mary Catherine Moran. 3rd ed. Indianapolis: Liberty Fund, 2005.
- Kassler, Jamie C. "Restraining the Passions: Hydropneumatics and Hierarchy in the Philosophy of Thomas Willis." *The Soft Underbelly of Reason: The Passions in the Seventeenth Century*. Edited by Stephen Gaukroger. London: Routledge, 1998. 147-164.

- Keill, James. *Anatomy of the Human Body Abridg'd: or, a Short and Full View of All the Parts of the Body. Together with Their Several Uses, drawn from Their Compositions and Structures*. 2nd rev. ed. London, 1703.
- Keill, John. *An Introduction to the True Astronomy: or, Astronomical Lectures, read in the astronomical School of the University of Oxford*. 1702. London, 1721.
- Kemp, Gary. "The Aesthetic Attitude," *British Journal of Aesthetics* 39, no. 4 (1999): 392-399.
- Kirk, G.S., and J.E. Raven, eds. "Zeno of Elea." *The Presocratic Philosophers: A Critical History with a Selection of Texts*. Cambridge: Cambridge University Press, 1957. 286-297.
- Kivy, Peter. *The Seventh Sense: Francis Hutcheson and Eighteenth-Century British Aesthetics*. 1976. 2nd rev. Oxford: Clarendon Press, 2003.
- Knoeff, Rina. "Reins of the Soul: The Centrality of the Intercostal Nerves to the Neurology of Thomas Willis and to Samuel Parker's Theology." *Journal of the History of Medicine and Allied Sciences* 59, no. 3 (2004): 413-440.
- Knight, Thomas. *A Vindication of a Late Essay on the Transmutation of Blood*. 8 vols. London, 1731.
- Koehler, Peter. "The Evolution of British Neurology in comparison with Other Countries." *A Short History of Neurology: the British Contribution, 1660-1910*. Edited by Frank Clifford Rose. Oxford: Butterworth-Heinemann, 1999. 58-74.
- Korsgaard, Christine M. *The Constitution of Agency: Essays on Practical Reason and Moral Psychology*. Oxford: Oxford University Press, 2008.
- Kruger, Laurence. "An Early Illustrated Comparative Anatomy of the Brain: Samuel Collins' *A Systeme of Anatomy* (1685) and the Emergence of Comparative Neurology in 17th Century England." *Journal of the History of the Neurosciences* 13, no. 3 (2004): 195-217.
- Kuypers, Mary Shaw. *Studies in the Eighteenth Century Background of Hume's Empiricism*. New York: Russell and Russell, 1966.
- Larsen, Elizabeth. "Re-Inventing Invention: Alexander Gerard and 'An Essay on Genius.'" *Rhetorica* 11, no. 2 (1993): 181-197.

- Lavater, J.C. *Essays on Physiognomy: For the Promotion of Knowledge and the Love of Mankind; Written in German Language by J.C. Lavater, Abridged from Mr. Holcroft's Translation*. Trans. Thomas Holcroft. London: [1793?].
- Leavis, F.R. *English Literature in Our Time and the University*. London: Chatto and Windus, 1969.
- Lecaldano, Eugenio. "The Passions, Character, and the Self in Hume." *Hume Studies* 28, no. 2 (2002): 175-184.
- Lee, Sidney, ed. "Adam Smith," *Dictionary of National Biography*. Vol. LIII. London, 1898.
- Lega, Bradley C. "An Essay Concerning Human Understanding: How the *Cerebri Anatome* of Thomas Willis Influenced John Locke." *Neurosurgery* 58, no. 3 (March 2006): 567-576.
- Lehmann, William C. *Henry Home, Lord Kames, and the Scottish Enlightenment: A Study in National Character and in the History of Ideas*. Hague: Martinus Nijhoff, 1971.
- Lewes, George Henry. "The Principles of Success in Literature." Vol. 1. *The Fortnightly*. Edited by G.H. Lewes. London, 1865.
---. *Biographical History of Philosophy*. 2 vols. New York, 1892.
- Libby, Walter. "The Scientific Imagination." *The Scientific Monthly* 15, no. 3 (September 1922): 263-270.
- Locke, John. *An Essay Concerning Human Understanding*. 1689. Edited by Peter H. Nidditch. Oxford: Clarendon Press, 1975.
- Loeb, Louis E. *Stability and Justification in Hume's Treatise*. Oxford: Oxford University Press, 2002.
- Logan, Peter Melville. *Nerves and Narratives: A Cultural History of Hysteria in 19th-Century British Prose*. Berkeley: University of California Press, 1997.
- Lorch, Marjorie Perlman. "Explorations of the Brain, Mind and Medicine in the Writings of Jonathan Swift." *Brain, Mind and Medicine: Essays in Eighteenth-Century Neuroscience*. Edited by Harry Whitaker, C.U.M. Smith, and Stanley Finger. New York: Springer, 2007. 345-352.
- Lunsford, Andrea. "Alexander Bain's Contributions to Discourse Theory." *College English* 44, no. 3 (1982): 290-300.

- Maddrey, Joseph. *The Making of T.S. Eliot: A Study of the Literary Influences*. Jefferson: McFarland and Company, 2009.
- Malebranche, Nicholas. *The Search After Truth: With Elucidation of the Search after Truth*. 1674-75. Edited by and Trans. Thomas M. Lennon, and Paul J. Olscamp. Cambridge: Cambridge University Press, 1997.
- Mallinson, Jane Elizabeth. "Essay I. Objects of Knowledge: T.S. Eliot's Dissertation." *T.S. Eliot's Interpretation of F.H. Bradley: Seven Essays*. Dordrecht: Kluwer Academic Publishers, 2003.
- Manolescu, Beth Innocenti. "Traditions of Rhetoric, Criticism, and Argument in Kames's *Elements of Criticism*," *Rhetoric Review* 22, no. 3 (2003): 225-242.
- Martensen, Robert L. *The Brain Takes Shape: An Early History*. Oxford: Oxford University Press, 2004.
- . "When the Brain Came out of the Skull: Thomas Willis (1621-1675), Anatomical Technique and the Formation of the 'Cerebral Body' in Seventeenth Century." *A Short History of Neurology*. Edited by F. Clifford Rose. Oxford: Butterworth-Heinemann, 1999. 36-57.
- Mayne, Zachary. *Two Dissertations Concerning Sense and the Imagination, 1728*. New York: Garland Press, 1976.
- McGuinness, Arthur E. *Henry Home, Lord Kames*. New York: Twayne Publishers, 1970.
- . "Hume and Kames: The Burdens of Friendship." *Studies in Scottish Literature* 6 (1969): 3-19.
- McRae, R. "The Import of Hume's Theory of Time." Vol. 3 *David Hume: Critical Assessments*. Edited by Stanley Tweyman. 6 vols. London: Routledge, 1995.
- Meeker, Kevin. "Hume's Iterative Probability Argument: A Pernicious *Reductio*." *Journal of the History of Philosophy* 38, no. 2 (April 2000): 221-238.
- Meyer, Alfred and Raymond Hierons. "Thomas Willis's Concepts of Neurophysiology: Part I." *Medical History* 9, no. 1 (1965): 1-15.
- . "Thomas Willis's Concepts of Neurophysiology: Part II." *Medical History* 9, no. 2 (April 1965): 142-55.
- . "A Note on Thomas Willis' Views on the Corpus Striatum and Internal Capsule." *Journal of the Neurological Sciences* 1 (1964): 547-554.
- Michael, Fred S. and Emily Michael. "Gassendi's Modified Epicureanism." *History of European Ideas* 21, no. 6 (1995): 743-61.

- Milnes, Tim. "On the Authorship of *Two Dissertations Concerning Sense and the Imagination, with an Essay on Consciousness* (1728)." *Notes and Queries* 47, no. 2 (June 2000): 196-198.
- Mill, James. *An Analysis of the Phenomena of the Human Mind*. 1829. Edited by J.S. Mill. 2 vols. 2nd ed. London: Longmans, 1878.
- Mill, John Stuart. *An Examination of Sir William Hamilton's Philosophy and of the Principal Philosophical Questions Discussed in his Writings*. 2nd ed. London, 1865.
- Miller, D.A. "Cage aux folles: Sensation and Gender in Wilkie Collin's *The Women in White*." *The Making of the Modern Body: Sexuality and Society in the Nineteenth Century*. Edited by Catherine Gallagher and Thomas Laqueur Berkeley: University of California Press, 1987. 107-136.
- Milton, J. R. "Locke, Medicine and the Mechanical Philosophy." *British Journal for the History of Philosophy* 9, no. 2 (June 2001): 221-243.
- Molnár, Zoltán. "Thomas Willis (1621-1675), the Founder of Clinical Neuroscience." *Nature Reviews: Neuroscience* 5 (April 2004): 329-35.
- Monck, W.H.S. "Two Schools of Psychology." *Mind* 7, no. 27 (July 1882): 427-435.
- Moran, Mary Catherine, ed. "Introduction." *Essays on the Principles of Morality and Natural Religion*. 1779. *Several Essays Added Concerning the Proof of a Deity*. Edited by Mary Catherine Moran. 3rd ed. Indianapolis: Liberty Fund, 2005. <http://oll.libertyfund.org/title/1352/66196/>. (Accessed on May 28, 2010).
- Morgan, Thomas. *The Mechanical Practice of Physick*. London, 1735.
- Morris, William Edward. "Hume's Scepticism about Reason." *Hume Studies* 15, no. 1 (1989): 39-60.
- Moore, James. "Hume and Hutcheson." *Hume and Hume's Connexions*. Edited by M.A. Stewart and John P. Wright. University Park: Pennsylvania State University Press, 1995. 23-57.
- Moskowitz, Michael A. "Adventures of a Translational Researcher in Stroke and Migraine." *Stroke* 38 (April 2007): 1645-1651.
- Muri, Allison. *The Enlightenment Cyborg: A History of Communications and Control in the Human Machine, 1660-1830*. Toronto: University of Toronto Press, 2007.

Norton, David Fate. *David Hume: Common-Sense Moralist, Sceptical Metaphysician*. Princeton: Princeton University Press, 1982.

Noxon, James. "Remembering and Imagining the Past." *Hume: A Re-Evaluation*. Edited by Donald W. Livingston and James T. King. New York: Fordham University Press, 1976.

Newton, Isaac. *Opticks: Or a Treatise of Reflections, Refractions, Inflections and Colours of Light*. 1704. London: G. Bell and Sons, 1931.
---. *The Principia: Mathematical Principles of Natural Philosophy*. 1687. Trans. I. Bernard Cohen, Anne Whitman, and Julia Budenz. Berkeley: University of California Press, 1999.

Noonan, Harold W. *Personal Identity*. New York: Routledge, 1989.

Nordahl, C. W., D. Dierker, I. Mostafavi, C.M. Cynthia, S.M. Rivera, D.G. Amaral, and D.C. Van Essen. "Cortical Folding Abnormalities in Autism Revealed by Surface-Based Morphometry." *The Journal of Neuroscience* 27, no. 43 (October 2007): 11725-11735.

Oberg, Barbara Bowen. 1976. "David Hartley and the Association of Ideas." *Journal of the History of Ideas* 37, no. 3 (July-September): 441-454.

O'Connor, James P.B. "Thomas Willis and the Background to *Cerebri Anatome*." *Journal of the Royal Society of Medicine* 96, no. 3 (2003): 139-43.

Owen, David. *Hume's Reason*. Oxford: Oxford University Press, 1999.

Oxford English Dictionary. Oxford: Oxford University Press, 1917.
---. 2nd ed. Oxford: Oxford University Press, 2000.

Paine, Thomas. "An Essay on Dreams." *An Examination of the Passages in the New Testament, quoted from the Old and called Prophecies concerning Jesus Christ. To which is prefixed an Essay on Dream, showing by what operation of the mind a Dream is produced in sleep, and applying the same to the account of Dreams in the New Testament. With an Appendix containing my private thoughts of a Future State. And Remarks on the Contradictory Doctrine in the Books of Matthew and Mark*. New York, 1807.

---. *Rights of Man*. 1791. New York: Barnes and Noble Books, 2004.

Pappas, George S. "On McRae's Hume." *Hume Studies* 7, no. 2 (1981): 161-171.

Paracelsus. "The Archidoxies of Theophrastus Paracelsus." Vol. 2. *The Hermetic and Alchemical Writings of Paracelsus*. Edited by Arthur Edward Waite. 2 vols. Berkeley: Shambhala, 1976.

Partington, J. R. *A Short History of Chemistry*. New York: Macmillan, 1939.

Passmore, John. *Hume's Intentions*. London: Gerald Duckworth, 1968.

Penelhum, Terence. *Themes in Hume: The Self, the Will, Religion*. Oxford: Clarendon Press, 2000.

The Physiological Library. Begun by Mr. Steuart, and some of the students of Natural Philosophy in the University of Edinburgh, April 2 1724: and Augmented by some Gentlemen; and the Students of Natural Philosophy, December 1724. Edinburgh: University of Edinburgh, 1725.

Plato. "Parmenides." *Complete Works of Plato*. Edited by John M. Cooper. Trans. Mary Louise Gill and Paul Ryan. Indianapolis: Hackett Publishing, 1997. 359-397.

Pope, Alexander. *Essay on Man*. 1734. London, 1763.

Popkin, R.H. "David Hume: His Pyrrhonism and His Critique of Pyrrhonism." *The Philosophical Quarterly* 1, no. 5 (October 1951): 385-407.

Porter, Roy. *Doctor of Society: Thomas Beddoes and the Sick Trade in Late-Enlightenment England*. London: Routledge, 1992.

---. *Flesh in the Age of Reason*. London: Allen Lane, 2003.

---. *Health for Sale: Quackery in England 1660-1850*. Manchester: Manchester University Press, 1989.

Postle, Bradley R., T. Jason Druzgal, and Mark D'Esposito. "Seeking the Neural Substrates of Visual Working Memory Storage." *Cortex* 39, no. 4 (2003): 927-946.

Priestley, Joseph. *A Course of Lectures on Oratory and Criticism*. London, 1777.

Quincy, John. *Lexicon Physico-Medicum: or, a New Medicinal Dictionary; Explaining the Difficult Terms Used in the Several Branches of the Profession, and in such Parts of Natural Philosophy as are introductory thereto: with an Account of the Things Signified by such Terms. Collected from the most Eminent Authors; and particularly these who have wrote upon Mechanical Principles*. 3rd ed. London, 1726.

Ramsey, Allan. *The Investigator*. 1752. New York: Garland Publishing, 1971.

Reid, Thomas. *Essays on the Intellectual Powers of Man*. 1785. New York: Garland Publishing, 1971.

Richards, I.A. *Coleridge on Imagination*. 1934. New York: Harcourt, Brace and Company, 1935.

---. *The Philosophy of Rhetoric*. London: Oxford University Press, 1936.

---. *Principals of Literary Criticism*. 1924. 2nd ed. New York: Harcourt, 1938.

Richey, William. *Blake's Altering Aesthetics*. Columbia: Missouri University Press, 1996.

Rilling, James K., and Rebecca A. Seligman. "A Quantitative Morphometric Comparative Analysis of Primate Temporal Lobe." *Journal of Human Evolution* 42, no. 5 (May 2002): 505-533.

Rind, Miles. "The Concept of Disinterestedness in Eighteenth-Century British Aesthetics." *Journal of the History of Philosophy* 40, no. 1 (2002): 67-87.

Rogers, Jeffery, P. Kochunov, J. Lancaster, W. Shelledy, D. Glahn, J. Blangero, and P. Fox. "Heritability of Brain Volume, Surface Areas and Shape – An MRI Study in an Extended Pedigree of Baboons." *Human Brain Mapping* 28, no. 6 (June 2007): 576-83.

Rosenberg, Alexander. "Hume and the Philosophy of Science." *The Cambridge Companion to Hume*. Cambridge: Cambridge University Press, 1993. 90-116.

Ross, Ian Simpson. "Hume and Kames – A Rejoinder." *Studies in Scottish Literature* 6 (1969): 186-189.

---. *Lord Kames and the Scotland of his Day*. Oxford: Clarendon Press, 1972.

Ross, Stephanie. "Humean Critics: Real or Ideal?" *British Journal of Aesthetics* 48, no. 1 (2008): 20-28.

Rousseau, G. S. *Enlightenment Crossings: Pre- and Post-Modern Discourses: Anthropological*. Manchester: Manchester University Press, 1991.

---. "Praxis 2: Pineapples, Pregnancy, Pica and Peregrine Pickle." 1971. *Enlightenment Borders: Pre- and Post-Modern Discourses: Medical and Scientific*. Manchester: Manchester University Press, 1991.

---. "Temperament and the Long Shadow of Nerves in the Eighteenth Century." *Brain, Mind and Medicine: Essays in Eighteenth-Century Neuroscience*. Edited by Harry Whitaker, C.U.M. Smith, and Stanley Finger. New York: Springer, 2007. 353-370.

Rubia, Katya, Smith, A.B., Woolley, J., Nosarti, C. Heyman, I., and Brammer, M. "Progressive Increase of Frontostriatal Brain Activation from Childhood to Adulthood." *Human Brain Mapping* 27, no. 12 (May 2006): 973-993.

Russell, Paul. *The Riddle of Hume's Treatise: Skepticism, Naturalism, and Irreligion*. Oxford: Oxford University Press, 2008.

---. "Hume's *Treatise* and Hobbes's *The Elements of Law*." *Journal of the History of Ideas* 46, no. 1 (1985): 51-64.

Ruskin, John. *Modern Painters*. New York, 1859.

Russo, John Paul. "I.A. Richards in Retrospect." *Critical Inquiry* 8, no. 4 (Spring/Summer 1982): 743-760.

Rylance, Rick. *Victorian Psychology and British Culture, 1850-1880*. Oxford: Oxford University Press, 2000.

Shaftesbury, Anthony Ashley Cooper. *Characteristics of Men, Manners, Opinions, Times*. 1711. Edited by Lawrence E. Klein. Cambridge: Cambridge University Press, 1999.

Shapiro, Yanina. "Consciousness According to James: Forgetting, Disregarding and Other Selective Activities of Bodies-and-Brains." *Theory and Psychology* 7, no. 4 (1997): 457-81.

Schott, Heinz. "Paracelsus and Van Helmont on Imagination: Magnetism and Medicine before Mesmer." *Paracelsian Moments: Science, Medicine, and Astrology in Early Modern Europe*. Edited by Gerhild Scholz Williams and Charles D. Gunnoe, Jr. Kirksville: Truman State University Press, 2002. 135-150.

Serjeantson, R. W. "Hume's General Rules and the 'Chief Business of Philosophers.'" *Impressions of Hume*. Edited by M. Fraca-Spada and P.J.E. Kail. Oxford: Clarendon Press, 2005. 187-212.

Sheehan, Donald. "Discovery of the Automatic Nervous System." *AMA Archives of Neurology and Psychiatry* 35, no. 3 (1936): 1081-1115.

Short, Bryan C. "Figurative Language in the Scottish New Rhetoric." *Language Sciences* 22, no. 3 (2000): 251-264.

Siebert, Donald T. *The Moral Animus of David Hume*. Newark: University of Delaware Press, 1990.

- Skinner, Andrew S. "Adam Smith. Science and the Role of the Imagination." *Hume and the Enlightenment: Essays Presented to Ernest Campbell Mossner*. Edited by William B. Todd. Edinburgh: Edinburgh University Press, 1974.
- Smith, Adam. *Essays on Philosophical Subjects*. Edited by Wightman, Bryce, and Ross. Oxford: Oxford University Press, 1980.
- . *Lectures on Rhetoric and Belles Lettres*. 1762. Edited by John M. Lothian. Carbondale: Southern Illinois University Press, 1963.
- . *A Theory of Moral Sentiments*. 1759. Boston, 1817.
- Smith, C.U.M. "Brain and Mind in the 'Long' Eighteenth Century." *Brain, Mind and Medicine: Essays in Eighteenth-Century Neuroscience*. Edited by Harry Whitaker, C.U.M. Smith, and Stanley Finger. New York: Springer, 2007. 15-28.
- Spillane, John D. *The Doctrine of the Nerves: Chapters in the History of Neurology*. Oxford: Oxford University Press, 1981.
- Steno, Nicholas. "A Dissertation on the Anatomy of the Brain, by M. Steno, read in the assembly held at M. Thevenot's House in the year 1668." Vol. 2. *A System of Anatomy From Monro, Winslow, Innes, and the Latest Authors. Arranged, as nearly as the Nature of the Work Would Admit, in the Order of the Lectures Delivered by the Professor of Anatomy in the University of Edinburgh*. Edited by Andrew Fyfe. 2 vols. London, 1784. 76-102.
- Sterne, Laurence. *The Life and Opinions of Tristram Shandy, Gentleman*. 1759. New York: Modern Library, 2004.
- Stewart, M.A. "Hume's Intellectual Development, 1711-1752." *Impressions of Hume*. Edited by Marina Frasca-Spada and P.J.E. Kail. Oxford: Oxford University Press, 2005. 11-58.
- Stroud, Barry. *Hume*. London: Routledge, 1977.
- . "'Gilding or Staining' the World with 'Sentiments' and 'Phantasms.'" *The New Hume Debate*. Edited by Rupert Read and Kenneth A. Richman. London: Routledge, 2000.
- Sutton, John. "Carelessness and Inattention: Mind-Wandering and the Physiology of Fantasy from Locke to Hume." *The Body as Object and Instrument of Knowledge: Embodied Empiricism in Early Modern Science*. Edited by Charles T. Wolfe and Ofer Gal. Dordrecht: Springer, 2010. 243-264.
- Swift, Jonathan. "Battel of the Books." *Tale of a Tub: Written for the Universal Improvement of Mankind*. 3rd ed. London, 1704.

- Symonds, Charles. "Thomas Willis, F.R.S. (1621-1675)." *Notes and Records of the Royal Society of London* 15 (July 1960): 91-7.
- Thomson, Ian. "Rhetoric and Passions, 1760-1800." *Rhetoric Revalued: Papers from the International Society for the History of Rhetoric*. Edited by Brian Vickers. Binghamton: Center for Medieval and Early Renaissance Studies, 1982. 133-142.
- Thomson, Thomas. *The History of Chemistry*. 2 vols. London, 1830.
- Tillyard, E.M.W. *The Muse Unchained: An Intimate Account of the Revolution in English Studies at Cambridge*. London: Bowes and Bowes, 1958.
- Townsend, Dabney. *Hume's Aesthetic Theory: Taste and Sentiment*. London: Routledge, 2001.
- Traiger, Saul. "Impressions, Ideas, and Fictions." *Hume Studies* 13, no. 2 (November 1987): 381-399.
- Tsunga, Albert. "David Hume and Lord Kames on Personal Identity." *Journal of the History of Ideas* 22, no. 3 (July-September 1961): 398-403
- T.S.W. "Circle of Willis." *The American Journal of Surgery* 7 (1929): 136-7.
- Tursi, Renee. "William James's Narrative of Habit." *Style* 33 (Spring 1999): 67-88.
- Urmson, J.O. "Memory and Imagination." *Mind* 76, no. 301 (1967): 70-92.
- Van Sant, Ann Jessie. *Eighteenth-Century Sensibility and the Novel: The Senses in Social Context*. Cambridge: Cambridge University Press, 1993.
- Wallace, Wes. "The Vibrating Nerve Impulse in Newton, Willis, and Gassendi: First Steps in a Mechanical Theory of Communication." *Brain and Cognition* 51, no. 1 (March 2003): 66-94.
- Waxman, Wayne. *Hume's Theory of Consciousness*. Cambridge: Cambridge University Press, 1994.
- Whale, John. *Imagination under Pressure, 1789-1832: Aesthetics, Politics, and Utility*. Cambridge: Cambridge University Press, 2000.
- Whyatt, Robert. *Physiological Essays: Containing, I. An Inquiry into the Causes which Promote the Circulation of the Fluids in the Very Small Vessels of Animals. II. Observations on the Sensibility and Irritability of the Parts of Men and other*

Animals; Occasioned by Dr. Haller's Late Treatise on these Subjects. Edinburgh, 1755.

- Wightman, William P.D. "Myth and Method in Seventeenth-Century Biological Thought." *Journal of the History of Biology* 2, no. 2 (September 1969): 321-336.
- Williams, A. N. "A Case of Pituitary Adenoma: Thomas Willis Revisited." *European Paediatric Neurology Society* 7, no. 4 (2003): 183-5.
- . "Thomas Willis' Paediatric General Practice." *British Journal of General Practice*. 57, no. 535 (2007): 70-3.
- . "Thomas Willis's Practice of Paediatric Neurology and Neurodisability." *Journal of the History of the Neurosciences*. 12, no. 4 (2003): 350-67.
- . "Thomas Willis' Understanding of Cerebrovascular Disorders." *Journal of Stroke and Cerebrovascular Diseases* 12, no. 6 (2003): 280-4.
- . "Too Good to be True? Thomas Willis – Neonatal Convulsions, Childhood Stroke and Infanticide in Seventeenth Century England." *Seizure* 10, no. 7 (October 2001): 471-83.
- , H.M. Alton, and R. Sunderland. "A Case of Pituitary Adenoma: Thomas Willis Revisited." *The European Journal of Paediatric Neurology* 7, no. 4 (2003): 183-5.
- , and L. Birmingham. "The Art of Making Ineffective Treatments Effective." *Lancet* 359, no. 9321 (2002): 1937-1939.
- Willis, Thomas. *The Anatomy of the Brain*. 1664. Trans. S. Pordage. 1681 ed. Tuckahoe: USV Pharmaceutical Corp., 1971.
- . "The Second Medical and Physical Discourse: Of Musculary Motion." 1670. *The Remaining Medical Works of that Famous and Renowned Physician Dr. Thomas Willis of Christ-Church in Oxford, and Sidley Professor of Natural Philosophy in that Famous University: Viz I. Of Fermentation, II. Of Feavours, III. Of Urines, IV. Of the Ascension of the Bloud, V. Of Musculary Motion, VI. Of the Anatomy of the Brain, VII. Of the Description and Uses of the Nerves, VIII. Of Convulsive Diseases*. Trans. S. Pordage. London, 1681. 34-49.
- . "Of Fermentation, or the Inorganical Motion of Natural Bodies: A Medical-Philosophical Discourse of Fermentation or, Of the Intestine Motion of Particles in Every Body." 1659. *The Remaining Medical Works of that Famous and Renowned Physician Dr. Thomas Willis of Christ-Church in Oxford, and Sidley Professor of Natural Philosophy in that Famous University: Viz I. Of Fermentation, II. Of Feavours, III. Of Urines, IV. Of the Ascension of the Bloud, V. Of Musculary Motion, VI. Of the Anatomy of the Brain, VII. Of the Description and Uses of the Nerves, VIII. Of Convulsive Diseases*. Trans. S. Pordage. London, 1681. 1-52.
- . *Two Discourses concerning the Souls of Brutes, which is that of the Vital and Sensitive of Man*. 1672. Trans. S. Pordage. 1683 ed. Gainesville: Scholars' Facsimiles and Reprints, 1971.

---. *Willis's Oxford Lectures. 1661-1664*. Edited by and Trans. Kenneth Dewhurst. Oxford: Stanford Publications, 1980. In-text citations reference the date of the historical lectures themselves.

Winters, B. "Hume's Argument for the Superiority of the Natural Instinct." Vol. 3. *David Hume: Critical Assessments*. Edited by Stanley Tweyman. 6 vols. London: Routledge, 1995.

Wollstonecraft, Mary. *A Vindication of the Rights of Woman*. 1792. Edited by Carol H. Poston. 2nd ed. New York: W.W. Norton, 1975.

Wright, John P. "Butler and Hume on Habit and Moral Character." *Hume and Hume's Connexions*. Edited by M.A. Stewart and John P. Wright. University Park: Pennsylvania State University Press, 1995. 105-118.

---. "Hume's Academic Scepticism: A Reappraisal of His Philosophy of Human Understanding." *Canadian Journal of Philosophy* 16, no. 3 (1986): 407-435.

---. "Locke, Willis, and Seventeenth-Century Epicurean Soul." *Atoms, Pneuma, and Tranquillity: Epicurean and Stoic Themes in European Thought*. Edited by Margaret J. Olser. Cambridge: Cambridge University Press, 1991. 239-58.

---. *The Sceptical Realism of David Hume*. Manchester: Manchester University Press, 1983.

Yolton, John W. *Thinking Matter: Materialism in Eighteenth-Century Britain*. Oxford: Basil Blackwell, 1983.

Zimmerman, Carl. *Soul Made Flesh: The Discovery of the Brain – and How it Changed the World*. New York: Free Press, 2004.