The Passions of the Soul, Natural Philosophy and Medicine: Theories of Emotion in Seventeenth-Century England

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ABSTRACT

This dissertation examines how theories of the passions of the soul developed over the course of the seventeenth century in England. It investigates how changes in the natural philosophy and medicine of the period influenced such theories and pays particular attention to the way emotions were related to new ideas about the body and soul.

I argue that topics often at the margins of the history of philosophy – including medicine, alchemy, natural magic and vitalist theories of active matter – played an important role in the development of theories of emotion during the seventeenth century. In doing so, I attempt to both build upon and revise recent scholarship on early modern emotions. Firstly, I call into question a recently established narrative in the history of philosophy which primarily sees seventeenth-century theories of emotion as moving away from a Scholastic Aristotelian account towards a new set of theories based on the mechanical philosophy – a shift that can be seen to reflect the wider natural philosophical changes of the era. While this transition certainly took place, I maintain that this linear narrative tells only part of the story, and that during the same period there existed many alternative intellectual traditions which also shaped the creation of new theories of the passions. Secondly, I aim to add detail to what is often an oversimplified and incomplete account of the passions in relation to the medicine of the period. In the first chapter, I attempt to clarify a common misconception regarding the relationship between the humours of the body and the passions of the soul. In subsequent chapters I show how post-humoral medical paradigms, such as chemical and mechanical frameworks, as well as advances in anatomy influenced the formation of new theories of emotion during the seventeenth century.

Recent scholarship in the history of science has shown how alchemy, natural magic and theories of active matter became particularly popular in England in the seventeenth century. Over the course of this dissertation, I show how major and minor figures of the period in England drew upon these traditions, as well as new ideas in medicine, when they came to formulate their original accounts of the passions. Individuals whose writings I examine include Thomas Wright, Francis Bacon, Kenelm Digby, Margaret Cavendish, Thomas Willis and Walter Charleton.

This dissertation draws upon scholarship across a variety of disciplines including the history of philosophy, literary studies, the history of science, the history of emotions and the history of medicine. Although it is a study intellectual history, it endeavours to offer a scholarly contribution which may be of use across all the previously mentioned disciplines.

ACKNOWLEDGEMENTS

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I would also like to thank my second supervisor, John Tresch, who never fails to see the bigger picture. His questions, suggestions and general support over the years have helped me a great deal. A special thank you must also go to Jill Kraye. I had the good fortune of becoming her neighbour in 2018. I am incredibly grateful for all the advice, encouragement and red ink I have received since then. Having recently moved home I can no longer call her a neighbour, but I am proud to call her a friend.

It has been a great honour to have been based at the Warburg Institute for the duration of my studies. I have thoroughly enjoyed the countless conversations with students, staff, fellows and readers among the bookshelves, kitchens and common rooms. These discussions, and the *spirit* of the Warburg Institute, have undoubtedly shaped this dissertation in ways I would never have planned. I would also like to express my gratitude to all the Warburg Library staff who helped me access the various books and electronic resources needed to undertake this study. Their assistance, especially during the period of 2020-2021, has been an immense help.

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Finally, I would like to thank my sweetheart, Arianna Dalla Costa, who has improved this project (and me) in so many ways. I dedicate this thesis to her.

DECLARATION

I, Daniel Samuel, hereby declare that this thesis represents my own work. Where information has been derived from other sources, I can confirm that this has been duly acknowledged in the thesis.

The following publication contains material that partly arises from work on this dissertation:

Daniel Samuel, ‘A British Response to the Passions of the Soul’, in *Descartes and Medicine: Problems, Responses and Survival of a Cartesian Discipline*, ed. by Fabrizio Baldassarri (Turnhout: Brepols, 2023).

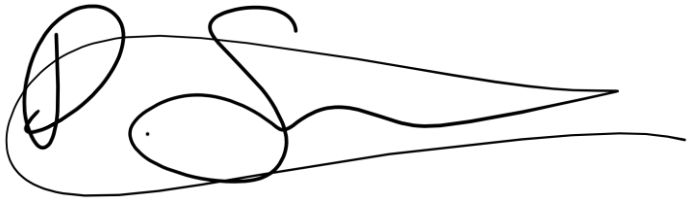
Signature: 

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Fig. 13. (p. 210). The explanation of the ninth table. Source: Thomas Willis, *The Remaining Medical Works of that Famous and Renowned Physician Dr. Thomas Willis* (London: T. Dring, C. Harper, J. Leigh, and S. Martyn, 1681). Early English Books Online, <https://0-historicaltexts-jisc-ac-uk.catalogue.libraries.london.ac.uk/eebo-ocm38875837e> [accessed 17 June 2024].

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INTRODUCTION

My interest in seventeenth-century philosophy first arose during my time as a doctor in the NHS. Working as a general practitioner, I became increasingly interested in how a person's psychological state could affect their physical health. With the recent discovery of conditions such as Takotsubo Cardiomyopathy, in which an individual's heart can change shape upon hearing bad news – sometimes with fatal consequences – medical professionals are now beginning to recognise the extent to which the workings of the mind can influence the health of the body.[1] Nevertheless, conversations between doctors and patients which attempt to discuss how the mind may contribute to physical illness remain fraught with many challenges. It has recently been suggested that up to one in four people who see a GP have 'medically unexplained symptoms' – the preferred term now used to indicate bodily symptoms that cannot be attributed to a physical cause.[2] Furthermore, it is still the case that conversations which seek to address these symptoms are at risk of breaking down, with the patient often having to justify that the problem is not 'all in their head'.[3]

Any effort to understand not just the medical but also the philosophical complexities of the mind-body relationship sooner or later leads to the figure of René Descartes (1596-1650). According to many commentators on the topic, it is Descartes' mind-body dualism that continues to undermine a more holistic approach to health.[4] In my endeavour to grasp the nature of Descartes' intervention, and why he seemed to be receiving so much scorn, I became ever

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[1] According to the British Heart Foundation: 'Takotsubo Cardiomyopathy, also known as Broken Heart Syndrome, is a condition where your heart muscle becomes suddenly weakened, usually because of severe emotional or physical stress'. The list of possible triggers includes grief, bereavement, and financial worries. See: https://www.bhf.org.uk/informationsupport/conditions/cardiomyopathy/takotsubo-cardiomyopathy/.

[2] See https://www.nhs.uk/conditions/medically-unexplained-symptoms/. Tellingly, medical students are often introduced to the concept of 'medically unexplained symptoms' during their psychiatry placement. See 'Medically Unexplained Symptoms', in *Psychiatry PRN: Principles, Reality, Next Steps*, ed. by S. Stringer, L. Church, S. Davison and M. Lipsedge (Oxford: Oxford University Press, 2009), 167-174.

[3] For a series of case studies which explore the difficulties of treating these kinds of symptoms see Suzanne O'Sullivan, *It's All in Your Head: Stories from the Frontline of Psychosomatic Illness* (London: Vintage, 2016).

[4] For instance, see Patrick Bracken and Philip Thomas, 'Time to Move beyond the Mind-Body Split.' *British Medical Journal* 325, No. 7378 (2002): 1433-1434; Neeta Mehta, 'Mind-Body Dualism: A Critique from a Health Perspective.' *Mens Sana Monographs* 9, Issue 1 (2011): 202-209.

more fascinated by the concept of 'the passions of the soul'.[5] This phrase sparked my interest, not only because it is the title of one of Descartes' works, but also because I came to learn that 'the passions of the soul' were a well-established topic in medieval and early modern medicine. I was especially surprised to discover that, for many centuries, physicians and large portions of the general public commonly understood the passions to be one of six things that unavoidably influenced bodily health.[6]

In the twenty-first century, healthcare professionals tend to think of emotions in relation to mental health and seem to have forgotten the important role they continue to play in the maintenance of our physical well-being. Consequently, at the heart of this study lies an attempt to comprehend how the shifting intellectual landscape of the seventeenth century changed the way emotions were thought to be present in the mind and body, not only to illuminate some lesser-known aspects of early modern thought, but with the hope that a better understanding of the subject might help address a modern-day medical predicament.

Historiographical context

Over the past few decades there has been a significant rise of scholarly interest in early modern accounts of the passions. Susan James' *Passion and Action: The Emotions in Seventeenth-Century Philosophy* (1997) has helped to establish the emotions as an important topic in the study of early modern philosophy.[7] Her monograph examined the place of emotions with

[5] The tendency to cast Descartes as a villain, and the inappropriate nature of such a depiction, is examined in Theodore M. Brown, 'Descartes, Dualism, and Psychosomatic Medicine', in *The Anatomy of Madness: Essays in the History of Psychiatry, Volume 1*, ed. by W. F. Bynum, R. Porter, and M. Shepherd (London: Routledge, 1985), 40-62.

[6] See *Lifestyle and Medicine in the Enlightenment: The Six Non-Naturals in the Long Eighteenth Century*, ed. by J. Kennaway and R. Knoeff (Abingdon: Routledge, 2020).

[7] Susan James, *Passion and Action: The Emotions in Seventeenth-Century Philosophy* (Oxford: Clarendon Press, 1997). Throughout this dissertation I use the terms 'passion' and 'emotion' interchangeably. On how the word emotion came to replace existing categories such as passion, affection, appetite and sentiment over the course of the eighteenth and nineteenth centuries see Thomas Dixon, *From Passions to Emotions: The Creation of a Secular Psychological Category* (Cambridge: Cambridge University Press, 2003).

respect to new ideas about the mind and body and explored the role of the passions in human reasoning and action. Observing that many of the thinkers of the period were attempting to displace the Scholastic Aristotelian conception of the passions, James focused on a group of thinkers whose theories were instead based on a mechanical account of nature such as René Descartes, Thomas Hobbes, Nicolas Malebranche and Baruch Spinoza.[8] Studies on seventeenth-century emotions have since tended to give prominence to philosophers who developed their theories of emotion in the context of the new mechanical philosophy.[9] For instance, Gábor Boros recognised that the nature of the passions was a lively field of debate in the early modern period and claimed that the starting point of these debates 'is to be found in Descartes' oeuvre'.[10] He further stated that the modern historian may find it 'helpful to think in terms of the period which begins with Descartes' *Passions of the Soul* (1649) and Hobbes' *Leviathan* (1651), and embraces the later contributions of Spinoza, Pascal, Malebranche, Locke and Leibniz'.[11] These observations led Boros to conclude that 'one of the trademarks of philosophy in the early modern period is the renewal of the theory of the passions on the basis of the new mechanical-corpuscular philosophy'.[12]

In analysing the thought of Descartes, Hobbes and Spinoza, Deborah Brown's recent analysis of seventeenth-century debates on the passions also centred on philosophers who developed their account of the passions within a mechanistic paradigm.[13] Similarly, Amy Schmitter's encyclopaedia entry on theories of emotion in the seventeenth and eighteenth

[8] See also Susan James, 'The passions in metaphysics and the theory of action', in *The Cambridge History of Seventeenth-Century Philosophy*, ed. by Daniel Garber and Michael Ayers, 2 vols (Cambridge: Cambridge University Press, 1998), I, 913-949; and, in the same book, Susan James, 'Reason, the passions, and the good life', II, 1358-1396.
[9] On the complexities of 'the mechanical philosophy' as a historiographical category see Daniel Garber, 'Remarks on the Pre-History of the Mechanical Philosophy', in *The Mechanization of Natural Philosophy*, ed. by D. Garber and S. Roux (New York: Springer, 2013), 3-26.
[10] Gábor Boros, 'The Passions', in *The Oxford Handbook of Philosophy in Early Modern Europe*, ed. by D. M. Clarke and C. Wilson (Oxford: Oxford University Press 2011), 182-200: 182-183.
[11] *Ibid*., 183.
[12] *Ibid*., 199.
[13] Deborah Brown, 'Power and Passion in Hobbes, Descartes and Spinoza', in *The Routledge Companion to Seventeenth Century Philosophy*, ed. by D. Kaufman (Abingdon: Routledge, 2018), 334-353.

centuries is largely dedicated to the ideas of the thinkers mentioned above.[14] In another article charting the changes in British accounts of the passions in the seventeenth century, Schmitter examined the ideas of a wider range of thinkers including Francis Bacon, Walter Charleton and Mary Astell.[15] Since, however, the main focus of her article is on the moral dimension of the passions, the relationship between theories of emotion and the different natural philosophical traditions present in England is largely unaddressed.

At present, the best attempt to examine the relationship between early modern theories of emotion and natural philosophical traditions outside of the Aristotelian and mechanical frameworks is Sabrina Ebbersmeyer's study of Renaissance theories of the passions.[16] In her analysis of the writings of Marsilio Ficino, Bernardino Telesio and Tommaso Campanella, Ebbersmeyer showed how a Neoplatonic account of the cosmos, as well as the view that sentient material spirits were present throughout nature, contributed to the development of novel theories of the passions over the course of the Renaissance. As I will demonstrate, some of these lesser-known strands of thought were picked up by philosophers in England at the start of the seventeenth century and influenced the formation of new theories of emotion.

The tendency to see seventeenth-century theories of emotions as moving away from a Scholastic Aristotelian account towards new versions based on the mechanical philosophy reflects a well-established narrative regarding the intellectual changes that took place during the so-called scientific revolution. This narrative, which rose to prominence around the middle decades of the twentieth century, posited that one of the central features of the scientific revolution was the replacement of an Aristotelian conception of nature with one that viewed

[14] Amy M. Schmitter, '17th and 18th Century Theories of Emotions', in *The Stanford Encyclopedia of Philosophy,* ed. by E. N. Zalta (Summer 2021 Edition), https://plato.stanford.edu/archives/sum2021/entries/emotions-17th18th/.
[15] Amy M. Schmitter, 'Passions and Affections', in *The Oxford Handbook of British Philosophy in the Seventeenth Century*, ed. by P. R. Anstey (Oxford: Oxford University Press, 2013), 442-471.
[16] Sabrina Ebbersmeyer, 'Renaissance Theories of the Passions', in *Philosophy of Mind in the Late Middle Ages and Renaissance*, ed. by S. Schmid (London: Routledge, 2018), 185-206.

the cosmos in mechanical terms.[17] Several studies over the past few decades, however, have brought to light a number of alternative intellectual traditions which contributed to the scientific advances of the period.[18] Notably, the ideas and practices associated with the alchemical tradition have been recognised as an important factor in shaping much of the natural philosophical thought of the period.[19] Similarly, the domain of natural magic is now generally considered to be a significant factor in transforming the scientific attitudes, practices and ideas of the era.[20]

With regard to the development of natural philosophy across different regions, John Henry's seminal studies have illustrated how a wide range of intellectual traditions contributed to the rise of the mechanical philosophy in seventeenth-century England.[21] Challenging the commonly held assumption that the mechanical philosophy held matter to be passive and inert, Henry showed that a number of English mechanical philosophers attributed various degrees of activity to matter.[22] Guido Giglioni's investigations of Francis Bacon and Francis Glisson also

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[17] See Marie Boas-Hall, 'The Establishment of the Mechanical Philosophy.' *Osiris* 10 (1952): 412-541; E. J. Dijksterhuis, *The Mechanization of the World Picture* (Oxford: Oxford University Press, 1961); Richard S. Westfall, *The Construction of Modern Science: Mechanisms and mechanics* (New York: Wiley, 1971).

[18] As outlined in Daniel Garber, 'Physics and Foundations', in *The Cambridge History of Science, Volume 3: Early Modern Science*, ed. by K. Park and L. Daston (Cambridge: Cambridge University Press, 2006), 21-69; *The Cambridge History of Philosophy of the Scientific Revolution*, ed. by D. M. Miller and D. Jalobeanu (Cambridge: Cambridge University Press, 2022). On the problems of the scientific revolution as historical category see Steven Shapin, *The Scientific Revolution* (Chicago: University of Chicago Press, 1996).

[19] See Allen G. Debus, *The Chemical Philosophy: Paracelsian Science and Medicine in the Sixteenth and Seventeenth Centuries* (New York: Science History Publications, 1977); Debus, *Alchemy and Chemistry in the 16th and 17th Centuries*, ed. by P. Rattansi and A. Clericuzio (Dordrecht: Kluwer Academic Publishers, 1994); Debus, *Reading the Book of Nature: The Other Side of the Scientific Revolution*, ed. by A. G. Debus and M. T. Walton (Kirksville: Sixteenth Century Publishers, 1998); William R. Newman and Lawrence M. Principe, *Alchemy Tried in the Fire: Starkey, Boyle, and the Fate of Helmontian Chymistry* (Chicago: University of Chicago Press, 2002).

[20] The classic study on this topic is Frances A. Yates, *Giordano Bruno and the Hermetic Tradition* (London: Routledge and Kegan Paul, 1964). For an up-to-date analysis of the role of magic in early modern scientific thought see Doina Cristina-Rusu, 'Magic in the Seventeenth Century', in *Encyclopedia of Early Modern Philosophy and the Sciences*, ed. by D. Jalobeanu and C. T. Wolfe (Cham: Springer, 2020), https://doi.org/10.1007/978-3-319-20791-9_604-1

[21] John Henry, 'Matter in Motion: The Problem of Activity in Seventeenth-Century English Matter Theory', PhD diss. (The Open University, 1983); John Henry, 'Occult Qualities and the Experimental Philosophy: Active Principles in Pre-Newtonian Matter Theory.' *History of Science* 24, Issue 4 (1986): 335-381.

[22] For instance, see the fortieth anniversary edition of the widely read book by Carolyn Merchant, *The Death of Nature: Women, Ecology, and the Scientific Revolution* (New York: HarperOne, 2020). Merchant writes: 'The removal of animistic, organic assumptions about the cosmos constituted the death of nature – the most far-reaching

uncovered a strand of English natural philosophical thought which saw matter as fundamentally alive and brimming with inner appetites.[23] These recent studies, which have revealed the plurality of ways the natural world was conceptualised in the seventeenth century, have been fundamental for my study of the passions.

In addition to being shaped by changes in natural philosophy, seventeenth-century theories of emotion were also influenced by developments in the medicine of the period. So far literary scholars have led the way in situating early modern accounts of the passions in a medical context. In *Humoring the Body: Emotions and the Shakespearean Stage* (2004), Gail Kern Paster has demonstrated how the medical doctrine of the four humours – commonly associated with the ancient physician Galen – provided a rationale for the manner in which doctors, as well as large portions of the general public, viewed the relationship between the constitution of the body and the passions of the soul.[24] In response, Michael Stolberg, one of the few historians of medicine to examine early modern theories of the passions, acknowledged that 'historians of emotions have frequently pointed to humoral medicine as a major source of emotional concepts and expressions in the early modern period'.[25] He criticised these same studies, however, for paying little attention to 'the profound changes that took place in the 16th and 17th centuries'.[26] In this dissertation, I address this omission in the scholarly literature and

effect of the Scientific Revolution. Because nature was now viewed as a system of dead, inert particles moved by external, rather than inherent forces, the mechanical framework itself could legitimate the manipulation of nature', p. 193; 'Mechanism rendered nature effectively dead, inert, and manipulable from without. As a system of thought, it rapidly gained plausibility during the second half of the seventeenth century', p. 214.

[23] See Guido Giglioni, 'Anatomist Atheist?: the 'Hylozoistic' Foundations of Francis Glisson's Anatomical Research', in *Religio Medici: Medicine and Religion in Seventeenth-century England*, ed. by O. P. Grell and A. Cunnigham (Aldershot: Scolar Press, 1996), 115-135; Giglioni, 'Mastering the Appetites of Matter. Francis Bacon's *Sylva Sylvarum*', in *The Body as Object and Instrument of Knowledge*, ed. by C. T. Wolfe and O. Gal (Dordrecht: Springer, 2010), 149-168.

[24] Gail Kern Paster, *Humoring the Body: Emotions and the Shakespearean Stage* (Chicago: University of Chicago Press, 2004).

[25] Michael Stolberg, 'Emotions and the Body in Early Modern Medicine.' *Emotion Review* 11, No. 2 (2019): 113-122.

[26] *Ibid*., 113.

explain how changes in medical theory, especially advances in anatomical knowledge, contributed to new ways of understanding the passions.

Research aims

My aim in this dissertation is to show how topics often at the margin of the history of philosophy – such as medicine, alchemy, natural magic and vitalist theories of active matter – contributed to the development of theories of emotion in England over the course of the seventeenth century. In doing so, I both build upon and revise recent scholarship on early modern emotions. Firstly, I call into question the narrative (still dominant among historians of philosophy) which primarily sees seventeenth-century theories of emotion as moving away from a traditional Scholastic Aristotelian account towards new theories based on the mechanical philosophy – a transition that is seen to mirror the wider scientific changes of the era. Instead, I argue that this linear narrative tells only part of the story, since during this period there also existed many alternative intellectual traditions which also shaped the creation of new theories of the passions. Secondly, I show how the scholarship that has situated the passions in the context of Galenic medicine has tended to oversimplify the relationship between the humours of the body and the passions of the soul. Additionally, I demonstrate how post-Galenic medical paradigms, as well as advances in anatomical knowledge, transformed the understanding of the physiological basis of emotion as the century progressed. Overall, I contend that to appreciate fully the way emotions were understood to be present in the body and soul during the seventeenth century, the philosophical and medical developments of the period must be studied together.

At the heart of this dissertation lies a set of fundamental research questions. How did developments in seventeenth-century English natural philosophy and medicine give rise to novel theories of emotion? What intellectual traditions influenced these theories? How did new

ways of conceptualising the body and soul influence new accounts of the passions? What formal institutions and informal networks led to the formation of these theories?

I attempt to answer these questions by examining the thought of a group of English thinkers who formulated original theories of the passions over the course of the seventeenth century. The main figures studied in this thesis are Francis Bacon (1561-1626), Kenelm Digby (1603-1665), Margaret Cavendish (1623-1673), Thomas Willis (1621-1675) and Walter Charleton (1619-1707). All these thinkers constructed their systems of natural philosophy at a time when the traditional Aristotelian vision of nature was in decline, but before the appearance of Isaac Newton's seminal writings. In doing so, each of them drew upon a wide range of intellectual currents, including the alchemical tradition, natural magic and theories of active matter. In addition, they all took a keen interest in the medical developments of the period and formulated original theories about the workings of the human body. It is in the context of each author's natural philosophical and medical views, which inevitably shaped their understanding of the body and soul, that I analyse the diversity of seventeenth-century theories of emotion.

Scope of the dissertation

My main reason for focusing on English thinkers is that scholarship in recent years has revealed early modern England to have been particularly receptive to a number of 'occult traditions'.[27]

[27] See Allen G. Debus, *The English Paracelsians* (London: Oldbourne Press, 1965); Charles Webster, *The Great Instauration: Science, Medicine and Reform, 1626-1660* (London: Duckworth, 1975); Frances A. Yates, *The Occult Philosophy of the Elizabethan Age* (London: Routledge and Kegan Paul, 1979); Nicholas Clulee, *John Dee's Natural Philosophy: Between Science and Religion* (London and New York: Routledge, 1988); Antonio Clericuzio, 'From Van Helmont to Boyle: A Study of the Transmission of Helmontian Chemical and Medical Theories in Seventeenth-Century England.' *British Journal for the History of Science* 26, Issue 3 (1993): 303-334; Stephen Clucas, 'Corpuscular Matter Theory in the Northumberland Circle', in *Late Medieval and Early Modern Corpuscular Matter Theories*, ed. by C, Lüthy, J. Murdoch and W. Newman (Leiden: Brill, 2001), 181-207. The 'more positive attitude to occult principles among English thinkers compared to continental European thinkers' is examined in Xiaona Wang, '"Though their Causes be not yet discover'd": Occult Principles in the Making of Newton's Natural Philosophy', PhD diss. (The University of Edinburgh, 2019), 13-18: 15. See also Xiaona Wang, *Handling "Occult Qualities" in the Scientific Revolution: Disciplines and New Approaches to Natural Philosophy, from John Dee to Isaac Newton* (Leiden: Brill, 2023). On occult traditions in seventeenth-century

It has recently been argued that the increasing emphasis on the experimental method was one of the factors that allowed natural philosophers in England to accept the reality of occult qualities in nature.[28] It has been further suggested that this willingness to accommodate the presence of occult qualities in the natural world gave rise to theories of active matter, which according to Antonio Clericuzio, 'played an important part in seventeenth-century natural philosophy, notably in England'.[29] In keeping with this observation, the main figures in this study all attributed some degree of activity to matter. Some of them, such as Bacon and Cavendish, believed the source of activity in matter and the source of emotions in humans to be closely related.

Since my aim is to study seventeenth-century theories of emotion in the context of new theories about the natural world and the human being, I have decided to concentrate on learned rather than popular culture. Instead of investigating the different ways members of the public understood their own experience of the passions,[30] I examine the theories put forward by individuals who saw themselves as advancing the knowledge of the age and who came up with original ideas. These figures wrote on natural philosophy, medicine and a broad range of disciplines, formulating their account of the passions with reference to these wider systems of thought. Some of them knew each other personally or through their writings; and they were all well-educated and received their training at prominent institutions and/or through elite social

thought see Brian Copenhaver, 'The Occultist Tradition and its Critics', in *The Cambridge History of Seventeenth-Century Philosophy*, ed. by D. Garber and M. Ayers (Cambridge: Cambridge University Press, 1998), 454-512.

[28] Keith Hutchison, 'What happened to Occult Qualities in the Scientific Revolution?' *Isis* 73, No. 2 (1982): 233-253; Ron Millen, 'The Manifestation of Occult Qualities in the Scientific Revolution', in *Religion, Science and Worldview: Essays in Honor of Richard S. Westfall*, ed. by M. J. Osler and P. L. Farber (Cambridge: Cambridge University Press, 1985), 185-216; John Henry, 'Occult Qualities and the Experimental Philosophy.' *History of Science* 24, Issue 4 (1986): 335-381.

[29] Antonio Clericuzio, *Elements, Principles, and Corpuscles: A Study of Atomism and Chemistry in the Seventeenth Century* (Dordrecht: Kluwer Academic Publishers, 2000), 1.

[30] On the lay experiences of bodily emotions in the early modern period see Michael Stolberg, 'Emotions and the Body in Early Modern Medicine.' *Emotion Review* 11, No. 2 (2019): 113-122; Ulinka Rublack, 'Fluxes: The Early Modern Body and the Emotions.' *History Workshop Journal*, Issue 53 (2002): 1-16; Barbara Duden, *The Woman Beneath the Skin* (Cambridge, MA: Harvard University Press, 1991), 140-178.

networks. In addition, my primary focus is on *theories* of emotion as opposed to the practical methods people used to manage their passions.[31]

The scope of this dissertation is also limited to examining theories of the passions in relation to the changing natural philosophy and medicine of the seventeenth century. As Amy Schmitter has observed: 'Few areas of early modern philosophy remained untouched by at least some theory of the emotions.'[32] I do not attempt to study the many philosophical domains in which the passions were a subject of lively discussion. While these fields will be acknowledged when relevant, a systematic investigation would have resulted in an unmanageably large remit. For instance, I do not examine the passions with regard to the debates about causation or the metaphysical distinction between the active and the passive.[33] Nor do I investigate the role of the passions in the formation of knowledge,[34] or in the context of moral and political philosophy.[35]

The passions were also a topic of interest in domains outside of philosophy during the early modern period. A number of studies have explored the passions in relation to fields as diverse as music, art, rhetoric and literature.[36] Furthermore, the emergence of the field of the history of emotions – which studies the cultural construction of emotion and emotional norms

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[31] On the management of the passions in the early modern period see Elizabeth S. Radcliffe, 'Ruly and Unruly Passions: Early Modern Perspectives', in *Royal Institute of Philosophy Supplement, Volume 85*, ed. by A. O'Hear (Cambridge: Cambridge University Press, 2019), 21-38.

[32] For an overview of the different areas of early modern philosophy in which the passions were involved see Schmitter, '17th and 18th Century Theories of Emotions.'

[33] See James, *Passion and Action.*

[34] For a collection of essays on the role of the passions with regards to epistemology see *Emotion and Cognitive Life in Medieval and Early Modern Philosophy*, ed. by M. Pickavé and L. Shapiro (Oxford: Oxford University Press, 2012).

[35] See *Politics and the Passions, 1500-1850*, ed. by V. Kahn, N. Saccamano and D. Coli (Princeton: Princeton University Press, 2006); *Emotions, Passions, and Power in Renaissance Italy*, ed. by F. Ricciardelli and A. Zorzi (Amsterdam: Amsterdam University Press, 2015). See also the collection of articles in *Emotions and Choice from Boethius to Descartes*, ed. by H. Lagerlund, M. Yrjönsuuri (Dordrecht: Kluwer Academic Publishers, 2002).

[36] For instance, see *Representing Emotions: New Connections in the Histories of Art, Music and Medicine*, ed. by P. Gouk and H. Hills (Aldershot: Ashgate, 2005); Jennifer Montagu, *The Expression of the Passions: The Origin and Influence of Charles Le Brun's 'Conférence sur l'expression Générale et Particulière'* (New Haven, CT: Yale University Press, 1994); Lawrence D. Green, 'Aristotle's *Rhetoric* and Renaissance Views of the Emotions', in *Renaissance Rhetoric*, ed. by P. Mack (Basingstoke, Hampshire: MacMillan Press, 1994); *Reading the Early Modern Passions: Essays in the Cultural History of Emotion*, ed. by G. K. Paster, K. Rowe, and M. Floyd-Wilson (Philadelphia: University of Pennsylvania Press, 2004).

– has pioneered numerous methods to study emotions across chronological and geographical boundaries.[37] This study, however, remains an exercise in the intellectual history of seventeenth-century England, centring on theories of emotion, their relationship to new accounts of the body and soul, and the wider natural philosophical and medical contexts in which these ideas were formed.

Chapter summary

This dissertation follows a broadly chronological structure, enabling me to trace how ideas about the passions developed over the course of the seventeenth century. The first chapter examines how Aristotelian natural philosophy and Galenic medicine still formed the basis of the mainstream theory of emotion at the beginning of the century. I outline the principal features of this theory and explain how the Aristotelian and Galenic traditions shaped the way emotions were thought to be present in both body and soul. Specifically, I situate the passions in the context of Aristotelian faculty psychology and Galenic humoral theory and argue that in this traditional context the passions were understood to be hylomorphic phenomena. I also highlight the fact that the relationship between the body and soul was commonly regarded as bidirectional, which challenges the view of some modern scholars that the passions of the soul were believed to be largely determined by the bodily humours. Instead, I explain that while the body's humoral constitution predisposed individuals towards feeling certain passions, a judgement was required by the psychological faculty of the imagination before an emotion was produced. Furthermore, I set out the distinction between the passions of the soul as they were conventionally understood, the rational passions of the higher faculties of the human soul and the natural instincts common to all creatures. I also examine the first major treatise on the

[37] For an introduction to the key concepts of the discipline see Katie Barclay, *The History of Emotions: A Student Guide to Method and Sources* (London: Red Globe Press, 2020).

passions produced in England, authored by the Jesuit priest Thomas Wright (1561-1624), and use it as a case study to illustrate the main features of the traditional theory of emotion.

Subsequent chapters move further into the seventeenth century, examining a series of thinkers whose views about the natural world and the human body and soul departed from the traditional Aristotelian and Galenic accounts. These later chapters each follow a similar pattern: I first place the thinkers in their social and intellectual contexts, to gain a better understanding of the influences and methods by which they came to devise their ideas. Secondly, I examine their views on natural philosophy and specifically on the nature of matter, as these generally formed the basis for their theories of the human body and soul. Having laid this foundation, I then go on to examine each author's theory of emotion.

Chapter two considers Francis Bacon, who explicitly rejected the Aristotelian natural philosophy and Galenic medicine that dominated university teaching at the time. While Bacon is famous for his endorsement of induction as a method, it is less well-known that he also developed a speculative system of natural philosophy. Far from being a champion of the mechanical philosophy, Bacon constructed an elaborate natural philosophical system that drew upon alchemists such as Petrus Severinus and Italian naturalists such as Bernadino Telesio. At the heart of Bacon's speculative physics was his notion of spirit (or spirits) – subtle material entities which, in place of substantial forms or mathematical laws of motion, were responsible for much of the activity in the natural world. Bacon's notion of spirit was also a central feature of his theories about the nature of the human body and soul. Alongside his attempts to advance the scientific knowledge of the age, Bacon was keen to discover medical techniques that would aid in the prolongation of life. In particular, he believed that the successful management of one's passions was important to achieving this goal. This broader philosophical and medical context, I argue, is essential for understanding Bacon's theory of emotion.

The subject of chapter three is Kenelm Digby. This chapter examines how the rise of the mechanical philosophy led to the development of new theories of the passions. Digby's views about the natural world were formed by various intellectual traditions, including Aristotelianism, alchemy and natural magic. But two influences were especially important for his theory of the passions: the mechanical philosophy and his religious beliefs. When he composed his most detailed analysis of the passions in the 1640s, Digby was already familiar with the writings of the now more famous mechanical philosophers René Descartes and Thomas Hobbes. The chapter thus offers an outline of Descartes' and Hobbes' accounts of the passions and their relation to Digby's own views.[38] It then examines Digby's commitment to Roman Catholicism as another major factor in shaping his mechanical philosophy; in particular, it shows how he deployed his system of physics to justify his theological position regarding the fate and emotional state of the soul in the afterlife. The chapter also explores Digby's interest in human anatomy, showing how his account of the passions was grounded in recent advances in this field.

Chapter four turns to the writings of Margaret Cavendish, who rejected the mechanical vision of nature that was becoming increasingly popular during her lifetime. Cavendish instead embraced a vitalist natural philosophy and formulated a theory of matter as capable of perception and self-motion and as filled with internal appetites. For Cavendish, the appetites and passions experienced by humans ultimately derived from the appetites and passions present in matter itself. In her mature natural philosophical works, she held that the two highest degrees of matter, which she called sensitive animate and rational animate matter, were the source of matter's appetitive drives. However, in her earlier works she had referred to these two kinds of matter as the sensitive and the rational spirits. The chapter seeks to demonstrate that this shift

[38] Thomas Hobbes was the most famous theoretician of the passions in seventeenth-century England; however, unlike the central figures whom I discuss, he did not draw on the range of intellectual traditions at the core of this dissertation. For this reason, I do not devote a chapter to him.

in Cavendish's conception of active material spirits – hence also of the passions – was influenced by her engagement with the alchemical tradition.

Many of the different strands of thought discussed in chapters two to four come together in the two figures who feature in chapter five: Thomas Willis and Walter Charleton. While Willis and Charleton drew upon the writings of their predecessors in different ways, their originality lay in their eclectic merging of earlier and contemporary traditions. Both Willis and Charleton were physicians, and both wrote about the passions in the latter decades of the seventeenth century. Willis put forward his theory of emotion in a work on the nature of the soul which Charleton knew and explicitly made use of when he composed his treatise on the passions a few years later. Their works on natural philosophy, written near the beginning of their respective careers, reveal a deep engagement with the alchemical tradition, as well as a familiarity with corpuscular theories of matter. They both believed that humans possessed two distinct souls – a material soul primarily made of spirits and an immaterial soul given by God – and they formulated their account of the passions in relation to this view. Willis was also one of the greatest anatomists of his age, and his description of the nerve structures involved in the transmission of passions between the brain and the rest of the body marked a major breakthrough in the medical understanding of emotion.

Overall in the dissertation, I demonstrate that the challenge to the Scholastic Aristotelian account of the passions did not come only from new theories based on the mechanical philosophy but also from a variety of traditions including alchemy, natural magic, and vitalist theories of active matter. In line with recent historiography on the nature of intellectual change during the scientific revolution, I propose that the development of seventeenth-century theories of the passions reflects the intellectual changes that characterise the period more generally.

The dissertation also investigates advances in seventeenth-century medicine and examines how the passions were related to new ideas about the body and soul. In chapter one, I explain that at the beginning of the century there was a standard way of understanding the place of the emotions in relation to the physical and psychological domains. This view was based on humoral medicine, faculty psychology and the Aristotelian principles of matter and form. Over the course of the century several thinkers challenged this traditional account and put forward novel ways of conceptualising the soul, its relationship to the body and the place of the passions with respect to both the soul and the body. Although various alternative theories were proposed, at the end of the century no new consensus had been formed. The old orthodoxy had been rejected, but no new orthodoxy had taken its place.

The passions and wider seventeenth-century debates

While this dissertation is about seventeenth-century theories of the passions, it investigates them in the context of some of the wider intellectual debates of the period, on which it can therefore shed some light. As Deborah Brown has observed, 'seventeenth-century debates about the passions are not peripheral to our understanding of the major scientific and metaphysical shifts in the period'.[39] Rather, by analysing theories of the passions, we can gain insights into some of the major philosophical problems of the era.

For instance, scholars have recently noted a parallel in seventeenth-century accounts of the origin of motion in natural bodies and the origin of emotions in human beings. Mechanical philosophers such as Hobbes and Spinoza viewed the inertial tendencies of bodies – their endeavour to persevere in their current state – as mirroring the *conatus* that gave rise to the

[39] Brown, 'Power and Passion in Hobbes, Descartes and Spinoza', 351.

passions of living beings.[40] This dissertation shows that the connection between the source of motion in natural bodies and of emotions in human beings applies not only to mechanical philosophers of the period, but also to vitalist thinkers such as Bacon and Cavendish. They both understood motion to be fundamentally appetitive in nature, and this was true for the motions that gave rise to the activities of natural bodies, as well as for those that gave rise to human passions.

Another early modern debate in which the passions played an important role concerns the nature and relationship of the mind and body. Philosophers of the era commonly regarded the passions as both physical and psychological; but exactly how this was the case was a matter of contention. Throughout the seventeenth century, theories of the passions were inextricably bound up with changing ideas about the nature of material spirits. At the start of this period, it was widely thought that the thin and highly refined spirits produced in the human body were the instrument through which the mind and body could interact.[41] Beginning in the Renaissance, and continuing into the seventeenth century, an increasing number of natural philosophers saw material spirits as not only present in living bodies but also as spread throughout the material realm. According to Simon Schaffer, spirits, as 'gradations of subtle fluids that informed and activated the cosmos', were a major feature of English natural philosophy in the 1670s.[42] Spirits tended to play a prominent role in alchemical cosmologies, where they were often thought to be the hidden but active component of natural bodies. Laboratory practices such as distillation, for instance, often aimed at extracting such spirits.[43]

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[40] *Ibid*.
[41] See Hiro Hirai, 'Spirit in Renaissance Medicine', in *Encyclopedia of Renaissance Philosophy*, ed. by M. Sgarbi (Cham: Springer, 2018), https://doi.org/10.1007/978-3-319-02848-4_1107-1
[42] Simon Schaffer, 'Godly Men and Mechanical Philosophers: Souls and Spirits in Restoration Natural Philosophy.' *Science in Context* 1, Issue 1 (1987): 53-85: 57.
[43] See Robert Multhauf, 'The Significance of Distillation in Renaissance Medical Chemistry.' *Bulletin in the History of Medicine* 30, No. 4 (1956): 329-346.

In the seventeenth century, a growing number of philosophers who were influenced by ideas from the alchemical tradition (including Bacon, Cavendish, Willis and Charleton) began to view the material spirits in human beings not just as the instrument of the soul but as constituting the soul itself – or at least one part of it. As this dissertation makes clear, this new conception of the soul as consisting of active material spirits – often in communication with a second immaterial soul – led to new ways of understanding the passions as both physical and mental phenomena.

A third area of debate in which theories of the passions were involved concerned ideas about action at a distance. Many commentators on the passions thought that the emotions experienced by an individual could directly impact other people around them. Francis Bacon, for example, believed in the powers of the 'evil eye' and used his natural philosophical theories to explain how the passion of envy could strike another person down. Similarly, Kenelm Digby deployed his theory of the atomic effluvia to explain how passions could travel between individuals. The various ways of trying to account for the seeming activity of passions at a distance are examined over the course of this thesis.

My main goal in this dissertation is to demonstrate that seventeenth-century theories of the passions cannot simply be seen as a replacement of the Scholastic Aristotelian account by new versions based on the mechanical philosophy. Instead, I show how a wide variety of intellectual traditions contributed to the development of a range of novel theories. Even Willis and Charleton, whose theories of the passions were inspired by the writings of mechanists such as Descartes, drew upon ideas from the alchemical tradition, and fused them together in original ways. By drawing attention to the interplay of multiple philosophical traditions, I continue the work of other intellectual historians who have proposed a more complex account of seventeenth-century thought with respect to other disciplinary domains. In a recent article on the role of chemistry and artisanal knowledge in the rise of the mechanical philosophy, Vera

Keller observes that historians of science have now 'ousted a once-assumed mechanization of the world picture from its privileged place as an abrupt shift in the Scientific Revolution'.[44] Moreover, she suggests that 'if there no was no sudden flicking of a "gestalt switch" between vitalized and mechanized worlds, then the trading zone between them, if any existed, ought to become a key area of research'.[45] This dissertation aims to reappraise seventeenth-century accounts of the passions as one such zone of interaction. By examining the development of theories of emotion in relation to lesser-known currents of thought, it seeks to contribute to the growing literature attempting to deepen our understanding of the processes of intellectual change during the period of the scientific revolution.

[44] Vera Keller, 'Drebbel's Living Instruments, Hartmann's Microcosm, and Libavius's *Thelesmos*: Epistemic Machines before Descartes.' *History of Science* 48, Issue 1 (2010): 39-74: 39.
[45] *Ibid*.

CHAPTER ONE. THE TRADITIONAL THEORY OF EMOTION: ARISTOTELIAN NATURAL PHILOSOPHY AND GALENIC MEDICINE

This chapter examines how, in the opening decades of the seventeenth century in England, there existed a traditional and dominant theory of emotion based on the natural philosophy of Aristotle and the medical theories of Galen. I contend that to fully appreciate how emotions were understood to be present in the body and soul during this period it is necessary to investigate the emotions in relation to both these traditions. I also aim to highlight certain issues regarding the emotions that are often overlooked or misrepresented in scholarship on the topic. Specifically, I call attention to the central role of the imagination in the production of emotions. I also attempt to clarify the distinction between the higher rational passions, the more basic natural instincts and the passions of the soul as they were conventionally understood.

Recent scholarship on early modern emotions has helped bring to light some of the different contexts in which they were discussed. Gail Kern Paster's *Humoring the Body: Emotions and the Shakespearean Stage* (2004), has been extremely valuable in highlighting the central role of Galenic medicine in shaping theories of the passions during the Renaissance.[46] One of the central tenets of Galenic medicine was the theory of the four humours which proposed the human body to be composed of four basic fluids: blood, phlegm, yellow-bile and black-bile. Paster has shown how the theory of the humours was crucial in shaping how people viewed their emotions in the first decades of the 1600s. She highlights the fact that during the Renaissance emotions were understood to be an embodied phenomena, and contrasts this with post-Cartesian and post-Enlightenment habits of thought, which divorce the physical from the mental, associating emotions with the latter.

However, Paster's claim that there was a 'psychological materialism' that governed early seventeenth-century thought about the nature of people's mental and emotional operations

[46] Gail Kern Paster, *Humoring the Body: Emotions and the Shakespearean Stage* (Chicago: University of Chicago Press, 2004).

oversimplifies the manner in which people understood the nature of the body-soul relationship.[47] In her analysis, Paster places too great an emphasis on the role of the bodily humours in determining an individual's emotions and behaviours. As a result, she overlooks one of the basic features of the traditional theory of the passions: the requirement that a judgement be made in the soul before an emotion could arise. In this chapter I set out to show that while the body's humoral constitution was indeed understood to *predispose* individuals towards feeling certain passions, a judgement was required by the psychological faculty of the imagination before an emotion was *produced*.

Recently, a number of scholars have noticed these features of Paster's analysis of the emotions in the Renaissance. For instance, Angus Gowland has suggested that notions of embodied emotion 'when interpreted within the framework of psychological materialism, can lead to a misleading simplification of early modern body-soul relations, creating an overemphasis on the physical (and corresponding neglect of the psychic)' and has further noted how Paster presents a view 'in which the physical qualities of the body are more or less determinate of the functions of the soul'.[48] Gowland has argued that this way of viewing things overlooks the reciprocity understood to exist between the body and soul and the bi-directional nature of their relationship. Similarly, Elena Carrera has challenged the 'scholarly emphasis on humoral determinism' noting how Paster 'appears to reduce the passions to their physiological manifestations, thereby understating the two-way causal connections early moderns established between the passions and the embodied cognitions to which they were related'.[49] In their introduction to *The Renaissance of Emotion: Understanding Affect in Shakespeare and his Contemporaries* (2015), Richard Meek and Erin Sullivan have also recognised how 'scholars

[47] *Ibid*., 12
[48] Angus Gowland, 'Melancholy, Passions and Identity in the Renaissance', in *Passions and Subjectivity in Early Modern Culture*, ed. by B. Cummings and F. Sierhuis (London: Routledge, 2013), 75-94: 75.
[49] Elena Carrera, 'Anger and the Mind-Body connection', in *Emotions and Health, 1200-1700*, ed. by E. Carrera (Leiden: Brill, 2013), 95-146: 99, 106.

largely interested in the medical nature of Renaissance and early modern emotion have begun to take issue with the totalising predominance of humoralism within the field' and have suggested that more attention be paid to 'other systems of knowledge and representation that people used to conceptualise and articulate emotional experience.'[50]

To understand the place of the emotions within the human body and soul at the start of the seventeenth century another system of thought that needs to be taken into consideration is Aristotelian natural philosophy, which still dominated much of the philosophical thinking of the period.[51] While scholars in the field of literary studies have focussed on emotions within the context of Galenic medicine, it has been historians of philosophy who have studied the passions in relation to Aristotelian thought. In *Passion and Action: The Emotions in Seventeenth-Century Philosophy* (1997), Susan James has observed how seventeenth-century thinkers attempted to 'challenge and displace the understanding of the passions embedded in Scholastic Aristotelianism'.[52] Therefore, in order to fully appreciate the way emotions were thought to arise and have their effects in the body and soul at the beginning of the seventeenth century it is necessary to study them in the context of both Aristotelian natural philosophy and Galenic medicine.

In this chapter I outline some of the central features of the traditional theory of emotion by drawing on a range of texts published in England in the opening decades of the century. Key features of this theory include six main ideas: first, that passions were understood to be present in both the body and soul; second, that the emotions (like the relationship between the body and soul itself) can be viewed in terms of the Aristotelian principles of matter and form; third,

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[50] Richard Meek and Erin Sullivan, 'Introduction', in *The Renaissance of Emotion: Understanding Affect in Shakespeare and his Contemporaries*, ed. by R. Meek and E. Sullivan (Manchester: University of Manchester Press, 2015), 1-24: 6.

[51] On the prevalence of Aristotelian thought on the European Continent and in England into the seventeenth century see Charles Schmitt, *Aristotle and the Renaissance* (Cambridge, MA: Harvard University Press, 1983); Charles Schmitt, *John Case and Aristotelianism in Renaissance England* (Kingston and Montreal: McGill-Queen's University Press, 1983).

[52] Susan James, *Passion and Action: The Emotions in Seventeenth Century Philosophy* (Oxford: Oxford University Press, 1997), 25.

that passions existed within a broader vision of the soul based on a faculty psychology derived from the teachings of Aristotle; fourth, that the humours which constituted each human body predisposed individuals to feel certain emotions; fifth, that when emotions did arise in the body, they were primarily seated in the heart and associated with the movement of blood, heat and spirits to and from the heart; and finally, that emotions had the ability to significantly affect bodily processes and contribute to the cause and cure of physical disease.

Each of these central features of the traditional theory of emotion are analysed in greater detail in different sections of this chapter. The first part of the chapter provides a general introduction to the passions by examining the numerous textual genres in which they were discussed. The second section turns to address the question of how the passions were understood to be features of the body and soul at the start of the seventeenth century. Specifically, I claim it is helpful to view the passions in relation to the Aristotelian principles of matter and form and I suggest that they are best understood as 'hylomorphic' phenomena. The third section situates the passions in the context of the Aristotelian-based faculty psychology which provided the backdrop to the way the soul was generally thought to operate. The fourth section examines the passions in relation to the human body and locates them within the tradition of Galenic medicine. The fifth section analyses the first treatise on the passions to be published in England in the seventeenth century, Thomas Wright's *The Passions of the Minde*, and relates his account of the passions to the six main features of the traditional theory of emotion. The chapter's final section goes on to examine some of the topics that were up for debate with respect to the traditional theory of emotion.

Literature on the passions

In seventeenth-century England, a good way to learn about the passions of the soul was to read about them in the many different kinds of books in which they were discussed. A new type of

literature that emerged at the beginning of the century, and which flourished well into the next, was the vernacular treatise on the passions. Many of these books were original works by English authors such as *The Passions of the Minde* (1601) by the Jesuit priest Thomas Wright which will be examined later in greater detail.[53] However, a large number were translations of recently authored French texts such as *A Table of Humane Passions* (1621) by the Dominican Nicolas Coeffeteau, which was printed in London just a year after its initial publication in Paris.[54]

Treatises on the passions tended to share a number of common features. Typically, they would include a section discussing 'the passions in general' which examined both their origin and effects. They also contained a section describing 'the passions in particular' which examined specific emotions such as anger, fear and joy in greater detail. Treatises characteristically focussed on the moral dimension of the passions and highlighted the important role of reason in keeping the emotions under control. Authors generally favoured the Aristotelian attitude towards the passions which advocated their moderation through the use of reason. This was often set in contrast to the unfavoured Stoic position which recommended the complete eradication of all emotion.[55] On the whole it was inordinate passion rather than passion in itself that was deemed to be problematic. Many treatises were composed by priests and the theological dimension of the passions was often considered alongside the philosophical. In 1641 the Puritan minister William Fenner, who referred to the passions and affections

[53] Thomas Wright, *The Passions of the Minde* (London: printed by Valentine Simmens for W.B, 1601). This work was re-issued in 1604, 1621 and 1630. See *The Passions of the Minde in Generall. Corrected, enlarged, and with sundry new discourses augmented* (London: printed by Miles Flesher for Robert Dawlman, 1630).
[54] Nicolas Coeffeteau, *A Table of Humane Passions*, trans. by Edward Grimeston (London: printed by Nicholas Okes, 1621); Coeffeteau, *Tableau des passions humaines, de leur causes et de leurs effets* (Paris: chez Sébastien Cramoisy, 1620).
[55] On the Aristotelian and Stoic attitudes towards the emotions and the reception of these views in the Renaissance see Jill Kraye, 'Moral Philosophy', in *The Cambridge History of Renaissance Philosophy*, ed. by C. B. Schmitt, Q. Skinner, E. Kessler and J. Kraye (Cambridge: Cambridge University Press, 1988), 303-386.

interchangeably, wrote *A Treatise of the Affections*.[56] At the very start of his treatise, Fenner quoted a verse from St. Paul's letter to the Colossians in which he encouraged the reader to 'set your affections on things that are above, and not on the things which are on the earth'.[57] A few years later, in another treatise on the passions, Jean-Francois Senault, a French Augustinian friar, was keen to remind his audience that they could not bridle their emotions using the power of reason alone. In *The Use of Passions* (1649) Senault described how divine grace needed to join forces with reason if the passions were to be put to good use.[58] The crucial role of grace in the conversion of unruly passions into virtuous actions was again highlighted in another treatise on the passions written by the Anglican priest William Ayloffe entitled *The Government of the Passions According to the Rules of Reason and Religion* (1700).[59] Summing up the situation, at the end of his treatise Ayloffe concluded "tis easie to judge, that there is no Passion in our Souls, which may not be advantageously managed by Reason as well as Grace'.[60]

Detailed discussions about the passions could also be found in general works of moral philosophy. An English translation of a treatise on moral philosophy by Guillaume du Vair entitled *The Moral Philosophie of the Stoicks* (1598) outlined the author's sympathy with the Stoic attitude to the emotions in contrast to the one commonly seen in treatises on the passions.[61] The nature of the passions was also analysed in Pierre Charron's *De la Sagesse* which was printed in numerous editions in England, over the course of the seventeenth century,

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[56] William Fenner, *A Treatise of the Affections; or the Soules Pulse. Whereby a Christian may know whether he be living or dying* (London: printed by E. G for I. Rothwell, 1641). Fenner's decision to treat the terms passion and affection synonymously is discussed later in this chapter, see pp. 68-69.
[57] Fenner, *A Treatise of the Affections*, 1. Fenner is referencing St. Paul's *Epistle to the Colossians* 3:2 (KJV) 'Set your affection on things above, not on things on the earth.'
[58] Jean-Francois Senault, *The Use of Passions*, trans. by Henry, Earl of Monmouth (London: printed for J. L. and Humphrey Mosley, 1649), preface.
[59] William Ayloffe, *The Government of the Passions According to the Rules of Reason and Religion* (London: printed for J. Knapton, 1700), 6.
[60] *Ibid*., 122.
[61] Guillaume du Vair, *The Moral Philosophie of the Stoicks. Written in French and englished for the benefit of them which are ignorant of that tongue*, trans. by T. I. fellow of New-Colledge in Oxford (London: printed by Felix Kingston for Thomas Man, 1598). On p. 30 the author writes 'that if wee will bee truelie happie, we must purge our minds of all manner of passions.'

under the title *Of Wisdome* after its initial publication in France in 1601.[62] The structure of some parts of the text resembled the layout adopted by the treatises on the passions, especially in its description of the passions under the sequential headings 'of the passions in generall' and 'of passions in particular' alongside a description of the different faculties of the soul.[63] A manual of moral philosophy published much later in the century which discussed the emotions in a similar way was Henry More's *An Account of Virtue* (1690) which first appeared in Latin under the title *Enchiridion Ethicum* (1668).[64]

Throughout the seventeenth century it was commonly recognised that the careful control of one's emotions not only allowed an individual to cultivate a virtuous soul; it also helped them sustain a healthy body. Regimens were a popular type of medical literature in early modern Europe that offered advice on how to maintain physical health through management of the 'six non-naturals'.[65] These factors, which had been part of the learned medical tradition throughout the medieval period were: the climate, food and drink, exercise and rest, sleeping and waking, bodily excretions and the passions of the soul. A key feature of regimens was the advice to keep moderation in all things which meant that notions of virtue and health were closely allied within this genre. Excessive passions were generally deemed bad for one's health while moderate emotions were good. Regimens were authored by both medical professionals and educated laymen. *The Castle of Health* by the diplomat Thomas Elyot, first published in

[62] Pierre Charron, *De la Sagesse livres trois*, (Bordeaux: Simon Millanges, 1601).
[63] *Of Wisdome Three Bookes written in French by Peter Charron*, trans. by Samson Lennard (London: printed by George Miller, 1630), 73, 77.
[64] Henry More, *Enchiridion Ethicum, praecipua Moralis Philosophiae Rudimenta complectens, illustrate ut plurimum Veterum Monuments, et ad Probitatem Vitae perpetuo accommodate* (London: J. Flesher, 1668); Henry More, *An Account of Virtue, or, Dr. Henry More's abridgment of morals put into English* (London: printed for Benj. Tooke, 1690).
[65] On the origin of the six non-naturals and their continued presence in the Western medical tradition see Luis García-Ballester, 'On the Origin of the 'Six Non-Natural Things' in Galen', in *Galen and Galenism. Theory and Medical Practice from Antiquity to the European Renaissance,* ed. by L. García-Ballester, J. Arrizabalaga, M. Cabré, L. Cifuentes (Aldershot: Ashgate, 2002), 105-115; See also *Lifestyle and Medicine in the Enlightenment: The Six Non-Naturals in the Long Eighteenth Century*, ed. by J. Kennaway and R. Knoeff (Abingdon: Routledge, 2020).

the 1530s, continued to be published well into the seventeenth century.[66] *Klinikē, or The Diet of the Diseased* (1633) was a regimen authored by the physician James Hart in which traditional Galenic ideas about health were combined with the newly developing iatrochemical philosophies of the period.[67]

The passions were also discussed in books dealing with the topic of melancholy. Timothy Bright's *A Treatise of Melancholy* (1586) featured chapters with the headings 'how melancholie worketh fearfull passions in the minde' and 'how melancholicke persons are to order themselves in their affections'.[68] Robert Burton's *Anatomy of Melancholy* (1621) similarly addressed the topic of the passions of the soul at great length.[69] Both these works illustrated the intimate relationship between the humours of the body and the passions of the soul, with the specific humour of black bile being most commonly associated with the passions of fear and sorrow. Melancholy was a complex illness that was thought to involve both the supernatural and natural realms and Burton understood wayward passions to be a central feature of this ailment.[70]

The close association between the humours and the passions was also portrayed in the emblem literature of the period including Henry Peacham's *Minerva Britanna* (1612).[71] In this work, the different temperaments associated with the four humours were pictorially represented and briefly commented upon.[72] An important influence on Peacham's work was Cesare Ripa's *Iconologia* (1603) which similarly depicted a variety of temperaments and passions.[73]

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[66] Thomas Elyot, *The Castel of Helth* (London: Thomas Berthelet, 1539).
[67] James Hart, *Klinkē, or The Diet of the Diseased* (London: printed by John Beale, 1633).
[68] Timothy Bright, *A Treatise of Melancholy* (London: printed by William Stansby, 1613), 45, 303.
[69] Robert Burton, *The Anatomy of Melancholy*, Volume 1, ed. by T. C. Faulkner, N. K. Kiessling, and R. L. Blair (Oxford: Clarendon Press, 1989), 246-270.
[70] For a wide-ranging contextual analysis of Burton's work see Angus Gowland, *The Worlds of Renaissance Melancholy* (Cambridge: Cambridge University Press, 2006).
[71] Henry Peacham, *Minerva Britanna* (London: printed in Shoe-lane by Wa. Dight, 1612).
[72] See Figure 5 on p. 54.
[73] Cesare Ripa, I*conologia overo Descrittione Di Diverse Imagini cauate dall'antichità* (Rome: printed by Lepido Facij, 1603). On the influence of Ripa on Peacham see A. R. Young, 'Henry Peacham, Ripa's Iconologia, and Vasari's Lives.' *Renaissance and Reformation/Renaissance et Réforme* 9, No. 3 (1985): 177–88.

Educational treatises in the early modern period also noted the connection between an individual's humoral constitution and their emotions and behaviours. An example is *Positions for the training up of children* (1581) by the schoolmaster Richard Mulcaster.[74] Recognising the emotions to be both psychological and physiological, Mulcaster observed how 'the soule and bodie being coparteners in good and ill, in sweete and sowre, in mirth and mourning' have a 'common sympathie, & a mutuall feeling in all passions'.[75] A later educational treatise by Obadiah Walker, written a few years before he was appointed Master of University College, Oxford, and entitled *Of Education, especially of young gentleman* (1673) would go on to be printed in six different editions within thirty years of its first appearance. In this work the author laid out the nature of the passions and set out the various ways teachers could rectify the unruly emotions of their students.[76]

Brief discussions on particular passions could also be found in essay collections. John Florio's 1603 translation of Michel de Montaigne's *Essays* featured entries specifically on sorrow, fear and anger as well as many other topics closely related to the passions such as the imagination, virtue and moderation.[77] Meanwhile the 1625 edition of Francis Bacon's *The Essays* included sections on envy, love, boldness, and anger.[78]

As we have seen, any literate member of the general public in seventeenth-century England could learn about the passions, across a variety of perspectives, by reading different sorts of popular literature in the vernacular. Nevertheless, the vast majority of the texts mentioned above were written by individuals who had attended university where the passions

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[74] Richard Mulcaster, *Positions wherein those primitive circumstances be examined, which are necessarie for the training up of children, either for skill in their booke, or health in their bodie* (London: printed by Thomas Vautrollier, 1581). On discussions of the passions in educational treatises see Merridee L. Bailey, 'Educational Treatieses', in *Early Modern Emotions: An Introduction*, ed. by S. Broomhall (Abingdon: Routledge, 2017), 99-102.

[75] Mulcaster, *Positions... for the training up of children*, 40.

[76] Obadiah Walker, *Of Education, especially of young gentleman* (Oxford: s.n., 1673), 71-96.

[77] *The Essayes Or Morall. Politike, and Millitarie Discourses of Lo: Michaell de Montaigne*, trans. by John Florio, (London: printed by Val. Sims for Edward Blount, 1603).

[78] *The Essayes or Counsels, Civill and Morall, of Francis Lo. Verulam, Viscount St. Alban* (London: printed by John Haviland, 1625).

were a topic of study across a number of academic disciplines including natural philosophy, rhetoric, moral philosophy, theology and medicine.

It is possible to gain an insight into what was being taught at Oxford and Cambridge by examining the university statutes of the period. The statutes suggest that the writings of Aristotle remained the backbone of university teaching for much of the seventeenth century.[79] During the Renaissance, the university textbook became an increasingly popular tool that was used to teach across a variety of disciplines and discussions on the passions featured in a number of these works.[80] Natural philosophy was one of the academic disciplines in which textbooks were often used for teaching purposes. Joseph Mede, a lecturer at Christ's College, Cambridge in the first decades of the seventeenth century, is known to have been in possession of *Physiologiae Peripateticae Libri Sex*, first published in 1597 and authored by the Lutheran physician and philosopher Johannes Magirus. Mede also owned a copy of *Systema Physicum* by the Calvinist theologian and philosopher Bartholomäus Keckermann, first published in 1612.[81] Both these works analyse the passions, from a natural philosophical perspective, in sections of the text which examine the various functions of the soul.[82]

Since antiquity, the passions had also been a central topic within the field of rhetoric, and it was commonly understood that speakers had to engage with an audience's emotions if they were to create a persuasive argument. Aristotle's *Rhetoric* was a one of the key texts used

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[79] On the university statutes at Oxford and Cambridge see Mordechai Feingold, *The Mathematician's Apprenticeship, Science, Universities and Society in England, 1560-1640* (Cambridge: Cambridge University Press, 1984), 23-44; Feingold, 'Aristotle and the English Universities in the Seventeenth Century: A Re-evaluation', in *European Universities in the Age of Reformation and Counter Reformation*, ed. by H. Robinson-Hammerstein (Dublin: Four Courts Press, 1998), 135-148; William T. Costello, *The Scholastic Curriculum at Early Seventeenth-Century Cambridge* (Cambridge, MA: Harvard University Press, 1958).

[80] On textbooks in the Renaissance see Charles Schmitt, 'The Rise of the Philosophical Textbook', in *The Cambridge History of Renaissance Philosophy*, 792-804; Patricia Reif, 'The Textbook Tradition in Natural Philosophy.' *Journal of the History of Ideas* 30, No.1 (1969): 17-32.

[81] See Harris Fletcher, *The Intellectual Development of John Milton,* Volume II (Urbana: University of Illinois Press, 1961), 598, 602.

[82] Johannes Magirus, *Physiologiae Peripateticae Libri Sex* (Frankfurt: Johannes Berner, 1619), 694-705; Bartholomäus Keckermann, *Systema Physicum* (Hanau: Guilielmus Antonius, 1610), 399-416.

to teach rhetoric throughout the medieval period.[83] In this work, Aristotle provided a detailed account of the passions.[84] Other texts from antiquity, including Cicero's *De Oratore* and Quintilian's *Institutio Oratoria*, which similarly addressed the topic of the passions, were also used for teaching purposes.[85]

While being extremely helpful, the university statutes on their own are unable to provide a full picture of what was actually being studied at the universities.[86] Surviving manuscripts such as *Directions for a Student in the Universitie*, thought to be composed by Richard Holdswoth (1590-1649) a Master of Emmanuel College, Cambridge can help us gain a sense of the range of books being used by teachers and students for the Bachelor of Arts courses.[87] For instance, Holdsworth's manuscript has shown that one modern text used to teach oratory, alongside those of the classical period, was *De Eloquentia Sacra et Humana* (1630) by the French Jesuit Nicolas Caussin. According to Holdsworth, this text was able to teach 'the nature of mens passions and affections, how to raise and move them, and how to allay quiet and change them; a knowledge necessarie not only in writing, sett speeches and letters, but allso in common discourse and dealings with men'.[88]

With regards to the field of moral philosophy in the Renaissance, Aristotle's works continued to form the basis of much of the teaching at the universities, and his texts, and commentaries upon them addressed the ethical dimension of the passions.[89] Throughout the

[83] Rita Copeland, 'Pathos and Pastoralism: Aristotle's Rhetoric in Medieval England.' *Speculum* 89, No.1 (2014): 96-127.
[84] *The Complete Works of Aristotle*, ed. by J. Barnes (Princeton: Princeton University Press, 1984), 2195-2213. On Aristotle's analysis of the emotions in the context of rhetoric see Jamie Dow, 'Aristotle's Theory of the Emotions: Emotions as Pleasures and Pains', in *Moral Psychology and Human Action in Aristotle*, ed. by M. Pakulak and G. Pearson (Oxford: Oxford University Press, 2011), 47-74.
[85] See Fletcher, *The Intellectual Development of John Milton*, 657, 662.
[86] See the chapter on 'Philosophy in the Universities' in Sarah Hutton, *British Philosophy in the Seventeenth Century* (Oxford: Oxford University Press, 2015), 26-50.
[87] Holdsworth's manuscript is reproduced in Fletcher, *The Intellectual Development of John Milton,* Volume II, 623-664.
[88] *Ibid*., 643.
[89] See Kraye, 'Moral Philosophy', 325-339.

seventeenth century, Aristotle's *Nicomachean Ethics* continued to be taught at the universities in England.[90]

In the late medieval period, theologians based in the universities across Europe continued to debate the nature of the passions.[91] One topic that had been debated since antiquity was the relation of the passions to sinful actions.[92] Pre-passions – the involuntary appetitive motions that appeared within the soul before they were consented to by a judgement of the rational soul – were discussed at the universities throughout the late medieval period and would continue to be contested by religious thinkers across religious denominations into the seventeenth century.[93]

With regards to the medical curriculum, a physiological theory of the passions was recounted in texts such as Ibn Hunayn's *Isagoge ad Artem Galeni*.[94] This text was contained in the compendium of medical works known as the *Articella* which was often used in medical teaching into the early modern period.[95] These medical theories about the passions, and their continued presence into the seventeenth century will be outlined in greater detail later in this chapter.

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[90] See Hutton, *British Philosophy in the Seventeenth Century*, 38-40.
[91] Peter King, 'Late Scholastic Theories of the Passions: Controversies in the Thomist Tradition', in *Emotions and Choice from Boethius to Descartes*, ed. by H. Lagerlund, M. Yrjönsuuri (Dordrecht: Kluwer Academic Publishers, 2002), 229-258.
[92] See Richard Sorabji, *Emotion and Peace of Mind: From Stoic Agitation to Christian Temptation* (Oxford: Oxford University Press, 2002).
[93] On medieval discussions of the pre-passions see Simo Knuuttila, *Emotions in Ancient and Medieval Philosophy* (Oxford: Oxford University Press, 2004), 179-194.
[94] On medieval medical theories of the passions see Carrera, 'Anger and the Mind-Body Connection', 116-123; On medical education in the universities in late medieval Europe see Nancy Siraisi, 'The Faculty of Medicine' in *A History of the University in Europe*, Volume 1, ed. by H. De Ridder-Symoens (Cambridge: Cambridge University Press, 1992), 377-384; On medical education in seventeenth century England see Phyllis Allen, 'Medical Education in the Seventeenth Century.' *Journal of the History of Medicine and Allied Sciences* 1, No. 1 (1946): 115-143.
[95] See Jon Arrizabalaga, *The Articella in the Early Press ca. 1476-1534* (Cambridge: Cambridge Wellcome Institute for the History of Medicine, 1998).

Hylomorphic emotions

As we have seen, the passions were a topic of interest for a wide range of figures in society including priests, philosophers and physicians, and it was generally understood that they affected the body as well as the soul. One way of gaining an insight into exactly how emotions were thought to be both psychological and physiological is by examining the treatises on the passions published over the course of the century. Many of these treatises contained a brief definition of a passion near the beginning of the text. These definitions were often strikingly similar as demonstrated by the following examples:

> A passion, is a motion of the sensitive appetite, stirred up by the apprehension, either of good or evil in the imagination, which worketh some outward change in the body.[96]

> Passion then is nothing else, but a motion of the sensitive appetite, caused by the imagination of an appearing or veritable good or evil, which changeth the body against the laws of nature.[97]

> That which is called passion, say they, is no other thing, but a motion of the sensitive appetite, caused by the apprehension or imagination of good or evill, the which is followed with a change or alteration in the body, contrary to the lawes of nature.[98]

As the above definitions indicate, the passions were commonly understood to involve both the body and the soul. From a psychological viewpoint they were understood to be motions of the sensitive appetite caused by the apprehension of good or evil in the imagination – this part of the definition situated the passions within the tradition of Aristotelian faculty

[96] John Weemse, *The Portraiture of the Image of God in Man* (London: printed by T. C. for John Bellamie, 1636), 139.
[97] Senault, *The Use of Passions*, 17.
[98] Coeffeteau, *A Table of Humane Passions*, 2.

psychology as we shall later see. From a physiological perspective they were acknowledged to bring about a change or alteration in the body.[99]

At the start of the seventeenth century, one of the main ways of thinking about the relationship between the body and the soul was through the lens of the Aristotelian philosophy that dominated the university teaching of the period. According to Aristotle all substances in the natural world, from stones to flowers to humans, were composed of the two principles of matter and form. According to this theory of hylomorphism (matter-form-ism), objects gained their existence as unified entities through the combination of matter and form.[100] While the matter of an object provided the material substrate out of which it was made, the form gave a substance its structure, function and characteristic qualities. With regards to human beings, it was the soul that provided the form, while the various tissues that made up the body contributed the matter.[101] This hylomorphic account of the human being, that saw them as a union of body and soul, could also be used to explain the nature of the passions.

Near the beginning of *De Anima*, a text that was extensively studied and commented upon throughout the late medieval period and Renaissance, Aristotle briefly discussed the passions and their relationship to the body and soul. In a section exploring the nature of anger, he reported how a natural philosopher and logician would give different definitions of this particular emotion. The natural philosopher would describe anger as a surging of blood and

[99] The latter two definitions state that passions change the body 'against the laws of nature' and 'contrary to the lawes of nature'. The idea is inherited from ancient Stoic thought in which rational activity was seen as being in accordance with nature whereas passions, being inherently erroneous, were considered contrary to the laws of nature. See Lawrence C. Becker, 'Stoic Emotion', in *Stoicism: Traditions and Transformation*, ed. by S. K. Strange and J. Zupko (Cambridge: Cambridge University Press, 2004): 250-275 (258). The question of whether the passions were morally bad because they were contrary to nature (*praeter naturam*) was discussed by Thomas Aquinas in *Summa Theologiae* 1-II.24, 121.

[100] On matter, form and hylomorphism in the early modern period see *Matter and Form in Early Modern Science and Philosophy*, ed. by G. Manning (Leiden: Brill, 2012); Christopher Luthy and William R. Newman, "Matter' and 'Form': By Way of a Preface.' *Early Science and Medicine* 2, Issue 3 (1997): 215-226.

[101] Emily Michael, 'Renaissance Theories of Body, Soul and Mind', in *Psyche and Soma: Physicians and Metaphysicians on the Mind-Body Problem from Antiquity to Enlightenment* (Oxford: Clarendon Press, 2002), 147-172.

heat around the heart, while the logician would call anger a craving for retaliation. Aristotle then explained how the former described anger's matter whereas the latter described its form.[102]

In the thirteenth century, this hylomorphic account of anger was taken up and used by Thomas Aquinas in his own description of the passions. In the *Summa Theologica* Aquinas explained how passions most properly referred to acts of the sensitive appetite and affected not just the soul, but the soul-body composite.[103] He further explained how passions were necessarily linked to physical changes within the body such as an increasing or decreasing heart rate or an enlargement or contraction of the heart. He stated, 'in the passions of the soul, the movement of the appetitive potency is like the formal element, and the material element is a bodily change, where one is proportionate to the other'.[104] For Aquinas, as for Aristotle, any study into the psychology of the passions considered them in the context of their form, whereas an enquiry into the physiology of the emotion looked at them with regard to their matter.

The hylomorphic account of the passions, which originated with Aristotle and was later adopted by Aquinas, reappeared in a treatise on the passions published in London around the midpoint of the seventeenth century. *Psychosophia: or Natural and Divine Contemplations of the Passions and Faculties of the Soul of Man* (1653) was composed by Nicholas Mosley, an aristocrat and political ally of Charles I during the English Civil War.[105] Mosley studied at

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[102] *The Complete Works of Aristotle,* Volume 2, ed. by J. Barnes (Princeton: Princeton University Press, 1984), 643: 403a1-403b1, "Hence a physicist would define an affection of the soul differently from a dialectician; the latter would define e.g. anger as the appetite for returning pain for pain, or something like that, while the former would define it as a boiling of the blood or warm substance surrounding the heart. The one assigns the material conditions, the other the form or account."

[103] Thomas Aquinas, *Summa Theologiae*, ed. by P. Caramello (Turin: Marietti, 1950). See *Summa Theologiae, II-1*. 22, 114-116.

[104] *Ibid*., see *Summa Theologiae* II-1.44.1, 197: "in passionibus animae est sicut formale ipse motus appetitivae potentiae, sicut autem materiale transmutation corporalis: quorum unum alteri proportionator." English translation from Simo Knuuttila, *Emotions in Ancient and Medieval Philosophy* (Oxford: Oxford University Press, 2004), 241.

[105] Nicholas Mosley, *Psychosophia: or Natural and Divine Contemplations of the Passions and Faculties of the Soul of Man* (London: printed for Humphrey Mosley, 1653).

Magdalen College, Cambridge and his treatise on the passions was grounded in the Aristotelian natural philosophy taught at the universities.[106]

Psychosophia was divided into three parts; the first section considered the soul in the context of natural philosophy, the second examined it in terms on metaphysics, whereas the final segment studied the soul from the viewpoint of theology. In his work, Mosley explained how the theological part considered the soul as the image of God in man, while the metaphysical account examined it as incorporeal, spiritual and abstracted from bodily organs.[107] By contrast, the purpose of the natural philosophical study was to investigate the soul as 'the Form of man, and so a part of him who is compounded of Matter and Form'.[108] At one point in the text, Mosley directly referenced Aristotle's comments on anger from *De Anima* and stated how this emotion could be defined in terms of physical science as a 'certain motion of the body for some injury received', or in terms of logic as a 'desire for revenge' and went on to state how the former expressed the matter while the latter did not.[109]

The section of *Psychosophia* dedicated to investigating the passion of the soul was situated at the end of the first part of the work, which dealt with the soul from the perspective of natural philosophy.[110] Prior to analysing the passions, Mosley had already examined – in sequence – the soul's vegetative faculty, the external senses, the three internal senses of common sense, phantasy, and memory, as well as the locomotive faculty. After his analysis of the passions, and at the start of the second part of the work, Mosley examined the intellectual faculties of the soul.[111] The structure of Mosley's text reflected the hierarchical faculty

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[106] See Malcolm Gratton, 'Mosley, Nicholas (bap. 1611, d. 1672), Author and Royalist Landowner' in *Oxford Dictionary of National Biography*, 60 vols (Oxford: Oxford University Press, 2004), Volume 39, 468-469.
[107] *Ibid*., 26.
[108] *Ibid*.
[109] *Ibid.,* 25.
[110] *Ibid.,* 99-109.
[111] Mosley's decision to analyse the embodied soul as part of natural philosophy and the incorporeal soul as part of metaphysics aligns with a prior academic tradition, see Paul J. J. M. Bakker, 'Natural Philosophy, Metaphysics, or Something in Between? Agostino Nifo, Pietro Pomponazzi, and Marcantonio Genua on the Nature and Place of the Science of the Soul' in *Mind, Cognition and Representation: The Tradition of Commentaries on Aristotle's De Anima,* ed. by J. M. M. H. Thijssen, P. J. J. M. Bakker (Aldershot: Ashgate, 2007), 151-178.

psychology that studied the soul within in a traditional Scholastic framework. A brief examination of this approach will help us situate the place of the passions within the overall picture of the soul as it was commonly understood at the time.

Natural philosophy and faculty psychology

The soul was a topic of study within the discipline of natural philosophy throughout the universities of Europe during the late medieval and early modern period.[112] Despite the various doctrinal and methodological developments in natural philosophy during the Renaissance, Aristotle's books on nature (*libri naturales*), and the various commentaries upon them, still formed the basis of university teaching in England at the start of the seventeenth century.[113] The sequence of texts studied at the universities often began with Aristotle's *Physics*, which laid out the basic principles of natural philosophy such as matter, form and privation, before moving onto works which focussed on different parts of nature or specific topics such as *On the Heavens* and *On Generation and Corruption*. The study of *On the Soul*, and commentaries upon it by Greek, Arabic and Latin authors, formed part of the natural philosophy syllabus and the enquiry into the nature of the soul sat at the boundary between the disciplines of natural philosophy and metaphysics.[114]

Within the Aristotelian tradition, the soul was viewed as a collection of hierarchically organised faculties, or powers. A popular sixteenth century philosophical textbook, written by

[112] See Katharine Park, 'The Organic Soul', in *The Cambridge History of Renaissance Philosophy*, 464-484; Sander De Boer, 'The (Human) Soul' in *The Routledge Companion to Sixteenth Century Philosophy*, ed. by H. Lagerlund and B. Hill (Abingdon: Routledge, 2017), 411-435.
[113] For an overview of natural philosophy in the Renaissance and Early Modern period see Eva Del Soldato, 'Natural Philosophy in the Renaissance', in *The Stanford Encyclopedia of Philosophy* (Fall 2020 edition), ed. by Edward N. Zalta, https://plato.stanford.edu/archives/fall2020/entries/natphil-ren/; Ann Blair, 'Natural Philosophy', in *The Cambridge History of Science. Volume 3: Early Modern Science*, ed. by K. Park and L. Daston (Cambridge: Cambridge University Press, 2006), 365-406.
[114] See Paul J. J. M. Bakker, 'Natural Philosophy, Metaphysics, or Something in Between?'; Fernando Vidal, *The Sciences of the Soul: The Early Modern Origins of Psychology* (Chicago: University of Chicago Press, 2011), 35-46.

the Carthusian monk Gregor Reisch (1467-1525) and entitled *Margarita Philosophica,* provided a brief account of the various faculties of the soul. The following diagram reconstructs Reisch's classification of the different faculties.

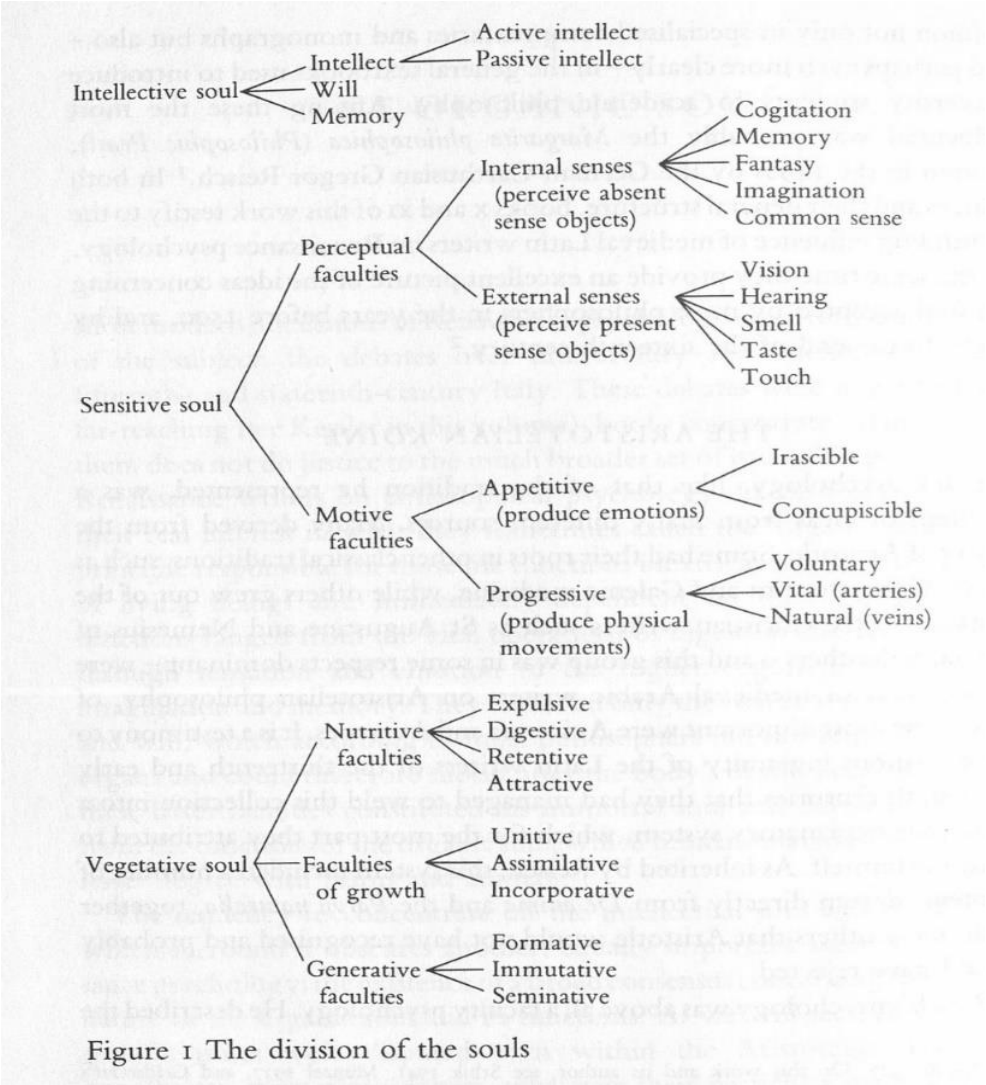

Figure 1 The division of the souls

Figure 1: The division of souls. Source: Katharine Park, 'The Organic Soul', in *The Cambridge History of Renaissance Philosophy*, p. 466. Reproduced courtesy of Cambridge University Press.

Reisch's division of the soul's faculties closely resembled those found in the various treatises on the passions produced in seventeenth-century England, as well as other types of literature that attempted to chart the faculties of the soul such as Robert Burton's *The Anatomy*

of Melancholy (1621).[115] As a general rule, faculty psychology identified three types of soul, each consisting of a set of powers. Plants possessed a vegetative soul which gave them the powers of nutrition, growth and reproduction. Animals had a sensitive soul which contained the aforementioned powers but also imbued them with the powers of sensation and motion. Humans alone had a rational (or intellective) soul which gifted them with the additional faculties of the intellect and will.

Emotions were produced by the appetitive faculty of the sensitive soul and were subcategorised as either concupiscible or irascible (see Figure 1). However, according to the standard definition of an emotion, before a passion could arise, an object within the soul had to be judged as either good or evil, and it was the faculty of the imagination that performed this operation. The cognitive faculties of the sensitive soul, which were involved in the acquisition of knowledge, consisted of the five external senses of touch, sight, hearing, smell and taste as well as the internal senses.[116] The number of internal senses was often disputed within discussions on the faculties of the soul.[117] One viewpoint, rooted in the writings of Avicenna, held there to be five internal senses as pictured in Figure 2 below.

[115] One noticeable difference between Reisch's classification and those found in works produced in seventeenth century England is the lack of discussion on the intellective memory in the latter. In the English works it is the Intellect and Will which remain the core faculties of the intellective (or rational) soul.
[116] On the division of the soul's powers into the cognitive and appetitive see De Boer, 'The (Human) Soul', 415.
[117] On the internal senses see Ruth Harvey, *The Inward Wits: Psychological Theory in the Middle Ages and the Renaissance* (London: Warburg Institute, 1975); Pekka Kärkkäinen, 'Internal Senses', in *Encyclopaedia of Medieval Philosophy* ed. by H. Lagerlund (Dordrecht: Springer, 2011) https://doi.org/10.1007/978-1-4020-9729-4_246

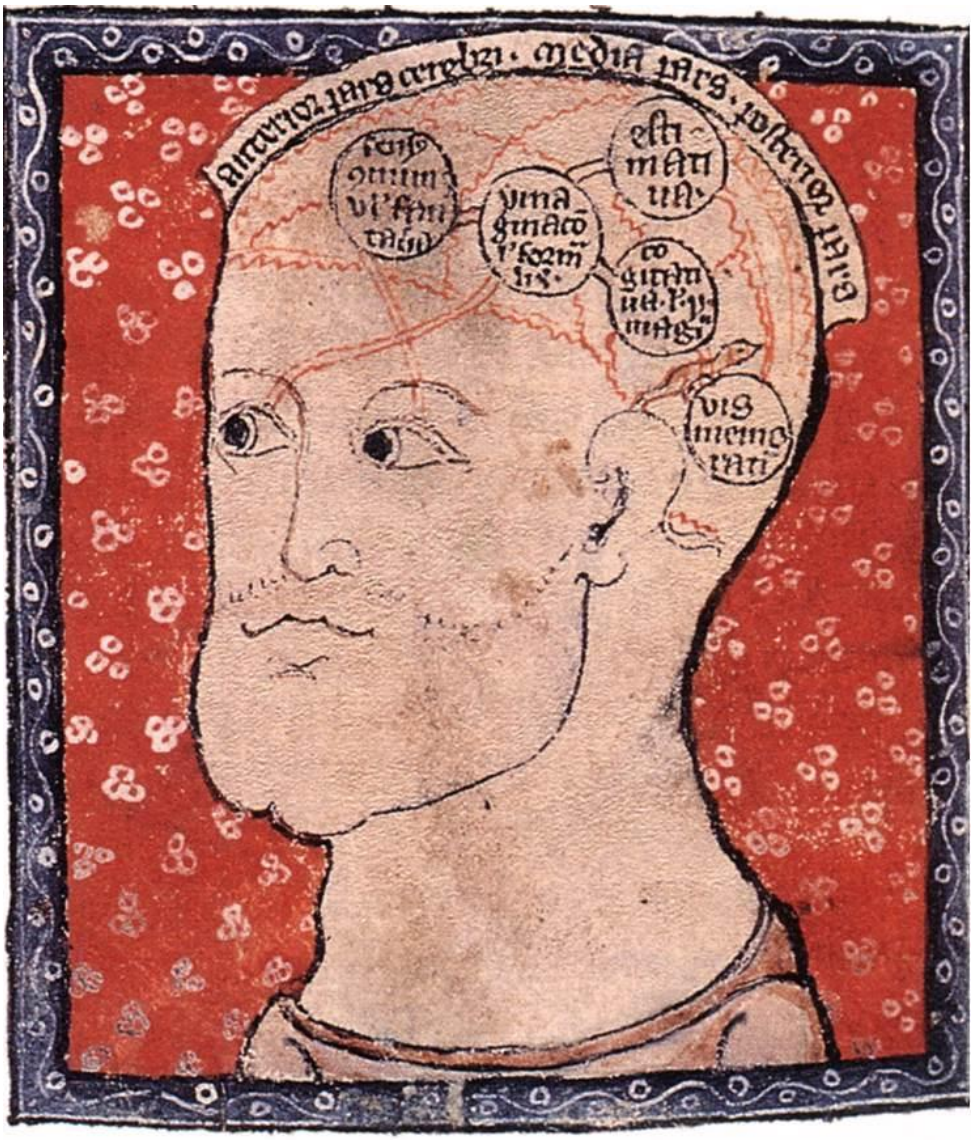

Figure 2: Diagram of the brain, c. 1300, by unknown English miniaturist. Source: Cambridge University Library, Public domain, via Wikimedia Commons. https://commons.wikimedia.org/wiki/File:14th-century_painters_-_Diagram_of_the_brain_-_WGA15761.jpg

Avicenna's idea of five internal senses was adopted by numerous medieval Latin writers. The faculty of common sense, which combined the basic sensory stimuli from each of the five external sense organs, was thought to be housed in the anterior ventricle of the brain. Memory, on the other hand, was conventionally located in the posterior ventricle of the brain. The location and exact function of cogitative power, estimative power, imagination and fancy varied depending on the particular viewpoint of the author.

By the beginning of the seventeenth century there was an increasing tendency to reduce the number of internal senses to just three and to locate each of them in one of the ventricles of the brain, with imagination being seated in the middle ventricle between the anterior common sense and the posterior memory. Robert Burton proposed such an arrangement in his *Anatomy of Melancholy*. In a section dedicated to explaining the function of the inward senses, he wrote that 'Inner senses, are three in number, so called because they be within the brain-panne, as *Common Sense, Phantasie, Memorie* … *Phantasie*, or Imagination, which some call *Æstemative*, or *Cogitative* … is an inner sense, which doth more fully examine the Species perceaved by common sense'.[118]

It was generally understood that one of the main tasks of the imagination was to judge a representation of a particular object received from common sense or memory, and to determine whether it was beneficial or harmful for the individual. Only once this operation was performed would a passion then arise in the appetitive faculty of the sensitive soul in accordance with the nature of the judgement. The resulting passion would then provide the impulse that would move an organism either towards, or away from, the object under consideration.

Taxonomies of the passions were often organised around the different kinds of judgements that produced the emotions. One of the most frequently referenced classifications of the passions in the seventeenth century was a list originally provided by Thomas Aquinas in his *Summa Theologica*.[119] Aquinas listed eleven different passions which he divided into six concupiscible passions (love, hate, desire, aversion, joy, sorrow) and five irascible passions (hope, despair, boldness, fear, anger).

[118] Burton, *The Anatomy of Melancholy*, 152.
[119] For a detailed analysis of Aquinas' view of the passions see Robert Miner, *Thomas Aquinas on the Passions: A Study of Summa Theologiae Ia2ae 22-48* (Cambridge: Cambridge University Press, 2009).

The concupiscible passions arose when an object was deemed to be good or evil with the soul simply inclined to obtain or avoid it. The appetite towards a perceived good originated in love (*amor*), which moved an individual towards the object through desire (*desiderium*), and which would result in joy (*gaudium*) when the object was obtained. There was a corresponding sequence of passions which appeared in response to a perceived evil. An initial hatred (*odium*) of an evil object would be followed by an aversion (*fuga*) away from it, which when unsuccessful would result in sorrow (*tristitia*).[120]

Irascible passions arose in the soul when an obstacle appeared between an object and the simple movement away or towards it. The striving towards a particular good that was difficult to obtain was associated with hope (*spes*), while the movement away from it was associated with despair (*desperatio*). The inclination towards a threatening evil was boldness (*audacia*) whereas an aversion away from it was fear (*timor*). Anger (*ira*), which did not have an opposite passion, resulted from the inclination to resist a present evil.[121]

Another ancient classification of the passions that was often discussed in the treatises on the passions was one provided by the Stoics and set out by Cicero in his *Tusculan Disputations*.[122] According to this scheme, the passions were divided into four basic types, depending on whether the object under consideration was regarded as a present or future good or a present or future evil. An object seen as a present good would give rise to pleasure (*laetitia*) while a present evil would result in distress (*aegritudo*). An object deemed as future good would give rise to desire (*libido*) whereas a future evil would cause fear (*metus*). The eleven-fold and four-fold classifications of the passions were presented on the titlepages of two of the treatises on the passions that were published in London in the first half of the seventeenth century (Figures 3 and 4).

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[120] James, *Passion and Action*, 1997, 57.
[121] *Ibid.*
[122] Knuuttila, *Emotions in Ancient and Medieval Philosophy*, 52.

Figure 3: The titlepage of *The Use of Passions* by Jean-Francois Senault (1649). The eleven passions of Aquinas' classification are depicted.

Figure 4: The titlepage of *A Table of Humane Passions* by Nicolas Coeffeteau (1621). The four passions of the Stoic classification are depicted.

The passions, as motions of the sensitive appetite brought on by a judgement in the imagination, were understood to arise in the sensitive part of the human soul. However, it was commonly known that the passions could affect the workings of the rational soul as well.

Excessive or inordinate emotions were often thought to undermine the proper functioning of the rational soul's two faculties: the intellect and the will. In *The Passions of the Minde in Generall*, Thomas Wright dedicated one of the six chapters of his treatise to exploring what he thought were the four main effects of inordinate emotions. The first he listed was the ability of excessive passions to impair the processes of reasoning, and he opened his chapter on the topic by stating 'wise men confesse, and ignorant men prove, that passions blind their judgements and reason'.[123] The second effect of inordinate passions recounted by Wright was their ability to seduce the will.[124] The tendency of the passions to undermine the will was generally thought to incline individuals towards vicious and sinful behaviour.[125] Another result of uncontrolled passion listed by Wright was their ability to disquiet the mind. The therapeutic effects associated with the careful management of emotion was a feature of both Stoic and Epicurean thought.[126] This idea was taken up in the Early Modern period, especially in seventeenth century England.[127] The natural philosopher and physician Walter Charleton (1619-1707), whose treatise on the passions will be examined in greater detail in the final chapter of this study, explicitly stated that it was written with the purpose of curing the mind.[128] The fourth and final effect of inordinate passions listed by Wright was their ability to alter the body, and the way this was thought to happen is worth exploring in greater detail.

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[123] Wright, *The Passions of the Minde in Generall*, 48.
[124] *Ibid*., 57.
[125] On the passions and their effect on the will and human behaviour in the medieval and early modern periods see Risto Saarinen, *Weakness of Will in Medieval Thought: From Augustine to Buridan* (Leiden: Brill, 1994); Risto Saarinen, *Weakness of Will in Renaissance and Reformation Thought* (Oxford: Oxford University Press, 2011).
[126] See Martha C. Nussbaum, *The Therapy of Desire: Theory and Practice in Hellenistic Ethics* (Princeton: Princeton University Press, 1994).
[127] See Sorana Corneanu, *Regimens of the Mind: Boyle, Locke and the Early Modern Cultura Animi Tradition* (Chicago: University of Chicago Press, 2011).
[128] Walter Charleton, *Natural History of the Passions* (London: printed by T. N for James Magens, 1674), Epistle Prefatory.

Medicine and humoral theory

The classical doctrine of the four humours played a fundamental role in explaining the nature of the human body during the Renaissance. This theory had its roots in ancient Greek works such as Hippocrates' *On the Nature of Man* and Galen's *On Mixtures*, and it was taken up and developed by numerous Arabic and Latin physicians in the Middle Ages.[129] At the heart of humoral theory was the idea that the human body was made up of four basic fluids called humours (blood, phlegm, yellow bile and black bile) with each humour linked to a pair of primary qualities (hot, cold, dry and moist). Blood was warm and moist, phlegm was cold and moist, yellow bile was warm and dry and black bile was cold and dry. Bodily health was associated with a correct balance of these humours, whereas disease arose when the proportion of humours became unbalanced within the whole body or in a specific part of it. Every individual had a humoral constitution that was fitting to them, and medical treatment often consisted of restoring a person's idiosyncratic humoral balance. If, for instance, illness resulted from an excess of heat and moisture in the body, a substance with the contrary qualities of dryness and cold might be applied to restore the body's default state of equilibrium.

The theory of the humours portrayed the human body as intimately connected with its natural environment as each humour was related to one of the four elements in nature and a season of the year. Blood was associated with air and spring, phlegm with water and winter, yellow bile with fire and summer and black bile with earth and autumn. Some authors also linked the humours with heavenly bodies, with the association between Saturn and black bile being of particular interest to many authors in the Renaissance.[130] The four humours married every individual with the outer world of the seasons and planets, but they also connected the human body with the inner world of the soul.

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[129] See Noga Arikha, *Passions and Tempers: A History of the Humours* (New York: Harper Collins, 2007).
[130] See Raymond Klibansky, Erwin Panofsky and Fritz Saxl, *Saturn and Melancholy: Studies in the History of Natural Philosophy, Religion and Art* (Montreal: McGill-Queen's University Press, 2019) [1st edition 1964].

The central idea linking the constitution of the body with the workings of the soul was that of temperament, also called complexion. The number of temperaments and their characteristics was a point of dispute in antiquity and the early Middle Ages, but by the late Middle Ages a scheme of four temperaments with specific associated traits became dominant.[131] Each of the four temperaments was derived from the dominant type of humour present in the body and this led in turn to characteristic predispositions within the soul. Individuals with a sanguine temperament had blood as their dominant bodily humour and people with this complexion generally had a cheerful manner. Choleric individuals were dominated by yellow bile and their irascible temperament would predispose them to outbursts of anger. A predominance of phlegm would result in a phlegmatic complexion which was characterised by a stolid and largely unemotional personality. Melancholic individuals had a predominance of black bile which inclined them to periods of depression and as well as creative genius. A person's temperament, produced by their humoral constitution, was readily seen to contribute to the development of an individual's character and emotional predisposition.

This idea is illustrated in Henry Peacham's aforementioned book of emblems, *Minerva Britanna*. This work pictorially represented the four temperaments and described their various associations (Figure 5). For instance, the figure representing the choleric temperament is depicted as a young man holding a sword 'unsheathed in his ire'. The figure is also positioned next to a lion to indicate that he is unable to refrain from cruel deeds, or alternatively, that he possesses a brave and bounteous mind. The figure representing the sanguine temperament, on the other hand, is shown to be of a benign and gentle nature. He is situated next to a lustful goat to show his proclivity for women and wine, but he is also described as being fair-spoken, bashful and seldom moved to anger.

[131] Jacques Bos, 'Complexion (cf. Temperament)', in *Encyclopedia of Early Modern Philosophy and the Sciences*, ed. by D. Jalobeanu and C. T. Wolfe (Cham.: Springer, 2021), https://doi.org/10.1007/978-3-319-20791-9_402-1

HEERE *Melancholly* muſing in his fits,
Pale viſag'd, of complexion cold and drie,
All ſolitarie, at his ſtudie ſits,
Within a wood, devoid of companie:
Saue Madge the Owle, and melancholly Puſſe,
Light-loathing Creatures, hatefull, ominous.

His mouth, in ſigne of ſilence, vp is bound,
For *Melancholly* loues not many wordes:
One foote on Cube is fixt vpon the ground,
The which him plodding *Conſtancie* affordes:
A ſealed Purſe he beares, to ſhew no vice,
So proper is to him, as *Avarice*.

THE Aierie *Sanguine*, in whoſe youthfull cheeke,
The *Peſtane Roſe*, and *Lilly* doe contend:
By nature is benigne, and gentlie meeke,
To Muſick, and all merriment a frend;
As ſeemeth by his flowers, and girlondes gay,
Wherewith he dightes him, all the merry May.

And by him browzing, of the climbing vine,
The luſtfull *Goate* is ſeene, which may import,
His pronenes both to women, and to wine,
Bold, bounteous, frend vnto the learned ſort;
For ſtudies fit, beſt louing, and belou'd,
Faire-ſpoken, baſhfull, ſeld in anger moou'd.

NEXT *Choller* ſtandes, reſembling moſt the fire,
Of ſwarthie yeallow, and a meager face;
With Sword a late, vnſheathed in his Ire:
Neere whome, there lies, within a little ſpace,
A ſterne ei'de Lion, and by him a ſheild,
Charg'd with a flame, vpon a crimſon feild.

We paint him young, to ſhew that paſſions raigne,
The moſt in heedles, and vnſtaied youth:
That Lion ſhowes, he ſeldome can refraine,
From cruell deede, devoide of gentle ruth:
Or hath perhaps, this beaſt to him aſſign'd,
As bearing moſt, the braue and bounteous mind.

HEERE *Phlegme* ſits coughing on a Marble ſeate,
As Citie-vſurers before their dore:
Of Bodie groſſe, not through exceſſe of meate,
But of a Dropſie, he had got of yore:
His ſlothfull hand, in's boſome ſtill he keepes,
Drinkes, ſpits, or nodding, in the Chimney ſleepes.

Beneath his feete, there doth a *Tortoiſe* crall,
For ſloweſt pace, Sloth's Hieroglyphick here,
For Phlegmatique, hates Labour moſt of all,
As by his courſe araiment, may appeare:
Nor is he better furniſhed I find,
With Science, or the virtues of the mind.

Figure 5: Emblems of the temperaments from Henry Peacham's *Minerva Britanna* (1612).

The notion that a person's bodily temperament could influence their character and behaviour was widespread during the sixteenth century and the idea was often depicted on stage. Ben Johnson's *Every Man in His Humour* was first performed in Shoreditch, London in 1598, with *Every Man out of His Humour* being staged the following year. Both these plays depicted characters whose desires and conduct were largely driven by the temperaments which they possessed.

The extent to which temperament predetermined or predisposed an individual's thoughts, feeling and behaviours was often a matter of debate. *The Examination of Men's Wits* (1594) was an English translation of a work by the Spanish physician Juan Huarte which argued that an individual's talent was largely determined by their humoral constitution and that the profession they were best suited to was in large part a product of their physical constitution.[132] As well as influencing a person's character and intellectual abilities, temperament was also thought to predispose individuals to feel certain passions.[133] Someone with a sanguine complexion was more likely to feel joy, while a choleric individual was prone to feel anger. Alternatively, someone with a melancholy temperament was predisposed to experience the passions of sorrow and fear. Nicholas Mosley expressed such a view in *Psychosophia* in which he stated that passions are:

> stronger or weaker according to the temperature of the four elements in the body of man, from whence the complexions have their denomination; if the complexion be Sanguine it commonly feeds the Affection of Joy and Mirth and Love and the like; if Cholerick expect Anger, Hatred and

[132] Juan Huarte, *The examination of mens wits* (London: trans. by Richard Carew printed by Adam Islip, 1594). On Huarte, temperament and the concept of ingenium see Fabrizio Bigotti, *Physiology of the Soul: Mind, Body and Matter in the Galenic Tradition of the Late Renaissance (1550-1630)* (Turnhout: Brepols, 2019), 107-136.
[133] Texts on this theme include: Levinus Lemnius, *The Touchstone of Complexions* (London: Thomas Marsh, 1576); John Downame*, Spiritual Physick to Cure the Diseases of the Soul, arising from Superfluitie of Choller, prescribed out of God's Word* (London: By Gabriel Simson for William Iones, 1600); Thomas Walkington, *The Opticke Glasse of Humors* (London: imprinted by John Windet for Martin Clerke,1607).

> Malice etc, if Melancholy, then Sorrow, Fear and Grief; and thus according to the temperature of the body are Passions for the most part more or less predominant.[134]

According to this statement, a person's humoral constitution inclined them towards experiencing certain passions. However, this did not mean that an individual's temperament *determined* the emotions they experienced. The prevailing theory of emotion, as previously outlined, maintained that a value judgement had to be made in the soul's imaginative faculty before a passion arose within the sensitive appetite; therefore, if a person's physiological constitution *predisposed* them towards feeling certain emotions, it was ultimately a judgement in the soul that was needed for an emotion to be *produced*. The body affected the soul, but the opposite was also true – the soul affected the body. This prevented the whole theory from degenerating into sheer physiological determinism.

In addition to the theory which explained how individuals were predisposed towards feeling certain passions, there also existed a medical theory which explained the physiological changes that took place in the body once an emotion had been produced. This theory was taught across the universities of Europe at the start of the seventeenth century and was largely derived from medieval Arabic medical sources that entered the West as part of the Arabic to Latin translation movement of the eleventh to thirteenth centuries.[135] Latin translations of these Arabic works were used to teach medical theory and practice well into the early modern period.[136] The medical theory of the passions found in a number of these texts centred around the heart and the movement of blood, heat, and spirits either away from, or back towards it.

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[134] Mosley, *Psychosophia*, 102.
[135] On medicine and the Arabic to Latin translation movement see Peter E. Pormann, 'Medical Conceptions of Health from Antiquity to the Renaissance', in *Health: A History*, ed. by P. Adamson (Oxford: Oxford University Press, 2019), 67-71.
[136] See Nancy Siraisi, *Avicenna in Renaissance Italy: The Canon and Medical Teaching in Italian Universities after 1500* (Princeton: Princeton University Press, 1987).

Spirits, considered within a medical context, were understood to be an extremely thin and subtle physical substance that permeated the human body. A popular medieval account of the spirits described three distinct kinds inhabiting the body. The natural spirits were generated in the liver and flowed through the veins; vital spirits were produced in the heart and flowed through the arteries; while animal spirits were filtered in the brain and travelled through the nerves.[137] As the most refined physical substance in the body, the spirits were often considered an important intermediary between the workings of the body and those of the soul, and they were often referred to as the 'instrument' of the soul.[138]

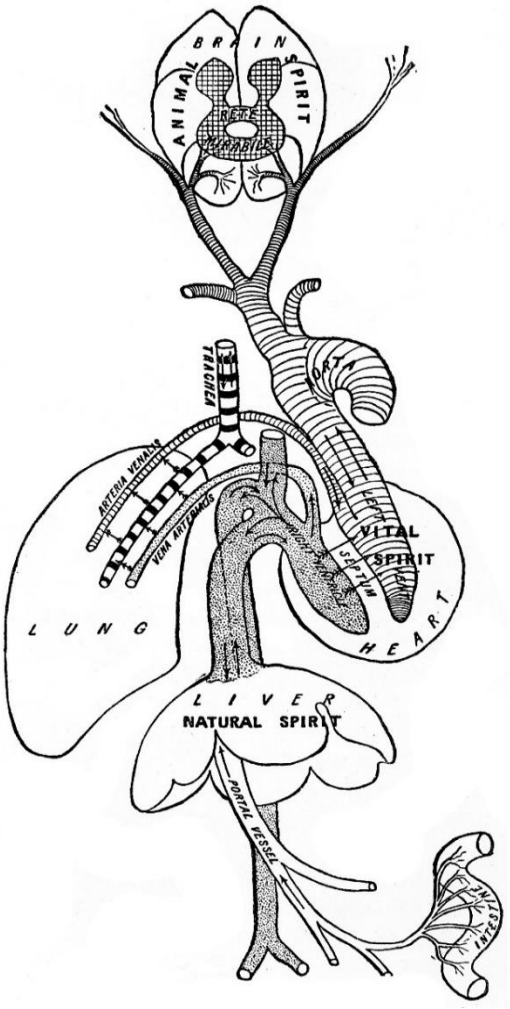

Figure 6: Galen's physiological system showing the locations of the generation of the three kinds of medical spirits. Source: Charles Singer, *The Evolution of Anatomy*, (London: Kegan Paul, Trench, Trubner, 1925) https://wellcomecollection.org/works/xuvgdtjk

[137] James J. Bono, 'Medical Spirits and the Medieval Language of Life.' *Traditio* 40 (1984): 91-130.
[138] See Hiro Hirai, 'Spirit in Renaissance Medicine', in *Encyclopedia of Renaissance Philosophy*, ed. by M. Sgarbi, Cham, Springer, 2018, https://doi.org/10.1007/978-3-319-02848-4_1107-1

The Galenic doctrine of the innate heat was another key feature of the physiological theory of emotion. The innate heat originated in the heart, and like the spirits, it was considered an instrument of the soul.[139] It was involved in the biological process of digestion, growth and generation and was a key ingredient of life itself. It was this heat within the heart that was responsible for forming the vital spirits in the left ventricle of the organ, and the spirits in turn carried the heat to the different parts of the body.

A highly influential medical text that described the physiological basis of the passions was the *Pantegni* by the eleventh century physician and monk Constantine the African. This work was a Latin translation of parts of a medical encyclopaedia originally complied in the tenth century by the Persian physician ʻAlī ibn al-ʻAbbās al-Maǧūsī, more commonly known in the West as Haly Abbas. The *Pantegni* circulated widely throughout the medieval period and was eventually printed in Europe in the sixteenth century.[140] In this work, the passions were primarily seen as movements of the vital spirits and innate heat either away from, or back towards, the heart.[141] In particular, joy and anger were associated with movement of the spirits and heat away from the heart. The motion was slow in joy and quick in anger. Conversely, distress and fear were linked to movements back towards the heart. This time the motion was slow in distress and quick in fear. This fourfold scheme became a popular way of medically classifying the passions and the physiological changes they produced. Similar classifications appeared in both Ibn Hunayn's *Isagoge ad Artem Galeni* and Avicenna's *De Viribus Cordis*,

[139] See Elisabeth Moreau, 'Innate Heat', in *Encyclopedia of Renaissance Philosophy*, ed. by M. Sgarbi, (Cham: Springer, 2015), https://doi.org/10.1007/978-3-319-02848-4_399-1
[140] Charles Burnett and Danielle Jacquart, 'A Catalogue of Renaissance editions and manuscripts of the Pantegni', in Jacquart and Burnett, *Constantine the African and 'Alī ibn al-'Abbās al-Maǧūsī: The Pantegni and Related Texts* (Leiden: Brill, 1994), 316-351.
[141] Knuuttila, *Emotions in Ancient and Medieval Philosophy*, 212-215.

both of which were highly influential in European medical education well into the sixteenth century.[142]

The popular fourfold scheme also appeared in a sixteenth century English medical treatise authored by the Cambridge educated physician Christopher Langton. In a section describing their effects upon the body Langton stated how the passions:

> make great alteration in the body, which amongst all others fear, joy, anger and sorrow declare evidently. Fear by drawing the spirit and blood into the inner parts leaves the outer pale for cold. Anger sets the body on fire with moving of the blood to the outer parts … Sorrow is an affection in which the heart as though it were smitten, is drawn together and doth tremble and quake … Joy is a sudden motion in which the heart rejoicing dilates himself and suddenly sends forth all his natural heat and spirits.[143]

As Langton's description makes clear, the passions were known to significantly affect bodily physiology and doctors understood that if they were not properly managed then they had the potential to cause various diseases. However, the notion that uncontrolled passions could lead to physical illness was not a notion reserved for university trained physicians alone. Such an idea was frequently discussed in popular regimens that widely circulated throughout England throughout the medieval and early modern period. Thomas Elyot's *The Castle of Health* (1539) was one of the first printed English vernacular regimens and it appeared in multiple editions over the course of the sixteenth and seventeenth centuries.[144] Surveying the bodily effects of anger Elyot noted how it could lead to fevers, trembling palsies and

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[142] A translation of Ibn Hunayn's *Isagoge* can be found in *A Source Book in Medieval Science*, ed. by E. Grant, (Cambridge, MA: Harvard University Press, 1974), 705-715: 708. On Avicenna's *De Viribus Cordis* see Kristin Elizabeth Peterson, 'Translatio libri Avicennae De Viribus Cordis et medicinis cordialibus Arnaldi de Villanova', PhD diss. (University of Harvard, 1993), 91.

[143] Christopher Langton, *A Very Brefe Treatise Ordrely Declaring the Principal Partes of Physick* (London: Edward Whitchurch, 1547) [some spellings changed into modern English].

[144] Paul Slack, 'Mirrors of health and treasures of poor men: the uses of the vernacular medical literature of Tudor England', in *Health, Medicine, and Mortality in the sixteenth century*, ed. by C. Webster (Cambridge: Cambridge University Press, 1979), 237-273, 250.

indigestion.[145] In a regimen entitled *Klinikē, or A Diet for the Diseased* (1633), the Northamptonshire based physician James Hart listed irrecoverable consumption, apoplexies and gout as just some of the illnesses brought about by an excess of passion.[146]

On top of affecting the movements of the spirits and blood, Hart noted how passions could directly affect the humoral constitution of the body and 'excite and stirre up some particular humor; as joy stirreth up the blood, and anger choler; so doth fear and griefe stirre up and move melancholy'.[147] For Hart, an individual's humoral constitution could predispose them towards feeling certain emotions, and when passions did arise, they had the ability to affect the bodily humours in turn. In a later section of the regimen which discussed the physical effects of joy, Hart, in line with tradition, described how this particular emotion caused the blood and spirits to fly away from the heart and towards the outer parts of the body. He then noted how in some cases the heart was left so destitute by joy that it was possible for someone to die from an excess of this passion.[148]

In the opening decades of the seventeenth century, it was commonly understood that people could die from an excess of emotion. The annual bill of mortality for London, which registered the passing of every person in the city, regularly noted grief to be a cause of death. In 1630, as many as twenty people were recorded as dying from grief, which was more than those who died that year from scurvy (five) and by the executioner's sword (thirteen).[149]

The idea that someone could die from a burst of emotion was even referred to in one of Shakespeare's plays. Towards the end of *King Lear*, the audience is informed of the death of Lear's trusted friend, the Duke of Gloucester. After Gloucester realises that one of his two sons has betrayed him, while the other has served him loyally, we learn how the old man's 'flawed

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[145] Thomas Elyot, *Castle of Health* (London: printed for the Company of Stationers, 1610), 96.
[146] Hart, *Klinkē,* 391, 393.
[147] *Ibid*., 394.
[148] *Ibid.,* 400.
[149] See Erin Sullivan, 'A Disease unto Death: Sadness in the Time of Shakespeare', in *Emotions and Health, 1200-1700*, ed. by E. Carrera (Leiden: Brill, 2013), 159-184: 182.

heart, alack, too weak the conflict to support, 'twixt two extremes of passion, joy and grief, burst smilingly'.[150] In addition to being dramatic, Gloucester's cause of death was in keeping with the medical theories of the day.

Thomas Wright's theory of emotion

So far in this chapter I have argued that, in England at the start of the seventeenth century, there existed a traditional theory of emotion which was based on the natural philosophy of Aristotle and the medicine of Galen. Numerous writers on the passions adopted this traditional account of the passions when they wrote about the topic across a variety of textual genres. One such author was Thomas Wright, who provided a detailed analysis of the passions in his treatise on the topic *The Passions of the Minde* (1601). Wright's treatise was the first to be published in England in the seventeenth century and it was republished several times in the immediate decades following its initial release.[151] A significant section of the text provided an analysis of the passions from the viewpoint of rhetoric. Wright was a Jesuit priest, and the religious dimension of the passions is also addressed throughout the work.[152] Nevertheless, Wright formulated his theory of emotion within the context of the natural philosophy of Aristotle and

[150] William Shakespeare, *King Lear, The Arden Shakespeare*, ed. by R.A. Foakes (London: Bloomsbury, 1997), 380.
[151] The only prior treatise I have been able to find is Thomas Rogers, *The Anatomie of the Mind* (London: printed by J. C for Andrew Maunsell, 1576). This was republished a few years later as *A Paterne of a passionate mind. Conteining a briefe description of the sundry strange affects of the minde of man* (London: printed by Thomas East, 1580).
[152] Thomas Wright was born into a Catholic family during the reign of Elizabeth I. As a teenager he left England for the English College, Douai and when it relocated to Rheims he moved onto the English College in Rome. After this he joined the Society of Jesus and taught at Jesuit colleges in Genoa, Milan, Rome and Valladolid. Throughout his life he was keen to further the Catholic cause in England and was involved in a number religious and political controversies. As well as composing his treatise on the passions, Wright also wrote other works on the nature of the Eucharist and what he considered to be the faults of the Protestant religion, see Peter Milward, 'Wright, Thomas (c. 1561-1623), Roman Catholic Priest and Religious Controversialist', in *Oxford Dictionary of National Biography* (Oxford: Oxford University Press, 2004), Volume 60, 492-493; On the religious context of Wright's account of the passions see Erin Sullivan, 'The passions of Thomas Wright: Renaissance Emotion across Body and Soul', in *The Renaissance of Emotion*, 25-44.

the medicine of Galen. In this section I examine Thomas Wright's treatise in light of the six main features of the traditional theory of emotion as listed in the introduction to this chapter.[153]

As previously mentioned, the first main feature of the traditional theory of the passions was the notion that emotions were present in both the body and soul. Wright acknowledged this fact at the very beginning of his treatise. In the opening section of the work, he listed the different kinds of professionals that he thought might be interested in reading his treatise and referred specifically to the physician and the preacher, or as he put it 'the curers both of body and soule'.[154] Later on Wright stated 'As this Treatise affordeth great riches to the Physician of the soule, so it importeth much the Physitian of the body, for that there is no Passion very vehement, but that it alters extreamly some of the four humors of the body'.[155] Wright clearly understood that the passions affected both the body and the soul.

The second key feature of the traditional theory was the idea that the presence of emotions in the body and soul could be understood in terms of the Aristotelian principles of matter and form. Wright referred to the writings of Aristotle throughout his treatise and in a section of the text in which he outlined the various factors involved in the generation of an emotion he stated that he had declared the 'formall, material, efficient and finall' causes of the passions – a clear allusion to the Aristotle's theory of four causes.[156] Wright also viewed the human soul to be the form of the body, in keeping with the Aristotelian tradition, and in a part of the treatise that listed a number of the philosophical problems regarding the nature of the soul, Wright asked whether there was more than one form residing within the human body.[157] This particular issue was one that had been debated at length within the Scholastic Aristotelian

[153] See p. 29.
[154] Wright, *The Passions of the Minde in General*, 2.
[155] *Ibid.,* 4.
[156] *Ibid.,* 47. On Aristotle's theory of causation see Andrea Falcon, 'Aristotle on Causality', in *The Stanford Encyclopedia of Philosophy,* ed. by E. N. Zalta and U. Nodelman (Spring 2023 Edition), <https://plato.stanford.edu/archives/spr2023/entries/aristotle-causality/>
[157] *Ibid.,* 300.

tradition throughout the late medieval period.[158] In a section analysing the natural philosophical conception of the soul Wright pointed the reader to the second and third books of *De Anima*.[159] However, Wright never directly referenced Aristotle's remarks about analysing anger in terms of form and matter – as Aquinas and Mosley did. Furthermore, Wright stated how natural philosophers 'busieth their braines' trying to explain how an operation in the soul altered the body and referred to the writings of Girolamo Fracastoro (1478-1553) to state that they agreed that it came about from a certain 'sympathy of nature'.[160] In drawing upon the writings of Fracastoro, who attempted to revive the ancient atomism of Lucretius, Wright reveals an interest in some of the wider intellectual currents of the period.[161]

The third key feature of the traditional theory of emotion was that it was grounded in the faculty psychology associated with the writings of Aristotle. Wright's account of the soul was indeed based on the faculty psychology that dominated the era and he described passions as 'acts of the sensitive power, or facultie of our soul'.[162] Moreover he stated that a passion can be defined as a 'sensual motion of our appetitive faculty, through imagination of some good or il thing'.[163] In a section of the treatise entitled 'an explication of the devisions of our sensitive appetite into Concupiscible and Irascible, that is, Coveting and Invading' he referred to Aristotle, John of Damascus and Thomas Aquinas as previous authors who divided the sensitive appetite into two.[164] In line with the traditional theory of emotion, Wright also acknowledged the central role of the faculty of the imagination in the production of an emotion, stating how 'we know most certaynely, that our sensitive appetite cannot love, hate, feare, hope &c. but that by imagination'.[165] In addition to the faculties of the imagination and the sensitive

[158] See Michael, 'Renaissance Theories of Body, Soul and Mind'.
[159] Wright, *The Passions of the Minde*, 3.
[160] *Ibid.*
[161] On Fracastoro and Lucretian atomism see Marco Beretta, 'The revival of Lucretian atomism and contagious diseases during the renaissance' in *Medicina nei secoli* 15 (2) (2003): 129-154.
[162] Wright, *The Passions of the Minde in Generall*, 8.
[163] *Ibid.*
[164] *Ibid.,* 19.
[165] *Ibid.,* 31.

appetite, and in line with the Scholastic thinking of the time, Wright also recognised there to be immaterial powers of the soul which he identified as the will and wit (or intellect).[166]

While Wright's views about the soul were based upon the natural philosophy of Aristotle, his understanding of the human body was largely informed by the Galenic medical tradition and its theory of the four humours – the fourth main feature of the traditional theory of emotion. Wright alluded to the central tenet of Galenic medicine when he wrote 'if blood, flegme, choller, or melancholy exceed the due proportion required to the constitution and health of our bodies, presently we fall into some disease… But if the humours be kept in due proportion; they are the preservatives of health'.[167] Moreover, Wright subscribed to the view that a person's humoral constitution predisposed them towards experiencing certain passions. Wondering why some people are always merry, while other are angry or sad, he stated 'this diversitie must come from the natural constitution of the body, wherin one or other humour doth predominate'.[168] Wright further noted how phlegmatic individuals were neither easily angered nor easily pleased, while those of a sanguine temperament were quick to anger though easily befriended. He described how melancholic types, if angered, were slow to forgive; whereas people of a choleric constitution were easily incensed and inclined to seek revenge. Alluding to the title of a treatise by Galen, Wright concluded that one could 'confirme that old saying to be true *Animi mores corporis temperaturam sequuntur*, the manners of the soule follow the temperature of the body'.[169]

The fifth main feature of the traditional theory of emotion was the idea that emotions were seated in the heart, and in accordance with the prevailing medical view of the period, Wright understood this to be the case. In a chapter of the treatise entitled 'That the Heart is the peculiar place where that Passions allodge', Wright put forward his opinion that 'the very seate

[166] *Ibid.,* 7.
[167] *Ibid.,* 17.
[168] *Ibid.,* 65.
[169] *Ibid.,* 37-38.

of all Passions, is the heart, both of men and beasts'.[170] One of the reasons he held this view was because he felt that the 'fiery spirits' that were contained within the heart – a reference to the vital spirits of the medical tradition – made it the organ most appropriate for 'affecting'.[171] Wright also explained how the appearance of passions caused humours, blood and the spirits to fly into the heart, or be expelled from it, and stated how 'the spirits and humours wait upon the Passions, as their Lords & Masters'.[172] Specifically, he noted how fear and anger could turn men pale as these passions often caused the blood to run to the heart.[173] Listing some of the effects of the passions he stated how pleasure dilated the heart while fear constricted it; meanwhile, love heated the heart whereas sadness cooled it.[174]

As well as thinking that emotions originated in the heart, and in accordance with the sixth main feature of the traditional theory of emotion, Wright was of the opinion that passions had the capacity to affect the overall health of the body. Near the beginning of his treatise, he noted how 'all Physitians commonly agree, that among divers other extrinsecall causes of diseases, one and not the least, is the excesse of some inordinate passion'.[175] Moreover, he believed that if a doctor could find out which passion was causing a disease, they could then infer which humour was abounding in the body, and this would allow them to apply the correct remedy and prevent the disease from appearing again.[176] Wright also believed that certain passions could bring about good health. Wright held the view that a moderate amount of pleasure helped the purer spirits return to the heart, which would then be distributed throughout the entire body to assist with various bodily processes such as concoction and expulsion.[177] An excessive amount of pleasure, however, would cause a 'great infirmitie' in the body as a

[170] *Ibid.,* 33.
[171] *Ibid.*
[172] *Ibid.,* 4, 33-36.
[173] *Ibid.,* 33-34.
[174] *Ibid.,* 35.
[175] *Ibid.,* 4.
[176] *Ibid.*
[177] *Ibid.,* 60.

person's heart would become crowded with a great abundance of spirits. The heart would then overheat, resulting in the production of 'cholericke and burned blood'.[178] Wright was also of the opinion that people could lose their lives due to an excess of sadness. He explained how this passion caused melancholy humours to gather about the heart which dulled and extinguished the good spirits, and this ultimately dried the body and made it wither away.[179] Wright drew upon the medical culture of his time to explain how the passions of the soul could affect the health of the body, but he also pointed out that such an idea was present in the Bible. Referring the reader to Proverbs 14 he noted how the scriptures pronounced that 'the life of the flesh is the health of the heart'.[180] Reiterating the point he also turned to a passage from Proverbs 17 which stated how a 'sad spirit dryeth the bones'.[181] For Wright, there was no doubt that a person's emotions could influence their physical health.

Thomas Wright's theory of emotion exhibited the main features of the traditional theory of emotion – one based on the natural philosophy of Aristotle and the medical theories of Galen. However, certain aspects of the traditional theory could often be the subject of debate.

Debating the traditional theory of emotion

According to the standard definition of an emotion, passions were motions of the soul's sensitive appetite. This idea was repeatedly stated in numerous treatises on the passions produced in the first half of the seventeenth century. As motions of the sensitive appetite, emotions were understood to be a psychosomatic phenomenon – in the sense of being simultaneously present in the body and the soul. However, during the Middle Ages, a debate arose around the question of whether passions were best understood as motions of the

[178] *Ibid.*
[179] *Ibid.,* 61.
[180] *Ibid.,* 59. See Proverbs 14:30 (KJV) 'A sound heart is the life of the flesh: but envy the rottenness of the bones.'
[181] *Ibid.,* 60. See Proverbs 17:22 (KJV) 'A merry heart doeth good like a medicine: But a broken spirit drieth the bones.'

embodied sensitive appetite or as motions of the immaterial rational appetite, also known as the will.

The question of whether passions properly belonged to the sensitive or the rational appetite was most famously addressed by Thomas Aquinas in the *Summa Theologica*.[182] As previously discussed, Aquinas had expressed the view that the passions of the soul were properly seated in the sensitive appetite and that they were brought about by judgements concerning particular sense objects. From this perspective, passions, by their very nature, involved bodily changes. However, in addition to this, Aquinas acknowledged the presence of motions of the will (*motus voluntatis*) seated in the intellectual appetite (*appetitus intellectivus*) which had universals, such as the immaterial good, as their object.[183] Aquinas called these immaterial motions of the rational appetite affections (*affectus*) and distinguished them from the passions of the soul (*passiones animae*), which were the embodied motions of the sensitive appetite.

John Duns Scotus, a thirteenth-century Franciscan friar, rejected the notion that passions were motions of the sensitive appetite altogether. Instead, he preferred to locate the passions exclusively in the will, and explained how passions only arose following a judgement made in the rational soul.[184] Duns Scotus views on the topic were heavily influenced by the writings of St Augustine, whose own thoughts on the matter were shaped by the theories of the ancient Stoics.[185]

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[182] On Aquinas' distinction between motions of the sensitive and rational appetite see Thomas Dixon, *From Passions to Emotions. The Creation of a Secular Psychological Category* (Cambridge: Cambridge University Press, 2003), 45-46.
[183] Thomas Aquinas, *Summa Theologiae*, I.80, 395. Also see Dixon, *From Passions to Emotions*, 46; Knuttilla, *Emotions in Ancient and Medieval Philosophy* (Oxford: Oxford University Press, 2004), 242.
[184] See Ian Drummond 'John Duns Scotus on the Passions of the Will', in *Emotion and Cognitive Life in Medieval and Early Modern Philosophy*, ed. by M. Pickavé and L. Shapiro (Oxford: Oxford University Press, 2012), 53-74.
[185] See Peter King, 'Dispassionate Passions', in *Emotion and Cognitive Life in Medieval and Early Modern Philosophy*, 9-31.

The debate as to whether emotions should be properly allocated to the sensitive appetite or to the rational appetite continued into the sixteenth century and beyond.[186]. In his analysis of the debates on the passions among Reformed Christian thinkers, David Sytsma has concluded that most Reformed authors followed Aristotle and Aquinas in placing the passions in the sensitive appetite with these writers viewing bodily change as an essential component of emotion.[187] One such thinker was John Weemse who discussed the passions at length in his work *The Portraiture of the Image of God in Man* (1627). After posing the question of whether the passions are placed in the sensitive or reasonable part of the soul, he immediately answered 'they are placed in the sensitive part, and not in the reasonable, because the reasonable doth not imploy any corporall organs in her actions … but the passions appeare in the blood … and they are a middle betwixt the body and the minde, and have correspondency with both'.[188]

One reformed thinker who departed from this prevailing view was the Puritan minister William Fenner, who in his *A Treatise of the Affections* stated: 'as the affections are motions, so they are *motions of the will*.' Fenner recognised that his opinion was the minority view: 'I know Aristotle and most of our Divines too, do place the affections in the sensitive part of the Soul, and not in the will, because they are to be seen in the beasts.'[189] But for Fenner, the affections were seated in the will, an idea that he thought was supported by the Bible. Turning to St Paul's letter to the Thessalonians, Fenner cited the apostle's statement 'being affectionately desirous of you, we were willing' as evidence for his claim that the affections and the will were 'together in one'.[190]

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[186] See Simo Knuuttila, 'Sixteenth-Century Discussions of the Passions of the Will', in *Emotion and Cognitive Life in Medieval and Early Modern Philosophy*, 116-133.
[187] David S. Sytsma, 'The Logic of the Heart: Analyzing the Affections in Early Reformed Orthodoxy', in *Church and School in Early Modern Protestantism*, ed. by J. Ballor, D. Sytsma, and J. Zuidema (Leiden: Brill, 2013), 471-488: 477.
[188] Weemse, *The Portraiture of the Image of God in Man*, 140.
[189] Fenner, *A Treatise of the Affections*, 2.
[190] *Ibid*. See 1 Thessalonians 2:8 (KJV) 'So being affectionately desirous of you, we were willing to have imparted unto you, not the gospel of God only, but also our own souls, because ye were dear unto us.'

Although Fenner preferred to use the term 'affection' rather than 'passion' in his treatise, he did not differentiate between the two words in any technical sense. At one point Fenner even explicitly identified the two stating that 'the affections are the passions of the soul'.[191] Joining the two notions together at another point in the treatise (and alluding to the association of passion with passivity) Fenner explained that one of the reasons affections were called passions was because they made the body and soul suffer.[192] Even though many writers on the emotions in the seventeenth century grappled with the question of whether they were seated in the sensitive appetite or the rational appetite, unlike Aquinas, they did not tend to distinguish between passions and affections or use these terms to refer to different kinds of emotion.

In addition to discussions about the soul's sensitive and rational appetites, treatises on the passions occasionally discussed the status of the natural appetite. In *The Passions of the Minde*, Thomas Wright proclaimed how 'God, the author of nature, and imparter of all goodnesse hath printed in every creature, according to his divine providence, an inclination, faculty, or power to conserve it selfe, procure what it needeth' and 'to resist and impugne whatsoever hindereth it'.[193] Wright noted that this inclination towards self-preservation did not just appear in living organisms such as plants and birds, it also existed in elements like fire, which Wright explained had a natural tendency to move upwards because the other elements of water, earth and air threatened its heat. As Nicholas Coeffeteau also suggested in *A Table of Humane Passions*, it was this inclination throughout the natural world that lay behind the natural appetite present in the vegetative soul of living creatures.[194] This natural appetite, when present in living creatures, drove them to find sources of nourishment, to grow and to

[191] *Ibid*., 5.
[192] *Ibid.,* 3.
[193] Wright, *The Passions of the Minde in Generall*, 11-12.
[194] Coeffeteau, *A Table of Humane Passions*, To the Reader.

propagate.[195] John Weemse similarly recognised the presence of a natural inclination in all things. He claimed it was this natural instinct which caused heavy things to fall towards the centre of the earth and it was also the same instinct, for instance, that led ants to lay up provisions in the summer so that they could survive the winter months.[196] Weemse noted that the ancient Greek word for this natural instinct was *hormē*. Moreover, he held the view that this instinct was a form of natural love, and it was this love which ultimately carried man towards his desired objects. Given this to be the case, Weemse concluded that because man must love something then 'what better object could hee chuse to love than God?'[197] From this perspective it would have been possible to argue that all human emotions, whether they be motions of the sensitive or rational appetites, ultimately unfolded from an inclination or appetite present throughout nature itself.[198]

In his treatise, Weemse also pointed out how pre-passions were often thought to proceed from this natural inclination in humans.[199] The notion of pre-passions originally appeared in ancient Stoic thought and was later absorbed into the Christian tradition.[200] Within these traditions, pre-passions were thought to be the involuntary appetitive motions that appeared within the soul before they were consented to by a judgement of the rational soul. In the seventeenth century, the nature of the pre-passions continued to be disputed. The debate was mostly concerned with points of theology and morality, rather than natural philosophy or medicine, and the dispute centred around the question of whether these initial pre-rational

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[195] *Ibid.*
[196] Weemse, *The Portraiture of the Image of God in Man*, 162.
[197] *Ibid.*
[198] This idea would be taken up later in the century by Baruch Spinoza. His notion of conatus, rooted in the Greek notion of *hormē*, was a central component of his theory of the passions. See Nathan Rotenstreich, 'Conatus and Amor Dei: The total and partial norm.' *Revue Internationale de Philosophie*, Vol. 31, No. 119/120 (1977): 117-134; James, *Passion and Action*, 145-156.
[199] Weemse, *The Portraiture of the Image of God in Man*, 142.
[200] Sarah C. Byers, 'Augustine and the Cognitive Cause of Stoic 'Preliminary Passions' (*Propatheiai*).' *Journal of the History of Philosophy* 41, No. 4 (2003): 433-448; Jill Kraye, 'Απάθεια and Προπάθεαι in Early Modern Discussions of the Passions: Stoicism, Christianity, and Natural History.' *Early Medicine and Science* 17, 1-2 (2012): 230-253: 231.

motions in the soul were sinful or not. Points of contention involved nuanced distinctions between first and second initial movements of the soul and how they related to mortal and venial sin.[201] Opposing views were often taken by Roman Catholics and Reformed thinkers, with the Catholics taking a more lenient position towards pre-passions compared to the Reformed theologians. The Jesuit priest Thomas Wright and the Reformed minister John Weemse both addressed this topic in their works.[202]

Another point of dispute regarding the emotions was to do with the exact number of principal passions and the manner in which they were classified. The debate was neatly summarised in Nicholas Coeffeteau's *A Table of Humane Passions* (1621) in a section entitled 'Of the Number of Passions'.[203] Here the author reported how 'the philosophers which discourse of the passions of the soule, agree not on the number, some naming more, some lesse'. Coeffeteau then related how some philosophers recognised the four principal passions of pleasure, pain, hope and fear (a clear allusion to the ancient Stoic classification), while others thought there were only two principal passions; namely, pleasure and pain. He then went on to state that amidst the diversity of opinions, the one embraced by 'all those that make an exact profession of philosophy … is to say, that there are eleven primitive and general passions' of which all the rest are buds and branches.[204] This classification of eleven passions was a clear reference to the one put forward by Aquinas.

Another tradition stretching back to Augustine viewed the different types of emotion as being fundamentally rooted in the single passion of love. This was the view ultimately taken by the Augustinian friar Jean-Francois Senault who also dedicated a chapter in his *The Use of*

[201] As detailed in Sytsma, 'The Logic of the Heart', 483-487.
[202] Wright, *The Passions of the Mind in General*, 15; Weemse, *The Portraiture of the Image of God in Man*, 141-142.
[203] Coeffeteau, *A Table of Humane Passions*, 29-51.
[204] *Ibid.,* 32.

Passions (1649) to exploring the number of passions in men.[205] In it he expressed his disagreement with those philosophers 'who give several names to one and the same thing', and went on to state how 'they divide the unity of love, and take her different effects for different Passions.'[206] Instead, Senault embraced the opinion of Augustine and professed that 'love is the only passion which doth agitate us, or hath operation in us'.[207] But even though Senault may have subscribed to the Augustinian idea that all passions were grounded in love, his statement that a passion is 'nothing else, but a motion of the sensitive appetite' revealed his fundamental grounding in Aristotelian natural philosophy and the tradition of faculty psychology which continued to dominate the thinking of the period.[208]

Conclusion

In this chapter I have outlined the main features of the traditional theory of emotion dominant in England at the start of the seventeenth century. This theory situated the passions within the intellectual traditions of Galenic medicine and Aristotelian natural philosophy, both of which were central to the university teaching of the period. Throughout this chapter, I have attempted to show how it is necessary to investigate the passions in the context of both these traditions if we are to fully appreciate how emotions were thought to be present in the body and the soul.

With regards to their presence in the body, the passions were well-established topic in the medicine of the period and were listed as one of the six non-naturals that were known to affect bodily health. A mainstream medical account of the passions situated them within the heart and associated different passions with the various movement of spirits, blood and heat towards and away from this organ. In addition to this, an individual's humoral complexion was

[205] Jean-François Senault, *The Use of Passions*, trans. by Henry, Earl of Monmouth (London: printed by J. L. and Humphrey Moseley, 1649), 21-30.
[206] *Ibid.,* 26.
[207] *Ibid.*
[208] *Ibid.,* 17.

thought to predispose them towards feeling certain passions. A person with a melancholic temperament, for instance, was more likely to feel sadness. However, a certain temperament did not determine which emotions a person felt – a point that has often been overlooked in recent scholarship on early modern emotions. For a passion to actually be produced, a judgement had to be made by the faculty of the imagination which was generally thought to be housed in the middle ventricle of the brain.

According to the mainstream Aristotelian-based faculty psychology of the period, the imagination was thought to be one of the many powers of the human soul. Another of the soul's faculties – the sensitive appetite – was the location where emotions were thought to arise. A standard definition of an emotion that could be found in numerous treatises on the passions considered them to be motions of the sensitive appetite brought about by a judgement in the imagination and accompanied by a change in the body. Passions, as they were regularly understood, were simultaneously present in the body and soul, and in the context of the Aristotelian natural philosophy which dominated the period they can be thought of as hylomorphic phenomena.

In addition to passions as motions of the sensitive appetite, many authors discussed the existence of passions in the rational appetite – often considered to be an immaterial power of the soul. Furthermore, some thinkers viewed passions as extensions of the natural instincts that governed the movements of everything in the cosmos, including the motions of the elements to their natural resting places. Nevertheless, at the start of the seventeenth century, and in the context of the Galenic medicine and Aristotelian natural philosophy which dominated the period, the passions were first and foremost motions of the soul's sensitive appetite found within the human heart.

Over the course of the early modern period the traditional theory of the passions and their relation to the body and soul would eventually be rejected. However, the attempt to

challenge and replace the basic tenets of Aristotelian and Galenic thought was already well underway by the time the seventeenth century began. In the next chapter, we will examine the thought of an individual who rejected the ancient authorities of the schools and who instead drew upon the writings of a range of contemporary figures when he came to formulate his views about nature, the human body and the passions of the soul.

CHAPTER TWO. FRANCIS BACON'S THEORY OF EMOTION: SPIRITS, ACTIVE MATTER AND THE PROLONGATION OF LIFE

Francis Bacon (1561-1626) is well known for his attempts to reform and advance the learning of his age. His inductive method of reasoning, most famously outlined in the *Novum Organum* (1620), is often regarded as a key milestone in the development of modern science.[209] Bacon was keen to overcome what he considered to be the restrictive dogmas of his day and was highly critical of the ancient authorities whose works continued to be taught at the universities during his lifetime. On numerous occasions in his written works, Bacon explicitly rejected the basic principles of Aristotelian natural philosophy and Galenic medicine, which – as we saw in the previous chapter – formed the basis of the traditional theory of emotion dominant at the beginning of the seventeenth century.

Instead of adopting a mechanical philosophy of nature, Bacon constructed a highly original 'speculative' theory of matter which he developed over the course of his life.[210] When Bacon came to formulate his ideas about the natural world, he drew upon the ideas of *novatores* – thinkers who opposed the Aristotelianism of the schools – such as the Italian naturalist Bernardino Telesio (1509-1588), as well as Paracelsian physicians like Petrus Severinus (1542-1602).[211] In contrast to a figure such as Descartes, who viewed the cosmos as consisting of inert corpuscles moving in accordance with universal natural laws, Bacon proposed a theory of matter which saw it brimming with activity.

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[209] On Bacon's place in the emergence of modern science and the various topics that influenced his thinking see John Henry, *Knowledge is Power: How Magic, the Government and an Apocalyptic Vision Helped Francis Bacon to Create Modern Science* (London: Icon Books, 2017).

[210] Graham Rees suggested that Bacon fathered two distinct philosophies; the first, well-known philosophy, was associated with his new method of induction and his promotion of observation and experimentation; the second, largely overlooked philosophy was what Rees termed his 'speculative philosophy' and it offered a systematic body of wide-ranging theories about the structure of the universe and the nature of matter. For an overview of the latter see Graham Rees, 'Bacon's Speculative Philosophy', in *The Cambridge Companion to Bacon*, ed. by M. Peltonen (Cambridge: Cambridge University Press, 1996), 121-145.

[211] On the category of *novatores* see Daniel Garber, '*Novatores*', in *The Cambridge History of the Philosophy of the Scientific Revolution*, ed. by D. Marshall Miller and D. Jalobeanu (Cambridge: Cambridge University Press, 2022), 35-57.

Bacon saw the activity of matter as originating in a set of appetites present throughout the material realm.[212] For Bacon, these appetites were ultimately responsible for motion in the natural world, but they were also, and crucially for our purposes, the source of human emotions. Bacon believed that the appetites that underlay the motions of the cosmos found their expression through spirits: a thin, highly active, *material* substance present throughout the cosmos. Spirits also played an important role in his ideas about the workings of the human body and the composition of the soul. Bacon's theory of emotion was therefore inextricably bound up with his wider theories about matter, spirits and the human body and soul. In this chapter I aim to explain how Bacon's account of the passions fits into his wider natural philosophical and medical views. Moreover, I argue that Bacon's theory of emotion, rather than being based on a mechanical philosophy of nature, was informed by a wide range of intellectual traditions including alchemy, natural magic and a vitalist conception of active matter.[213]

Much recent scholarship on Bacon has debated the influence of magic and alchemy upon his life and works. Although it is generally agreed upon that Bacon was engaged with magic and alchemy for much of his life, one branch of scholarship has tended to emphasise Bacon's break from an 'occult mentality' towards a more scientific outlook.[214] More recently, however, a growing body of scholarship has argued that the occult traditions were an important factor in contributing to Bacon's practical activities and theoretical writings.[215] In analysing the

[212] On the centrality of the notion of appetite in Bacon's philosophy see the collection of essays in *Francis Bacon on Motion and Power*, ed. by G. Giglioni, J. A. T. Lancaster, S. Corneanu, D. Jalobeanu (Dordrecht: Springer, 2016).
[213] Garber has suggested that Bacon's matter theory can be seen as part of a 'vitalist active matter tradition' present in seventeenth-century England. I will address this theme in greater depth in chapter four. See Daniel Garber, 'Margaret Cavendish among the Baconians.' *Journal of Early Modern Studies* 9, Issue 2 (2020): 53-84 (68).
[214] Examples of this can be found in Brian Vickers, 'Francis Bacon and the Progress of Knowledge.' *Journal of the History of Ideas*, Vol. 53, No. 2 (1992): 495-518; Paolo Rossi, *Francis Bacon: From Magic to Science*, trans. by S. Rabinovitch (London: Routledge, 1968). On the supposed distinction between occult and scientific mentalities see *Occult and Scientific Mentalities in the Renaissance*, ed. by B. Vickers (Cambridge: Cambridge University Press, 1984).
[215] See Sophie Weeks, 'Francis Bacon's Science of Magic', PhD diss. (University of Leeds, 2007); for an analysis of this debate see Doina-Cristina Rusu, 'From Natural History to Natural Magic: Francis Bacon's Sylva Sylvarum', PhD diss. (Radboud University Nijmegen, 2013), esp. pp. 17-21.

theoretical underpinnings of Bacon's account of the passions, this chapter gives further strength to the view that magic and alchemy did indeed inform Bacon's views about the world and human nature.

This chapter is divided into six parts. In the first section I outline some of the key events in Francis Bacon's life and chart some of the key influences on his intellectual formation. I also examine the different intellectual traditions that were taking root in England towards the end of the sixteenth century. Drawing on recent scholarship, I show that natural philosophers in England around this time often engaged in alchemy and natural magic and, under the influence of these traditions, incorporated active principles in their theories of matter. In the second section I examine the concept of spirit to show how this idea became important in natural philosophy during the Renaissance. When Bacon adopted and adapted the notion of spirit for his own natural philosophical system, he built upon the theoretical developments made by a number of previous thinkers. In the third section I outline Bacon's speculative system of natural philosophy. I explain how, for Bacon, spirits played a crucial role in the processes of the natural world and constituted one of the two parts of every human soul (the other part being immaterial). In the fourth section I take a closer look at Bacon's medical writings and outline his idiosyncratic views about the workings of the human body. Having inspected his views about the nature of the human body and soul, in the fifth section I examine Bacon's writings about the passions as they appear in his works *Historia Vitae et Mortis* (1623) and *Sylva Sylvarum* (1627) and outline the key features of his theory of emotion. In the sixth and final section I examine Bacon's engagement with natural magic and show how this tradition informed his ideas about emotions acting at a distance. I conclude the chapter by comparing Bacon's theory of emotion with the traditional theory of emotion outlined in the chapter one.

Bacon's life and intellectual milieu

Francis Bacon was born at York House in London, near the Strand, into a well-connected family in 1561. His father, Sir Nicholas Bacon, was Lord Keeper of the Seal during the reign of Elizabeth I, and his mother Anne Cooke was the daughter of Sir Anthony Cooke, a prominent humanist scholar who had tutored Edward VI. From his mother, Francis received a solid humanist education in a household that was strongly influenced by Calvinist teachings. At the age of twelve Francis went up to Trinity College, Cambridge, where he became familiar with the contents and methods of scholastic learning, moving back to London at the age of fifteen to begin his training in the law at Gray's Inn. However, in 1576 he interrupted his studies and spent three years in Paris in the circle of the British ambassador, returning to England in 1579 upon hearing the news of his father's death. Back in London, Bacon resumed his legal studies and in 1581 he was elected MP for Cornwall. Bacon spent the next forty years advancing his legal and political career, obtaining the positions of Attorney General and Lord High Chancellor during the reign of James I. His public life ended in disgrace in 1621 when he was charged with multiple counts of corruption. After a brief imprisonment in the Tower of London he retired to his home outside St. Albans where he spent the last years of his life carrying out experiments and working on his philosophical writings.

Alongside his political ambitions, Bacon held a lifelong interest in reforming and advancing the knowledge of his age, especially in the realm of natural philosophy. In a letter composed in 1592 and addressed to his uncle Lord Burghley, Bacon spoke of his 'vast contemplative ends' which he hoped would bring in 'industrious observations, grounded conclusions, and profitable inventions and discoveries'.[216] Bacon was especially critical of the Aristotelian-based natural philosophy that formed the backbone of university curricula

[216] *The Works of Francis Bacon,* ed. by J. Spedding, R. L. Ellis, and D. D. Heath, 15 Vols. (London: Longman, 1857-1874), *Volume 8*, 109.

throughout Europe at the beginning of the seventeenth century. In a work written around 1603 entitled *The Masculine Birth of Time*, which remained unpublished during his lifetime, Bacon labelled Aristotle 'that worst of sophists stupefied by his own unprofitable subtlety' and stated how 'he composed an art or manual of madness and made us slave of words'.[217] Bacon was also highly critical of Galen, whose medical theory continued to provide the dominant paradigm for understanding the human body. Later in the same manuscript Bacon described the ancient physician as 'the narrow-minded Galen, who deserted the path of experience and took to spinning idle theories of causation', further attacking him as the 'plague of the human race'.[218]

Bacon was not the first Englishman to try to reform the learning of his age, and his efforts to transform natural philosophy should be considered in the context of some of the wider scientific developments taking place in England at the time. Before Bacon had published any of his scientific writings, two other prominent thinkers, John Dee (1527-1608) and William Gilbert (1544-1603), had written a number of scientific works that challenged the mainstream opinions of the day. Dee and Gilbert were arguably the first English natural philosophers to gain an international reputation since the Middle Ages and both these authors turned to the occult sciences, including magic and alchemy, in their attempts to reform natural philosophy. As Xiaona Wang has argued, these two individuals (as well as Francis Bacon himself) were crucial in establishing sympathetic attitudes to occult ways of thinking in England, with each of these thinkers embracing occult ideas and leaving them as a legacy for subsequent English thinkers of the seventeenth century.[219] But as Dee, Gilbert and other figures demonstrate,

[217] Benjamin Farrington, *The Philosophy of Francis Bacon: An Essay on its Development from 1603 to 1609 with New Translations of Fundamental Texts* (Liverpool: Liverpool University Press, 1964), 63.
[218] *Ibid.,* 65.
[219] Xiaona Wang, 'Occult Principles in the Making of Newton's Natural Philosophy', PhD diss. (The University of Edinburgh, 2019), 3.

England was already receptive to ideas stemming from the magical and alchemical traditions by the end of the sixteenth century – the very period in which Bacon was forging his views.

John Dee was the most famous figure in Elizabethan England to have embraced the magical tradition. In addition to using ceremonial forms of magic in his attempts to converse with angels, Dee also drew upon philosophical concepts contained in the magical tradition when constructing his system of physics.[220] In the *Propadeumata aphoristica* (1558) Dee's account of the causative principles in nature radically departed from the mainstream view found among the Scholastics. Instead, Dee drew upon a tradition of light metaphysics that held light to be the fundamental causal principle in the cosmos and which understood change in the natural world to be brought about by light or rays emanating from an active source.[221] The light metaphysics tradition, which promoted the idea of an active principle present within material bodies, was closely associated with many of the key figures of the magical tradition including the ancient Neoplatonists Plotinus and Proclus, the medieval thinkers Al-Kindi and Roger Bacon, as well as Renaissance figures such as Marsilio Ficino and Cornelius Agrippa.[222] The fact that Dee drew upon this tradition shows how his attempts to advance natural philosophy were deeply influenced by his involvement with theories associated with the magical tradition.[223]

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[220] On Dee's natural philosophy see Nicholas Clulee, *John Dee's Natural Philosophy: Between Science and Religion* (London-New York: Routledge, 1988); *John Dee: Interdisciplinary Studies in English Renaissance Thought*, ed. by S. Clucas (Dordrecht: Springer, 2006).

[221] Wang, *Occult Principles*, 53; Stephen Clucas, 'Astrology, Natural Magic, and the Scientific Revolution', in *The Cambridge History of Philosophy of the Scientific Revolution*, ed. by D. Marshall Miller and D. Jalobeanu (Cambridge: Cambridge University Press, 2022), 167-183: 173-174.

[222] On the tradition of light metaphysics see David C. Lindberg, 'The Genesis of Kepler's Theory of Light: Light Metaphysics from Plotinus to Kepler.' *Osiris* 2, No. 1 (1986): 4-42.

[223] Frances Yates has drawn attention to the fact that Bacon avoided mentioning Dee in his writings and has suggested that this may have been due to Dee falling out of favour with King James I, resulting in Bacon not wanting to be associated with him as such an association may have jeopardised his political ambitions. Yates has also suggested that Bacon's avoidance of mathematics might have been due to this topic being too closely associated with Dee and his conjuring. See Frances Yates, 'The Hermetic Tradition in Renaissance Science', in *Science and History in the Renaissance*, ed. by C. S. Singleton (Baltimore: The John Hopkins University Press, 1967), 255-274: 269; Yates, 'Bacon's Magic', in *Ideas and Ideals in the North European Renaissance: Collected Essays Volume III* (London: Routledge & Keegan Paul, 1984), 60-66; Yates, *The Rosicrucian Enlightenment* (London: Routledge & Keegan Paul, 1972), see the chapter titled 'Francis Bacon 'Under the Shadow of Jehovah's Wings", 118-129: 124.

The physician and natural philosopher Wiliam Gilbert also engaged with the tradition of natural magic in his attempt to explain the nature of magnetism. An early advocate of Copernican theory, Gilbert took to the study of magnetism in part to solve the problem of how the earth could remain in perpetual motion around the sun.[224] Within the Scholastic tradition magnetism was seen as a famous example of an occult quality which could not be explained by recourse to the four primary qualities of hot, cold, dry and wet.[225] During the Renaissance a number of thinkers associated with the tradition of natural magic aimed to address the mystery of the so-called occult qualities and attempted to provide rational explanations for their presence in various objects. One such individual was Giambattista della Porta (1535-1615) who tried to provide his own explanation for the phenomena of magnetism in his *Magia naturalis*.[226] Gilbert studied this text and carried out various experiments to refute a number of Della Porta's theories on the topic.[227] Some years later, Francis Bacon would go on to study Gilbert's writings and adapt them when putting forward his own theories about the nature of magnetism. Unlike Gilbert however, Bacon embraced the notion of action at a distance which Gilbert had earlier dismissed.[228]

Another set of English natural philosophers who looked to the occult sciences were the group of thinkers loosely associated with Henry Percy, the ninth Earl of Northumberland who acquired the nickname 'the wizard earl' due to his interest in scientific and alchemical

[224] See Stephen Pumfrey, 'Neo-Aristotelianism and the magnetic philosophy', in *New Perspective on Renaissance Thought: Essays in the History of Science, Education and Philosophy in Memory of Charles B Schmitt*, ed. by J. Henry and S. Hutton (London: Duckworth and Istituto Italiano per gli Studi Filosofici, 1990): 177-189; Yates, *The Rosicrucian Enlightenment*, 122-123.
[225] On the distinction between manifest and occult qualities see Keith Hutchison, 'What happened to Occult Qualities in the Scientific Revolution?' *Isis* 73, No. 2 (1982): 233-253. On the place of occult qualities in the magical tradition see Laura Sumrall, 'Occult Properties in the Renaissance', in *Encyclopedia of Renaissance Philosophy*, ed. by M. Sgarbi (Cham: Springer, 2018), https://doi.org/10.1007/978-3-319-02848-4_959-1
[226] Giovanni Battista della Porta, *Magiae Naturalis Libri XX* (Naples: apud Horatium Saluianum, 1589). Book VII was dedicated to examining the powers of the magnet.
[227] See Stephen Pumfrey, 'William Gilbert', in *Cambridge Scientific Minds*, ed. by P. Harman and S. Mitton (Cambridge: Cambridge University Press, 2002), 6-20: 9.
[228] Xiaona Wang, 'Francis Bacon and Magnetical Cosmology.' *Isis* 107, No. 4 (2016): 707-721.

experimentation.[229] As Stephen Clucas has shown, figures including Thomas Harriot, Walter Warner, and Nicholas Hill drew upon the tradition of light metaphysics and developed natural philosophical theories that were influenced by corpuscular conceptions of matter associated with the alchemical tradition.[230]

In the latter decades of the sixteenth century alchemical theories became increasingly important in the fields of natural philosophy and medicine in England, largely due to the rising number of individuals who were turning to the teachings of the Swiss alchemist and physician Paracelsus (1493–1541) and his followers. Paracelsian ideas were especially popular in Protestant, and especially Puritan, communities where the ancient authorities of Aristotle and Galen were being viewed with increasing suspicion due to their association with Roman Catholic teaching.[231] The religious milieu in England therefore provided fertile soil for Paracelsian ideas to take root. Richard Bostocke's *The difference between the ancient phisicke and the latter phisicke* (1585) is one example of a Paracelsian text which explicitly rejected the teachings of Aristotle and Galen. Bostocke referred to these two figures from antiquity as idolaters and heathens and instead called for medicine to be grounded in the art of alchemy.[232] The growing influence of chemical medicine in England can also be seen by the appearance of

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[229] Francis Bacon corresponded with the Earl of Northumberland in the first decade of the 1600s praising him for his studies and experimental activities. See Robert Kargon, *Atomism in England from Hariot to Newton* (Oxford: Clarendon Press, 1966): 43-44.

[230] Stephen Clucas, 'Corpuscular Matter Theory in the Northumberland Circle', in *Late Medieval and Early Modern Corpuscular Matter Theories*, ed. by C. Lüthy, J. Murdoch and W. Newman. (Leiden: Brill, 2001), 181-207.

[231] On the rise of Paracelsian thought in England and its religious and political associations see P. M. Rattansi, 'Paracelsus and the Puritan Revolution.' *Ambix* 11, No. 1 (1963): 24-32; Allen G. Debus, *The English Paracelsians* (London: Oldbourne Press, 1965); Charles Webster, 'Alchemical and Paracelsian Medicine' in *Health, Medicine and Mortality in the Sixteenth Century,* ed. by C. Webster (Cambridge: Cambridge University Press, 1979), 301-334, Dmitiri Levitin, *Ancient Wisdom in the Age of the New Science*, *Histories of Philosophy in England, c . 1640–1700* (Cambridge: Cambridge University Press, 2015): 238-242.

[232] The full title of the work clearly shows the authors rejection of the traditional ancient authorities; R[ichard] B[ostocke], *The difference between the auncient Phisicke, first taught by the godly forefathers consisting in vnitie peace and concord: and the latter Phisicke proceeding from Idolaters, Ethnickes, and Heathens: as Gallen, and such other consisting in dualitie, discord, and contrarietie. And wherein the naturall Philosophie of Aristotle doth differ from the truth of Gods worde and is iniurious to Christianitie and sounde doctrine* (London: [By G. Robinson] for Robert Walley, 1585).

The Practise of Chymicall and Hermeticall Physicke in 1605, which was a translation into English of segments of two works by the French Paracelsian physician Joseph Duchesne.[233]

Francis Bacon's own writings reveal an ambivalent attitude towards the alchemical tradition. On more than a few occasions he was highly critical of alchemy: for instance, in the *Novum Organum,* he disparagingly noted how 'the pack of chemists has founded a fantastic philosophy on a few furnace experiments'[234] Bacon was especially dismissive of Paracelsus, whom he called 'the adopted son of the family of asses' responsible for promoting 'detestable falsehoods'.[235] In other places, however, Bacon wrote about alchemists in a more positive light and stated how they have 'brought to light not a few profitable experiments and thereby made the world some amends'.[236] He also wrote of how the 'painfull search and stirre of Alchimists to make Gold, hath brought to light a great number of good and fruitful experiments … for the disclosing of nature, as the use of mans life'.[237] Bacon was also clearly sympathetic to some of the theoretical ideas put forward by alchemists, writing that 'the chemists have not gone far wrong in pointing out that, in their triad of principles, sulphur and mercury pretty well pervade the whole sum of things'.[238]

Bacon's attitudes to magic, much like his views about alchemy, were mixed. As Paolo Rossi has noted, 'Bacon condemned magic on ethical grounds. He accused it of fraud, of a

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[233] *The Practise of Chymicall, and Hermeticall Physicke, for the preservation of health. Written in Latin by Josephus Quersitanus, Doctor of Physicke. And Translated into English, by Thomas Timme, minister* (London: printed by Thomas Creede, 1605).
[234] *The Oxford Francis Bacon, Volume XI*, ed. by G. Rees and M. Wakely (Oxford: Oxford University Press, 2004), 89.
[235] Farrington, *The Philosophy of Francis Bacon*, 66.
[236] Francis Bacon, *Sylva Sylvarvm, or a Naturall History in Ten Centuries* (London: printed by J. H for William Lee, 1626), 86.
[237] Francis Bacon*, Of the Advancement and Proficience of Learning; or, The Partition of Sciences. Nine Books*, translated by Gilbert Watts (London: Leon Lichfield, 1640), 34
[238] *The Oxford Francis Bacon, Volume XI*, 437. On Bacon and alchemy see Joshua C. Gregory, 'Chemistry and Alchemy in the Natural Philosophy of Francis Bacon, 1561-1626.' *Ambix* 2, No. 2 (1938): 93-111; Muriel West, 'Notes on the Importance of Alchemy to Modern Science in the Writings of Francis Bacon and Robert Boyle.' *Ambix* 9, No. 2 (1961): 102-114; Stanton J. Linden, 'Francis Bacon and Alchemy: The Reformation of Vulcan.' *Journal of the History of Ideas* 35, No. 4 (1974): 547-560; Bruce Janacek, *Alchemical Belief: Occultism in the Religious Culture of Early Modern England* (University Park, PA: The Pennsylvania State University Press, 2011), 75-98.

craze for genius, and of megalomania; he refuted its non-progressive, non-co-operative methods and especially its attempts to replace human sweat by a few drops of elixir or an easy combination of substances.'[239] At the same time, however, Bacon praised the magical tradition for its experimental method and its utility, and when he came to devise his own classification of the sciences he gave magic a prominent position categorising it as one of the operative branches of natural philosophy.[240] According to his new definition, magic was 'the science which applies the knowledge of hidden forms to the production of wonderful operations; and by uniting (as they say) actives with passives, displays the wonderful works of nature'.[241] Furthermore, it was Bacon's stated ambition to ensure that 'magic, which has long been used in a bad sense, be again restored to its ancient and honourable meaning'.[242]

As we will see in the final section of this chapter, Bacon's involvement with the tradition of natural magic influenced his ideas about the passions of the soul and how they might be transmitted from one person to another at a distance. His interest in alchemy also played a crucial role in the development of his theory of matter. Central to Bacon's matter theory were spirits, which underpinned his understanding of the human soul, and consequently his theory of emotion. To understand Bacon's account of the passions it is therefore important to have a firm grasp of his notion of spirit.

The concept of spirit in the Renaissance

Francis Bacon's theory of emotion was intimately bound up with his theory of *spiritus*. Bacon wrote about *spiritus* across a number of his Latin and English works and used the term 'spirit'

[239] Rossi, *From Magic to Science*, 32.
[240] On Bacon's classification of the sciences see Sachiko Kusukawa, 'Bacon's classification of knowledge', in *The Cambridge Companion to Bacon*, 47-74.
[241] *The Works of Francis Bacon, Volume 4*, 366-367.
[242] *Ibid*., 366.

or 'spirits' throughout the latter.[243] In his classic *Spiritual and Demonic Magic from Ficino to Campanella* (1958), D.P. Walker first made a connection between the emotions and Bacon's ideas about spirits.[244] Commenting on *Historia Vitae et Mortis*, a text dedicated to exploring the various ways an individual could prolong their life, Walker noted how Bacon thought a person could postpone their death by keeping their spirits in an optimal condition. According to Bacon, one of the best ways to prolong life was to keep one's spirits dense: in particular, he pointed out how 'violent passions of the mind' must be avoided to ensure the spirits did not become too thin.[245] On the other hand, Bacon viewed moderate passions as promoting health because they strengthened and condensed the spirits.

When reading about Bacon's account of the spirits, one can clearly see that he derives many of his view about the topic from the Galenic medical tradition.[246] However, as Graham Rees observed, it is also possible to see affinities between Bacon's notion of *spiritus* and Neo-platonic doctrines, as well as Paracelsian ideas about the astral body.[247] Rees further noted how Bacon's views about spirits were also informed by the writings of the Italian philosopher Bernadino Telesio.[248] In this section I chart how a number of thinkers helped reconceptualise the notion of spirit during the Renaissance. I will briefly examine the thought of the Italian priest, philosopher and physician Marsilio Ficino as well as the French physician Jean Fernel, both of whom were influenced by the tradition of Neoplatonism. I will then turn to the thought of Paracelsus and his Danish follower Petrus Severinus. Following this, I will look at the

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[243] On Bacon's theory of spirits see D.P. Walker, 'Francis Bacon and Spiritus', in *Science, Medicine and Society in the Renaissance*, ed. by A.G. Debus (New York: Science History Publications, 1972), 121-130; Graham Rees, 'Francis Bacon and *Spiritus vitalis*', in *Spiritus, IV° Colloquio Internazionale del Lessico Intellettuale Euopeo*, ed. by M. Fattori and M. Bianchi (Rome: Edizioni dell' Ateneo, 1984), 265-282; Doina-Cristina Rusu, 'Same Spirit, Different Structure: Francis Bacon on Inanimate and Animate Matter.' *Early Science and Medicine* 23, No. 5 (2018): 444-458.
[244] D.P. Walker, *Spiritual and Demonic Magic from Ficino to Campanella* (London: The Warburg Institute, 1958), 199.
[245] Francis Bacon, *The Historie of Life and Death*. *With Observations Naturall and Experimental for the Prolongation of Life* (London: printed by I. Okes for Humphrey Mosley, 1638), 176-177.
[246] See p. 57 for an overview of spirits in the Galenic tradition.
[247] Rees, 'Francis Bacon and spiritus vitalis', 280.
[248] *Ibid*., 280-281.

writings of Bernadino Telesio who, possibly more than anyone else, shaped the way Bacon thought about spirits. Bacon's notion of spirit was unique; nevertheless, it built upon conceptual developments that had taken place during the fifteenth and sixteenth centuries. The centrality of spirits to Bacon's conception of nature and humans cannot be understated. For Bacon, spirits were not only the source of activity throughout the natural world; they also constituted the material portion of the human soul in which the passions arose.

At the universities *spiritus* was a commonly used term across medical and theological contexts. From a medical viewpoint, spirits were seen as a subtle, corporeal substance that coursed through the human body and were regarded as an intermediary substance between the physical body and the immaterial soul. From a theological perspective the term could refer to the highest, most divine part of the soul, to the Holy Spirit, or to angelic and demonic beings.[249] Springing from the writings of Marsilio Ficino (1433-1499), a new idea of *spiritus* emerged in the fifteenth century that went on to become highly influential in later periods, and which made the notion of spirit an important concept in the domain of natural philosophy.[250] In the *De Vita Libri Tres* (1489), Ficino postulated a world spirit (*spiritus mundi)* that permeated the cosmos.[251] He suggested that the world spirit existed as an intermediary between the world soul (*anima mundi*) and the body of the world (*corpus mundi*), in a way that mirrored the role of the medical spirits between the human body and soul. Like the medical spirits, the world-spirit was a physical entity. However, Ficino suggested that there was a distinction between these two

[249] See D.P. Walker, 'Medical Spirits and God and the Soul', in *Spiritus IV° Colloquio Internazionale del Lessico Intellettuale Euopeo,* ed. by M. Fattori and M. Bianchi (Rome: Edizioni dell' Ateneo, 1984), 223-244.
[250] On Ficino's conception of spirit see D.P. Walker, 'Ficino's spiritus and Music' and 'Medical Spirits in Philosophy and Theology from Ficino to Newton', in *Music, Spirit and Language in the Renaissance*, ed. by P. Gouk (London: Variorum, 1985). On the Stoic origins of the idea of a cosmic spirit see Ian Hensley, 'The Physics of Pneuma in Early Stoicism', in *The Concept of Pneuma after Aristotle*, ed. by S. Coughlin, D. Leith, and O. Lewis (Berlin: Edition Topoi, 2020), 171-202. On how this the idea of a cosmic spirit was taken up in early modern natural philosophy see Peter Barker, 'Stoic contributions to early modern science', in *Atoms, Pneuma, and Tranquillity: Epicurean and Stoic Themes in European Thought*, ed. by M. J. Osler (Cambridge: Cambridge University Press, 1991), 135-155.
[251] Marsilio Ficino, *Three Books on Life*, ed. by C. V. Kaske and J. R. Clark (Binghamton: Center for Medieval and Early Renaissance Studies, State University of New York at Binghamton, 1989). See introductory comments, 42-44.

types of substance. Ficino saw the medical spirits within each individual as deriving from the bodily humours and ultimately the four elements (earth, air, water, fire), whereas he regarded the world spirit as more like the Aristotelian quintessence, or fifth element, which made up the substance of the incorruptible aether of the heavenly spheres.[252] Imbued with celestial powers, the world spirit could act as an active principle in the processes of change taking place in the natural world.[253]

The French physician Jean Fernel (1497-1558) adopted the notion of the world spirit, as put forward by Ficino, in his own writings about the natural world.[254] Another concept that was an important factor in Fernel's medical works was that of the astral body. Within the Platonic tradition, it was thought that the divinely created immortal soul travelled down through the planetary spheres before it entered into the human body. During its descent through the celestial realms the soul acquired a garment made up of the substance of the stars, and this garment, or vehicle of the soul, came to be known as the astral body.[255] In his writings, Fernel identified the medical spirits of the Galenic tradition with the astral body of the Platonic tradition.[256] This meant that the spirits coursing through the human body now acquired a celestial origin and were made up of a substance from the heavens.[257]

Francis Bacon was well acquainted with the works of Ficino and Fernel. Although he rejected the idea that the world was a living creature in possession of a soul or *spiritus mundi*,

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[252] See Walker, *Spiritual and Demonic Magic*, 12-13.
[253] See Hiro Hirai, 'Concepts of Seeds and Nature in the Work of Marsilio Ficino', in *Marsilio Ficino: His Theology, His Philosophy, His Legacy*, ed. by M. J. B. Allen, V. Rees and M. Davies (Leiden: Brill, 2002), 257-284.
[254] See Hiro Hirai, 'Jean Fernel and his Christian Platonic Interpretation of Galen', in Hiro Hirai*, Medical Humanism and Natural Philosophy* (Boston-Leiden: Brill, 2011), 46-79: 48.
[255] On the astral body in the Neoplatonic tradition see App. II, 'The Astral Body in Neoplatonism' in Proclus*, The Elements of Theology*, ed. by E. R Dodds (Oxford: Clarendon Press, 1933), 313-321; John F. Finamore*, Iamblichus and the Theory of the Vehicle of the Soul* (Chico, California: Scholars Press, 1985).
[256] See D. P. Walker, 'The Astral Body in Renaissance Medicine', in *Journal of the Warburg and Courtauld Institutes, XXI* (1958): 119-133.
[257] For the debates around the celestial nature of the medical spirits in the Renaissance see Hiro Hirai, 'Spirit in Renaissance Medicine', in *Encyclopedia of Renaissance Philosophy*, ed. by M. Sgarbi (Cham: Springer, 2018), https://doi.org/10.1007/978-3-319-02848-4_1107-1; On the medieval precursor to these debates see Gad Freudenthal, 'The Medieval Astrologization of Aristotle's Biology: Averroes on the Role of the Celestial Bodies in the Generation of Animate Bodies.' *Arabic Sciences and Philosophy* 12, Issue 1 (2002): 111-137.

he certainly held the view that material spirits were an active and crucial component necessary for change to take place in the natural world.[258] Bacon did not adopt the Neoplatonic doctrine of the astral body either. Nevertheless, he believed that the human *spiritus* did have its origins in the skies and as D.P Walker has noted, 'it was perhaps Fernel's astrology that contained the seeds of the philosophies of nature developed by later thinkers of the period including Bacon'.[259]

As well as being an important topic in Renaissance Neoplatonism, spirits were also a central feature of Renaissance alchemy.[260] In addition to being one of the products frequently extracted in alchemical experiments, spirits were understood to be an important component of the cosmos as well as the human being.[261] Paracelsus, arguably the most influential alchemist of the sixteenth century, derived many of his own ideas from the Neoplatonic tradition.[262] Like Fernel and the ancient Neoplatonists, Paracelsus believed that each human being possessed an astral body.[263] Paracelsus also believed that spirits deriving from the stars were present throughout natural bodies and gave them their individual specificity, function and life.[264] For many alchemists, spirits took over many of the functions normally ascribed to Aristotelian substantial forms.[265]

Paracelsus' idea of spirit was further developed by his Danish follower Petrus Severinus, whose *Idea Medicinae Philosophicae* (1571) played a central role in the diffusion

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[258] On Bacon's rejection of a spirit or soul of the world see Bacon, *Sylva Sylvarum,* 241-242. The topic will be further discussed on p. 114.
[259] Walker, *The Astral Body in Renaissance Medicine*, 126.
[260] See Antonio Clericuzio, 'The Internal Laboratory. The Chemical Reinterpretation of Medical Spirits in England (1650-1680)', in *Alchemy and Chemistry in the 16th and 17th Centuries*, ed. by P. Rattansi and A. Clericuzio (Dordrecht: Kluwer, 1994), 51-83: 52.
[261] See Hiro Hirai, 'The World-Spirit and Quintessence in the Chymical Philosophy of Joseph Du Chesne', in *Chymia: Science and Nature in Medieval and Early Modern Europe*, ed. by M. López-Pérez, D. Kahn, and M. Rey-Beuno (Newcastle: Cambridge Scholars Publishing, 2010): 247-261.
[262] See Walter Pagel, 'Paracelsus and the Neoplatonic and Gnostic Tradition.' *Ambix* 8, No. 3, (1960): 125-166.
[263] See Dane T. Daniel, 'Invisible Wombs: Rethinking Paracelsus's Concept of Body and Matter.' *Ambix* 53, No. 2 (2006): 129-142.
[264] See Walter Pagel, *Paracelsus: An Introduction to Philosophical Medicine in the Era of the Renaissance* (Basel: S. Karger, 1958): 117-121.
[265] See Norma Emerton, *The Scientific Reinterpretation of Form* (Ithaca: Cornell University Press, 1984): 177-208.

of Paracelsian ideas throughout Europe towards the end of the sixteenth century.[266] For Severinus, spirits were imbued with a power to shape matter.[267] In his influential work Severinus also discussed the possibility of capturing spirits through alchemical practices with the aim of then using them to cure various kinds of diseases.[268] Severinus' ideas were taken up in England by the growing number of iatro-chemists (medical practitioners who sought to provide chemical solutions to various diseases). Jole Shackelford has pointed to the intellectual network based at Wilton House around Mary Sidney (sister of the poet Philip Sidney) as an important conduit for the entry of Severinus' ideas into England.[269]

Francis Bacon's own views about the nature of spirits were deeply influenced by the alchemical tradition, and as Antonio Clericuzio has noted 'the Paracelsian and Severinian notion of spirit played a central part in Francis Bacon's natural philosophy'.[270] In *The Masculine Birth of Time*, composed just a year after Severinus' death, Francis Bacon praised the Dane, and in a passage fictionally addressed to Paracelsus he stated:

> Only one of your followers do I grudge you, namely Peter Severinus, a man too good to die in the toils of such folly. You, Paracelsus, adopted son of the family of asses, owe him a heavy debt. He took over your brayings and by the tuneful modulations and pleasant inflexions of his voice made sweet harmony of them, transforming your detestable falsehoods into delectable fables.[271]

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[266] Jole Shackelford, *A Philosophical Path for Paracelsian Medicine: The Ideas, Intellectual Context, and Influence of Petrus Severinus (1540/2-1602)* (Copenhagen: Museum Tusculanum Press, 2004).
[267] Clericuzio, 'The Internal Laboratory', 53. For the close alignment of the concept of spirit and seed in the Renaissance alchemical and Neoplatonic traditions see Jole Shackelford, 'Seeds with a Mechanical Purpose', in *Reading the Book of Nature: The Other Side of the Scientific Revolution*, ed. by A. G. Debus and M. T. Walton (Kirksville: Sixteenth Century Publishers, 1998), 15-44; Hiro Hirai, '*Logoi Spermatikoi* and the Concept of Seeds in the Mineralogy and Cosmogony of Paracelsus.' *Revue d'histoire des sciences* 61, Issue 2 (2008): 245-264.
[268] See Hirai, 'Spirit in Renaissance Medicine.'
[269] Shackelford, *A Philosophical Path for Paracelsian Medicine*, 256.
[270] Clericuzio, 'The Internal Laboratory', 75.
[271] Farrington, *The Philosophy of Francis Bacon*, 66.

Another sixteenth-century thinker Bacon engaged with was Bernadino Telesio, whom Bacon labelled 'the first of the moderns.'[272] Telesio's writings influenced Bacon's views on the nature of spirits, but they were also important in shaping his theory of matter, the human soul, and its passions. As a result, it is worth briefly examining Telesio's thoughts on these topics in greater detail.[273]

Telesio's views on matter, the soul and the passions can be found in his *De natura iuxta propria principia* (1565) and its two expanded versions of 1570 and 1586, which were published under the slightly different title *De rerum natura iuxta propria principia*.[274] In these works, Telesio offered a complete system of natural philosophy that provided an alternative to the Aristotelian vision that still dominated the period. For Telesio, there were three fundamental principles in nature: matter, heat and cold. Matter was the inert substrate upon which the two active principles of heat and cold acted. Telesio rejected a heliocentric account of the cosmos and the earth remained at the centre of his vision of the universe. The centre of the earth was associated with the principle of cold and when this principle was present in matter it made it dense, immobile and dark. The outer celestial regions of the universe, on the other hand, were associated with heat, which when present in matter, made it rarefied, highly mobile and light. The surface of the earth was the zone where the two principles of hot and cold met and it was the battle between them that was responsible for the processes of change around the earth. In a radical departure from the prevailing physics of his day, Telesio attributed both appetite and sensation to all parts of matter activated by heat and cold. Heat and cold had a desire to preserve themselves and both, through matter, were able discern their surroundings and pursue the things

[272] See Guido Giglioni, 'The First of the Moderns or the Last of the Ancients? Bernardino Telesio on Nature and Sentience.' *Bruniana & Campanelliana* 16, No. 1 (2010): 69-87.
[273] On Bacon's engagement with Telesio see Daniel Garber, 'Telesio among the Novatores: Telesio's Reception in the Seventeenth Century', in *Early Modern Philosophers and the Renaissance Legacy*, ed. by C. Muratori and G. Paganini (Dordrecht: Springer, 2016), 119-134: 123-126.
[274] On Telesio's publications and for a summary of his thought see Michaela Boenke, 'Bernardino Telesio', in *The Stanford Enyclopedia of Philosophy,* ed. by E. N. Zalta, (Winter 2018 edition), <https://plato.stanford.edu/archives/win2018/entries/telesio/>

which promoted their self-preservation as well as avoid the things which threatened them. Matter was able to perceive its surroundings and was also able to sense its own pleasant or unpleasant reactions to it. For Telesio, matter was self-aware and sought its self-preservation. Given the fact that matter was able to discern what was good or bad for its survival and could sense the results, matter itself was understood to be full of passion.

According to Telesio, spirits were the material crystallization of the cosmic heat that permeated the heavens.[275] These material spirits had the ability to feel and react to everything within the universe.[276] With regards to humans, spirits were transmitted through the parental seed to form the material portion of the human soul.[277] The spirits, which were drawn out of the seed (*spiritus e semine eductus*), were unified as one continuous substance which coursed throughout the nervous system and had its main seat in the brain.[278] For Telesio, this *spiritus* constituted the material part of the human soul and it was understood to be a distinct but unified part of the human body. As it contained the greatest amount of heat and mobility it was able to perform actions which the rest of the body could not. The *spiritus*, like all matter in the universe, perceived its environment and pursued things that preserved it and avoided things that destroyed it. When the *spiritus* sensed something beneficial that would strengthen it, it compressed or expanded in a way that gave rise to the passion of pleasure. When it sensed something harmful that would weaken it, it became compressed or expanded in a manner that gave rise to the passion of pain. Therefore, for Telesio, pain and pleasure were the two basic passions that occurred within the *spiritus*, which for him constituted the material part of the human soul. The full range of passions that humans experienced, including joy, fear, sadness

[275] Hiro Hirai, 'Bodies and Their Internal Powers: Natural Philosophy, Medicine, and Alchemy', in *The Routledge Companion to Sixteenth Century Philosophy*, ed. by H. Lagerlund and B. Hill (Abingdon: Routledge, 2017), 394-410: 403.
[276] See Giglioni, 'First of the Moderns', 78-81.
[277] Hiro Hirai, 'Telesio, Aristotle, and Hippocrates on Cosmic Heat', in *Bernadino Telesio and the Natural Sciences in the Renaissance*, ed. by P. D. Omodeo (Leiden: Brill, 2019), 51-65.
[278] Michaela Boenke, 'Bernardino Telesio'.

and shame, arose as a result of the cognitive processes that accompanied the two basic feelings of pleasure and pain.[279]

Bacon's view that there were material spirits responsible for the processes of change in the natural world built upon ideas present in the writings of the Renaissance Neoplatonists, alchemists and Italian naturalists.[280] Moreover, his conception of the human *spiritus* (which he understood to be the lower portion of the human soul) was largely derived from the writings of Bernardino Telesio. Bacon also shared similar opinions with Telesio when it came to the nature of matter. Like Telesio, Bacon viewed matter as being able to perceive and also understood it to be filled with inner appetites. Unlike Telesio however, Bacon did not consider heat and cold to be the active principles underlying the strivings of matter. Rather, Bacon believed that there was a multiplicity of appetites within matter which ultimately gave rise to the various phenomena of nature.

Francis Bacon, matter and the human soul

In her influential 1952 essay on the establishment of the mechanical philosophy, Marie Boas Hall put forward the view that Francis Bacon was one of the early pioneers of the mechanical philosophy.[281] Since then, as one scholar has noted, 'Bacon has often been characterized as one of the tutelary deities of the modern notion of mechanical universe'.[282] However, more recent studies into Bacon's speculative natural philosophy and his theory of matter have shown that his conception of the universe was far from purely mechanical. Rather, as Daniel Garber has

[279] See Sabrina Ebbersmeyer, 'Telesio's Vitalisitic Conception of the Passions', in *Sense, Affect and Self-Preservation in Bernardino Telesio (1509-1588)*, ed. by G. Giglioni and J. Kraye (Dordrecht: Springer, forthcoming).
[280] On Telesio as an Italian naturalist see Garber, 'Physics and Foundations', 33-36.
[281] Marie Boas Hall, 'The Establishment of the Mechanical Philosophy.' *Osiris* 10 (1952): 412-541: 439-442.
[282] Guido Giglioni, 'How Bacon became Baconian' in *The Mechanization of Natural Philosophy*, ed. by D. Garber and S. Roux (New York: Springer, 2013), 27-54: 29.

recently noted, Bacon's account of the cosmos consisted of a 'vitalistic world of bodies shot through with appetites in sympathy and conflict with one another'.[283]

As Guido Giglioni has demonstrated in a series of publications, it was the notion of appetite that was at the heart of Bacon's theory of matter.[284] For Bacon, natural bodies did not principally move because they collided with other external objects; instead, they contained a host of internal appetites which instilled them with an underlying source of activity. Giglioni has further characterised Bacon's natural philosophy as being based on a 'metaphysics of living matter' with matter's vitality ultimately originating from a set of primal appetites.[285] Bacon developed his theory of the appetites of matter over the course of his writing career. In a manuscript entitled *Abecedarium novum naturae* (*The Alphabet of Nature),* a text that remained unpublished during his lifetime, Bacon offered a set of sixteen basic appetites which underlay matter.[286] He compared each of the appetites to a letter of the alphabet; when these appetites combined in matter, like letters in a word, various natural bodies would form and act according to their internal desires. The most systematic exposition of this idea can be found in the second book of his *Novum Organum*, where Bacon set out the 'simple elements of the motions, appetites, and active virtues which are in nature most catholic'.[287] Here Bacon offered a list of nineteen motions that operated through all of nature, and which governed the processes of matter.[288] Included in his list, among others, were the motions of resistance, liberty, and union.

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[283] Garber, 'Margaret Cavendish among the Baconians', 74.
[284] See Guido Giglioni, 'The Hidden Life of Matter: Techniques of Prolonging Life in the Writings of Francis Bacon', in *Francis Bacon and the Refiguring of Early Modern Thought*, ed. by J. R. Solomon and C. Gimelli Martin (Aldershot: Ashgate, 2005), 129-144; Giglioni, 'Mastering the Appetites of Matter'; Giglioni, 'Francis Bacon's *Sylva Sylvarum*', in *The Body as Object and Instrument of Knowledge*, ed. by C. T. Wolfe and O. Gal (Dordrecht: Springer, 2010), 149-168; Giglioni, 'How Bacon became Baconian', 27-54; Giglioni, 'Francis Bacon', in *The Oxford Handbook of British Philosophy in the Seventeenth Century* ed. by P. R. Anstey (Oxford: Oxford University Press, 2013), 41-72; Giglioni, 'List of Motions: Francis Bacon on Material Disquietude', in *Francis Bacon on Motion and Power*, ed. by D. Jalobeanu, G. Giglioni, J. A. T. Lancaster, and S. Corneanu (Switzerland: Springer, 2016), 61-82.
[285] Giglioni, 'The Hidden Life of Matter', 130.
[286] *The Oxford Francis Bacon, Volume XIII*: *Instauratio magna: Last Writings*, ed. by G. Rees (Oxford: Oxford University Press, 2000), xliii.
[287] *The Oxford Francis Bacon, Volume XI*, 413.
[288] Giglioni, 'Lists of Motions: Francis Bacon on Material Disquietude', 71-78.

It is possible to gain an insight into Bacon's views on the appetitive nature of matter by turning to his emblematic mythology as presented in *The Wisdom of the Ancients* (1619), originally published in Latin ten years earlier under the title *De sapientia veterum*.[289] In the fable entitled 'Cupid, or the Atom' (*Cupido, sive Atomus)*, Bacon explained how Cupid was the appetite and instinct of matter and a unique force that constituted and fashioned all things.[290] In a later work entitled *De principiis atque originibus*, written sometime in the 1610s, Bacon spoke of how the great majority of authors had agreed that Cupid was born without parents, armed with a bow and blindfolded and was one of the most ancient of gods.[291] Applying the myth to his system of natural philosophy, Bacon suggested that the arrows fired from Cupid's bow represented the atomic appetites that travel through matter, with each appetite proceeding from the blindfolded god pursuing the instant gratification of its own desires. Moreover, Bacon explained that Cupid was presented as parentless because, apart from God, he was the cause of causes. Underscoring his belief in the fundamental place of appetite within the material realm, Bacon remarked that 'nothing has corrupted philosophy as much as this enquiry about Cupid's parents'.[292]

Matter was not only pregnant with appetites, however; it also perceived. Mirroring the thought of Telesio, Bacon considered all natural bodies to be capable of perception. For Bacon, all bodies in the material realm, including minerals and metals, had the ability to perceive other objects in their environment and discern what was beneficial or harmful to them. It was the collection of appetites inherent within a body that determined whether an object should be avoided or pursued. In this respect appetites existed prior to and shaped perceptions. Bacon

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[289] *The wisdome of the ancients, written in Latin by the Right Honourable Sir Francis Bacon Knight, Baron of Verulam, and Lord Chancelor or England. Done into English by Sir George Knight* (London: printed by John Bill, 1619), 76-84.
[290] Giglioni, 'Francis Bacon', 50-51.
[291] *The Oxford Francis Bacon, Volume VI*: *Philosophical Studies c.1611–c.1619*, ed. by G. Rees (Oxford: Oxford University Press, 1996), 199.
[292] *Ibid.*

considered passion and perception to be a feature of all material bodies. When a natural body became highly complex, as a result of its competing appetites, it developed sense organs, as in animals and humans, and gained the capacity for sensation. Sensation therefore was a more complicated form of perception reserved for highly organised bodies with specific sense organs. The passions that occurred in living beings were thus different in degree but not in kind to the passions that permeated matter throughout the cosmos, and at various occasions in his writings Bacon explicitly referred to 'the passions of matter'.[293]

Bacon's theory of appetitive matter was one of the key features of his matter theory. Another defining aspect of his speculative natural philosophy was his division of matter into two distinct kinds: tangible matter and pneumatic matter.[294] Bacon retained a geocentric vision of the cosmos and placed tangible matter in the earth's core. This tangible matter was cold, heavy, dense and mostly inert. Pneumatic matter, on the other hand, spread from the fixed stars at the outer rim of the heavens, through the planetary spheres, and reached down towards the surface of the earth. Pneumatic matter was hot, light, rarefied and highly active. As part of his speculative system, Bacon proposed a zone of interaction where tangible matter met pneumatic matter, and this zone was thought to extend a few miles above and below the surface of the earth. This frontier zone was for Bacon, as it was for Telesio before him, the place where all the changing phenomena of the natural world took place.

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[293] See Bacon, *Sylva Sylvarum*, 224, in which Bacon dedicates one of the histories to listing the principal 'passions of matter'. See also *The Oxford Francis Bacon IV: The Advancement of Learning*, ed. by M. Kiernan (Oxford: Oxford University Press, 2000), 38-39, where Bacon writes of 'those very virtues which (I say) can be regarded as primordial in nature and which clearly constitute the primordia of nature and, indeed, the primary passions and desires of matter' (illarum dicimus, quae tanquàm Cardinales in Naturâ censeri possint, & in quibus Naturae primordia planè constituuntur; vtpotè Materiae primis Passionibus ac desiderijs'). In an early Latin text composed around 1607, entitled *Cogita et Visa* Bacon also writes of the appetites and passions of all matter (nam principia, fontes, causae, et formae motuum, id est omnigenae materiae appetitus et passiones), see *The Works of Francis Bacon, Volume 3*, 21.

[294] Bacon's matter theory was first brought to light by Graham Rees in a series of ground-breaking articles. See Graham Rees, 'Francis Bacon's Semi-Paracelsian Cosmology.' *Ambix* 22, No. 2 (1975): 81-101; 'Francis Bacon's semi-Paracelsian cosmology and the Great Instauration.' *Ambix* 22, No. 3 (1975): 161-173; 'The Fate of Bacon's Cosmology in the Seventeenth Century.' *Ambix* 24, No. 1 (1977): 27-38; 'Matter Theory: a Unifying Factor in Bacon's Natural Philosophy?' *Ambix* 24, No. 2 (1977): 110-125; 'Francis Bacon on Verticity and the Bowels of the Earth.' *Ambix* 26, No. 3 (1979): 202-211; 'Atomism and "Subtlety" in Francis Bacon's Philosophy.' *Annals of Science* 37, Issue 5 (1980): 549-571.

The alchemical tradition was another important factor shaping the way Bacon thought about the composition of the cosmos. In addition to dividing the cosmos into tangible and pneumatic matter, Bacon also drew upon the alchemical principles of sulphur and mercury to organise matter into two distinct families or 'quaternions'. Substances which belonged the family of sulphur were oily, concocted and inflammable, while substances which belonged to the family of mercury were watery, crude and non-inflammable. Substances which combined elements from both sets belonged to a family of intermediates. The table below summarizes Bacon's vision of how matter in the cosmos was arranged.

The Theory of Matter

	Sulphur Quaternion	Intermediates	Mercury Quaternion
Tangible Substances (with attached spirits)	Sulphur (subterranean)	Salts (subterranean and in organic beings)	Mercury (subterranean)
	Oil and oily inflammable substances (terrestrial)	Juices of animals and plants	Water and 'crude' non-inflammable substances (terrestrial)
Pneumatic substances	Terrestrial fire (sublunary)	Attached animate and inanimate spirits (in tangible bodies)	Air (sublunary)
	Sidereal fire (planets)	Heaven of the fixed stars	Ether (medium of planets)

Figure 7: Bacon's Theory of Matter. Source: Adapted from Graham Rees, 'Bacon's Speculative Philosophy' in *The Cambridge Companion to Bacon*, p. 137. I have added the coloured boxes.

Bacon often referred to pneumatic matter as spirits – the material substance that was so central to his vision of the natural world – and he divided pneumatic matter into two groups. The first group consisted of pure pneumatic matter (or pure spirits) and this group made up the heaven of the fixed stars, the planets, the ether through which the planets moved, as well as the air and fire that approached the surface of the earth. This group is indicated by the five sections contained within the yellow box in the table above. The second group consisted of attached pneumatic matter (or attached spirits) and is indicated by the red box in the table. This kind of

matter was called attached because it entered into, and became attached, to the tangible matter at the frontier zone, whereas the pure spirits remained in the heavens.[295]

Bacon regarded the spirits that entered into tangible bodies to be the main sources of activity in the natural world. In one of the sections of *Sylva Sylvarum* which examined the secret processes of nature, Bacon stated that it was the scarce known '*Spirits* or *Pneumaticalls*, that are in all *Tangible bodies'* which principally governed nature.[296] Bacon described the spirits as 'nothing else but a *natural body*, rarified to a Proportion, & included in the *Tangible Parts of Bodies*, as in an Integument'. He further declared that spirits were 'never (almost) at rest: And from them and their Motions, principally proceed … most of the Effects of nature', concluding 'For *Tangible parts* in *Bodies* are stupide things; And the *Spirits* doe (in effect) all.'[297] For Bacon, it was the spirits and their inner appetites, or 'Motions', that gave matter its intrinsic activity.[298]

As well as being a central component of his system of natural philosophy, Bacon's theory of spirits is key to understanding his conception of the human soul. Bacon's most extensive discussion of the soul appeared in *De augmentis scientiarum*.[299] In this work, Bacon rejected the standard scholastic definition of the soul as the form of the body (*forma corporis*) or its perfection (*actus ultimus*), instead proposing the idea that the human soul had two distinct parts, each of which had a separate origin. Bacon called these two parts of the soul the reasonable soul and the sensible (or irrational) soul.[300] The reasonable soul was divine and originated from the breath of God, whereas the sensible soul, which was common to humans and animals, was made up of spirits. Describing the nature of the sensible soul, Bacon stated:

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[295] Note that the sections contained in the green box in Figure 7 do not indicate tangible matter per se, but rather the organisation of tangible substances in which attached spirits have entered.
[296] Bacon, *Sylva Sylvarum*, 31.
[297] *Ibid.*
[298] On the appetitive nature of Bacon's 'motions' see Guido Giglioni, 'Introduction: Francis Bacon and the Theologico-political Reconfiguration of Desire in the Early Modern Period', in *Francis Bacon on Motion and Power*, 1-40.
[299] *The Works of Francis Bacon*, *Volume 4*, 396-404.
[300] *Ibid.,* 396-398.

> the sensible soul – the soul of brutes – must clearly be regarded as a corporeal substance, attenuated and made invisible by heat; a breath (I say) compounded of the natures of flame and air, having the softness of air to receive impressions and the vigour of fire to propagate its actions; nourished partly by an oily and partly by watery substances; clothed with the body, and in perfect animals residing chiefly in the head, running along the nerves, and refreshed and repaired by the spirituous blood of the arteries; as Bernadinus Telesius and his pupil Augustinus Donius have in part not altogether unprofitably maintained … and may be more fitly termed not soul, but spirit'.[301]

Bacon considered the spirits that made up the sensible soul of creatures and were 'clothed with the body' to be the same kind of spirits that were present in all natural bodies and enclosed within tangible matter. According to Bacon, the attached spirits that were present throughout nature were composed of sublunary fire and air (see red box in figure 7). Similarly, Bacon's sensible soul was compounded of 'flame and air' with the airy component being responsible for the soul's sensory capacities and the fiery component being responsible for its motor functioning.

Bacon also described how the sensible soul originated 'from the womb of the elements', a phrase that held strong Paracelsian connotations.[302] Many physicians and natural philosophers whose work was informed by the alchemical tradition often based their beliefs about the workings of nature on passages from the Bible.[303] In the *Novum Organum* Bacon warned against any natural philosophy grounded in Holy Scripture, stating 'some of the moderns have in the height of folly so wallowed in this vanity that they have tried to build

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[301] *Ibid.,* 398.
[302] *The Works of Francis Bacon*, *Volume 4*, 396. On the Paracelsian concept of wombs and elements see Dane T. Daniel, 'Invisible Wombs: Rethinking Paracelsus's Concept of Body and Matter.' *Ambix* 53, No. 2 (2006): 129-142.
[303] See Michael T. Walton, *Genesis and the Chemical Philosophy: True Christian Science in the Sixteenth and Seventeenth Centuries* (Brooklyn: AMS Press, 2011); Ann Blair, 'Mosaic Physics and the Search for a Pious Natural Philosophy in the Late Renaissance.' *Isis* 91, No. 1 (2000): 32-58; David S. Sytsma, 'Calvin, Daneau, and *Physica Mosaica*: Neglected Continuities at the Origins of an Early Modern Tradition.' *Church History and Religious Culture* 95, No. 4 (2015): 457-476.

natural philosophy on the first chapter of Genesis, the Book of Job, and other sacred writings, seeking the living among the dead … this unhealthy mixture of things divine and human begets not only fantastic philosophy but heretical religion'.[304] Nevertheless, when Bacon wrote about the origin of the sensible soul he referred back to the opening book of the Bible.

Bacon stated how 'the generation of the irrational soul, or that of brutes, was effected by the words 'Let the water bring forth; let the earth bring forth".[305] These phrases referred to the verses from the first book of Genesis in which God created the living creatures of the sea, sky and land.[306] The Latin term for 'living creatures' in these verses contained the root term *anima*, which, for Bacon, provided evidence for the fact that animals possessed a soul. The added fact that it was the waters and the earth from which the animals were brought forth suggested that the soul of brutes ultimately came from the elements.[307] Bacon also went on to argue that the Bible clearly stated that God 'made man' and not just 'the body of man' out of the dust of the earth. Bacon took this to mean that God made the sensible soul, as well as the body of humans, out of the dust of the earth. It was only man's rational soul that had its origin in the breath of God.[308]

Bacon's theory of spirits was central to his theory of matter as well as his account of the soul. Spirits also played a central role in his understanding of the human body and for Bacon, it was the condition of the spirits in the body that largely determined whether a person remained in good health and lived a long life.

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[304] *The Oxford Francis Bacon, Volume XI*, 103.
[305] *The Works of Francis Bacon*, *Volume 4*, 397.
[306] Bacon is quoting from Genesis 1:20 and 1:24.
[307] See Guido Giglioni, 'The Uncomfortable *Biformitas* of Being: Bacon on the Animal Soul', in *The Animal Soul and the Human Mind: Renaissance Debates*, ed. by C. Muratori (Pisa-Rome: Serra, 2013): 190-207.
[308] Bacon here is referring to Genesis 2:7 (KJV) '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.'

Francis Bacon, medicine and the body

An important source in understanding Bacon's views about the workings of the human body is a manuscript entitled *De viis mortis,* which he composed during the course of the 1610s.[309] In this work Bacon examined the various ways an individual could postpone old age and help restore the body's vital powers.[310] Central to Bacon's theories on life and longevity was his division of attached spirits into two different kinds: inanimate spirits (*spiritus mortuales*) and animate spirits (*spiritus vitalis*).[311] All attached spirits were made from a combination of air and fire; inanimate spirits contained a greater amount of air than fire, whereas animate spirits contained a greater amount of fire than air. Inanimate spirits were present throughout the natural world and could be found in inorganic as well as organic bodies. These inanimate spirits were distributed within bodies in discontinuous portions. Animate spirits, on the other hand, were only present in plants, animals and humans. In plants, animate spirits were organised into a continuous network of branching channels. In animals and humans, this continuous network was connected to a cell where the spirits were concentrated (i.e., the brain) and this endowed them with sensory and motor capacities.

[309] The full title of the manuscript is *De viis mortis, et de senectute retardanda, atque instaurandis viribus* (An inquiry concerning the ways of death, the postponing of old age, and the restoring of the vital powers).
[310] For an overview of Bacon's engagement with the medical tradition and literature on the prolongation of life see Graham Rees (assisted by Christopher Upton), *Francis Bacon's Natural Philosophy: A New Source. A transcription of manuscript Hardwick 72A with translation and commentary* (Chalfont St Giles: British Society for the History of Science, 1984), 63-69.
[311] On Bacon's distinction between inanimate and animate spirits see *The Oxford Francis Bacon, Volume VI*, lvi-lvii.

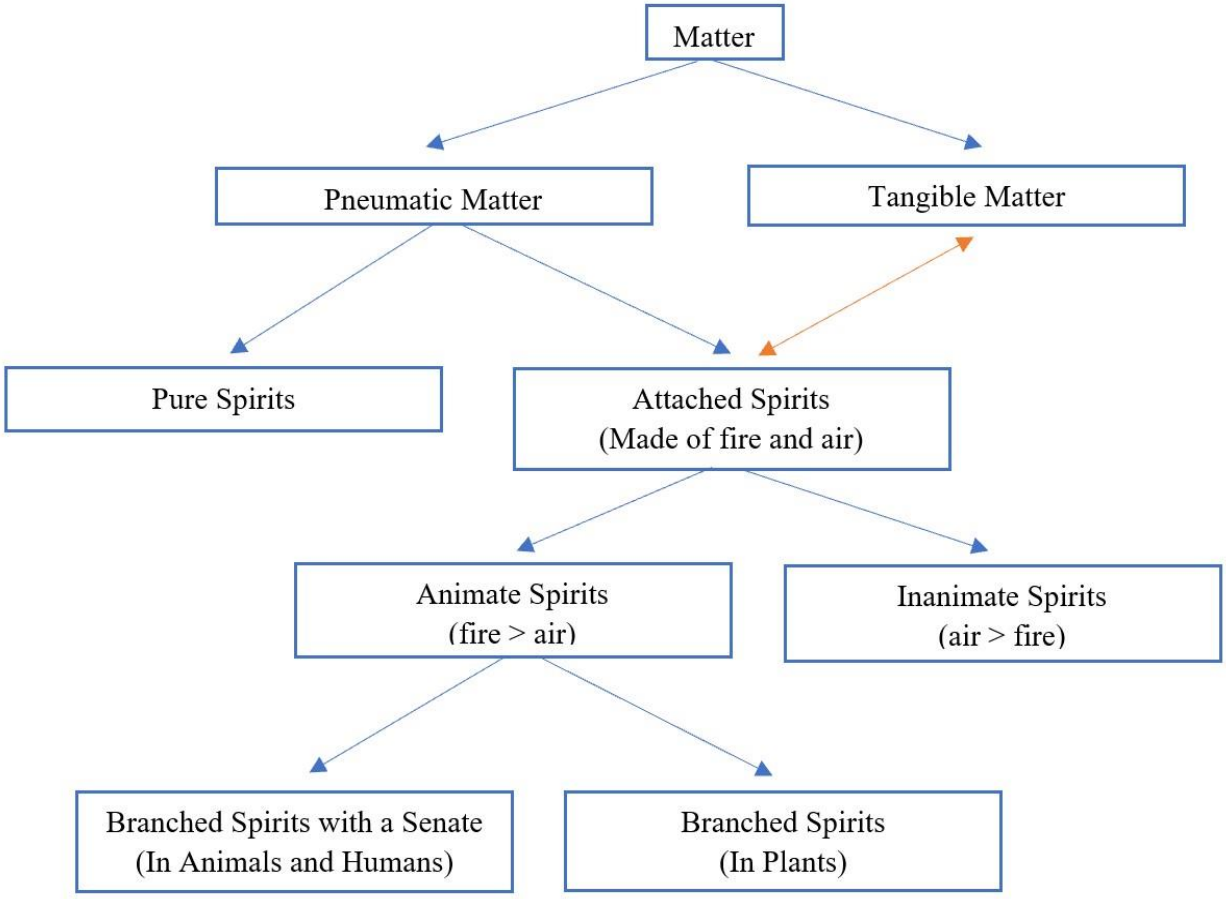

Figure 8: Divisions of Bacon's theory of matter based on *De viis mortis* and *Historia vitae et mortis*. The blue arrows show how the different types of matter are derived. The orange arrow shows the interaction between tangible matter and the attached spirits that is responsible for the processes of change in the intermediate zone.

The distinction Bacon made between the inanimate and animate spirits in *De viis mortis* reappeared in Bacon's later medical work *Historia vitae et mortis* (1623), which was also translated into English and published as *The Historie of Life and Death* in 1638. While Bacon was well versed in much of the earlier medical literature that had dealt with the topic of the prolongation of life, his own theory of the human body departed from standard medical doctrine. Bacon tended to avoid any reference to the four-humour theory of the Galenic physicians. Rather, his own unique innovation was to consider the body as a two-fold structure, one part of which was deemed to be essentially lifeless and without the need for nourishment. This part of the body included 'the membranes, and all tunicles, nerves, arteries, veins, bones,

cartilages, and most of the innards too'.[312] The other part of the body was alive and required nourishment and it included the blood, flesh and fat.[313] For Bacon, any enquiry into the prolongation of life needed to consist of a two-fold search that looked at the body along these two separate lines.[314]

This distinction was important for Bacon as the lifeless and unnourished parts of the body were difficult to repair, while the nourished and living parts were easily reparable. To illustrate the point, Bacon reminded his reader of the torments of Mezentius, an ancient Etruscan king who featured in Book X of Virgil's *Aeneid*. According to the legend, Mezentius devised a method of torture whereby an individual would be permanently strapped to a dead body. The individual subjected to torture would then spend the rest of his days living, and ultimately perishing, in the embrace of a corpse.[315] In Bacon's analogy, the corpse corresponded to the lifeless part of the body that was difficult to repair, whereas the person undergoing torture was the living part of the body that was easy to repair.

Bacon's physiological theories were based upon the idea of spirits enclosed in matter. According to Bacon, the lifeless portion of the body – the corpse in the analogy – was dominated by the inanimate spirits. As these spirits were more air-like than flame-like, they strove to break free from the parts of the body that enclosed them in order to reunite with the surrounding atmosphere. It was this action of the inanimate spirits escaping from the structures that contained them which was responsible for much of the degradation of the human body. For Bacon the inanimate spirits' attempt to break free from the body could be divided into three stages which he termed an *actio triplex*. These three stages were attenuation, escape and contraction. Attenuation took place when the inanimate spirits threw themselves against the

[312] *The Oxford Francis Bacon, Volume XII*, *The Instauratio magna, Part III: Historia Naturalis and Historia Vitae*, ed. by G. Rees (Oxford: Oxford University Press, 2007), 147.
[313] *Ibid.*
[314] *Ibid.,* 149.
[315] Benedino Gemelli, 'The History of Life and Death. A 'Spiritual' History from Invisible Matter to Prolongation of Life', *Early Science and Medicine* 17, No. 1 (2012): 134-157: 139.

walls of tangible matter that surrounded them; this slowly broke down the walls and even converted some of the tangible matter into inanimate spirits. When the wall was ruptured, the inanimate spirits were able to decamp into the surrounding air, allowing for their escape – the second stage of the process. As Bacon's physics did not permit a vacuum, the remaining mass of the natural body contracted to fill up the space lost, giving rise to contraction, the final stage of the process.

Animate spirits, which Bacon saw as more akin to fire than to air, predominated in the living part of the body. Unlike the inanimate spirits, the animate spirits did not strive to break free of their situation to return to the air. Instead, as a result of their fiery nature, they were hot, highly active, and mobile, and they needed to constantly nourish and replenish themselves. The animate spirits accomplished this by feeding on the juices of the body. Because of the heat they contained, the animate spirits needed to be cooled through the process of respiration. If they were not cooled sufficiently their heat could consume the substance of the body to the point of destruction. Similarly, if the motions of the animate spirits were not kept in order, they had the potential to damage their surrounding structures. Emotions had the capacity to change the motions of these spirits, as a result they had the potential to affect the health of the body.[316]

The differing tendencies of the inanimate and animate spirits are depicted in one of the stories Bacon presented in *The Wisdom of the Ancients*. In a fable entitled *Proserpina, or Spirit*, Bacon recounted the ancient myth of Proserpina and Pluto. In the story, Pluto kidnaps Proserpina and keeps her captive in his underworld.[317] Proserpina, who represents spirits in general, yearns to return to the world she came from, and her mother Ceres searches for her in the hope of being reunited with her. While she is in the underworld, Proserpina eats three pomegranate seeds, and because she has tasted the food of Hades, is obliged to stay there for

[316] *The Oxford Francis Bacon XII*, lvi.
[317] Francis Bacon, *The essays, or councils, civil and moral, of Sir Francis Bacon, Lord Verulam, Viscount St. Alban with a table of the colours of good and evil, and a discourse of The wisdom of the ancients* (London: printed for H. Herringman, R. Scot, R. Chiswell, A. Swalle, and R. Bentley, 1696), 89-93.

three months before she can return the world above ground. While the story was traditionally meant to explain why the three months of winter came about (winter corresponding to the three months Proserpina had to stay in the underworld), Bacon employed it to account for the relationship between the different types of matter that existed in the cosmos.[318] Proserpina symbolised the spirits which had their origin in the heavens. Pluto represented tangible matter which had its home within the bowels of the earth. Although Proserpina became trapped in Hades she longed to return to her home and re-unite with her mother Ceres (who represented the air). However, because she had tasted the pomegranate seeds, she was torn in two. The part that attempted to break free from tangible matter and return to the air symbolised the inanimate spirits. Meanwhile the part that accepted its new home in the underworld, and therefore did not try to break free, represented the animate spirits.

Bacon's division of spirits into two distinct classes, the inanimate and the animate, was highly original. So too was his division of the body into a lifeless part and a living part. Bacon maintained a keen interest in medicine throughout his life and included an essay on 'regiments of health' in the 1597, 1612 and 1625 editions of his *Essays.* In the final edition he stated that 'to be free minded, and cheerefully disposed … is one of best Precepts of Long lasting'.[319] He also warned his readers to avoid envy and anxious fears if they wanted to live a long life; instead encouraging them to entertain hopes, mirth and a variety of delights. Bacon clearly felt that an individual could improve their health by successfully managing their emotions. As mentioned earlier, this was because he believed the passions affected the health of the spirits.[320] In the next section we will investigate Bacon's views about the origins and effects of the passions in greater detail.

[318] On the myth of Prosperpina and Hades and its relation to the origin of the seasons see Walter Burkert, *Greek Religion: Archaic and Classical* (Oxford: Blackwell, 1985), 159-161.
[319] Bacon, *The Essayes or Counsels, Civill and Morall* (1625), 187-191.
[320] See p. 83.

Bacon's account of the passions

In this chapter so far, I have outlined how Francis Bacon engaged with a variety of intellectual traditions, including alchemy and natural magic, that were becoming increasingly popular in England around the turn of the seventeenth century. I have also discussed how the concept of spirit gained new meanings during the Renaissance, becoming an important feature of the natural philosophy of the period. Moreover, I have shown how Bacon adopted many of the new ideas associated with this term as he formulated his own eclectic and idiosyncratic conception of spirit. Furthermore, I have shown how the notion of spirit played a central role in Bacon's natural philosophical and medical theories. For Bacon, appetites and passions were a feature of matter itself. However, at various points in his written works Bacon specifically examined the passions of the human body and soul.

One instance where Bacon discussed human emotions was in his 1609 work *De sapientia veterum* in which Bacon offered an interpretation of a number of ancient myths. In a section of the work entitled 'Dionysus, or Passions', Bacon recounted the key events of the life of the pagan god Dionysus and stated how 'under the person of *Bacchus* is described the nature of affection, passion, or perturbation'.[321] For Bacon, the various myths associated with Dionysus, or Bacchus, revealed some of the basic features of the emotions. For instance, the fact that Dionysus was formed in the thigh of Jupiter, troubling Jupiter before he was eventually born, signified how the passions had the tendency to cause problems when they arose in the lower part of the human soul (with Jupiter representing the soul).[322] Similarly, the idea that Dionysus could revive from the dead indicated how the passions had a tendency to reappear from the grave even if they initially seemed to have been extinguished.[323] In *The Wisdom of*

[321] Bacon, *The Wisdom of the Ancients*, 81.
[322] *Ibid*., 83-84.
[323] *Ibid.,* 84.

the Ancients Bacon examined the passions through allegory, however, in a number of his other works he attempted to provide a more scientific account of human emotion.

In his 1605 text *The Advancement of Learning*, Bacon dedicated a section of the work to exploring 'humane philosophy or humanitie'.[324] According to Bacon, human philosophy could be split into two parts: the first considered humans as individuals whereas the second studied them in society. Bacon further divided knowledge of individual humans into three parts. The first consisted of knowledge with respect to the body, the second entailed knowledge with respect to the mind, the third – which could not be properly assigned to the science of either – concerned the 'sympathies and concordances betweene the mind and body'.[325] It was in this third part, regarding the 'league of mind and body', that Bacon discussed the passions.

Bacon was interested in knowing the extent to which the mind and body acted upon each other. He asked 'how, and how farre the humours and affects of the bodie doe alter or worke upon the mind' and 'how and how farre the passions, or apprehensions of the minde, doe alter or worke upon the bodie'.[326] Regarding the former (how the body acted on the mind), Bacon recognised that physicians had often prescribed medicines to help people recover from frenzies and to expel melancholy passions, stating that 'the affections of the mind are submitted unto, upon the state and disposition of the bodie'.[327] When it came to considering the operations of the 'passions of the minde uppon the bodie', Bacon made reference to the '*Accidentia animi*' – the Latin term commonly used by physicians when they referred to the passions in the context of lifestyle regimens.[328] Here, Bacon noted how the passions were a 'great force to further or hinder remedies, or recoveries'.[329] Again Bacon showed his familiarity with ideas commonly

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[324] Francis Bacon, *The Two Bookes of Francis Bacon. Of the proficience and aduancement of Learning, divine and human* (London: printed for Henri Tomes, 1605), II, 36.
[325] *Ibid.*
[326] *Ibid.,* 37.
[327] *Ibid.,* 37-38.
[328] See Naama Cohen-Hanegbi, '*Accidentia anime* in Late Medieval Medicine', in *Before Emotion: The Language of Feeling, 400-1800*, ed. by J. Feros Ruys, M. W. Champion and K. Essary (New York: Routledge, 2019), 131-141.
[329] Bacon, *The Two Bookes of Francis Bacon*, II, 38.

presented in medical regimens, such as the fact that the passions of the soul could positively or negatively affect the health of the body.

In the De *augmentis scientiarum* of 1623, which expanded in Latin upon the text of *The Advancement of Learning*, Bacon retained the section on human philosophy and the 'sympathies and concordances' between the mind and body.[330] In a newly added section of the text concerning the prolongation of life, Bacon now included various passages about the spirits – having developed his ideas about the topic in the eighteen-year period between the appearance of the two texts. In *De augmentis scientiarum* Bacon stressed the importance of keeping the spirits in an optimal condition if a person wanted to maintain their health, further stating how the passions moved the spirits and 'worked strangely upon them'.[331]

In *De augmentis scientiarum*, Bacon only briefly mentioned the relationship between the passions and the spirits. In another text which was also first published in 1623, the *Historia vitae et mortis*, Bacon outlined the relationship between the passions and the spirits in much greater detail. Bacon's analysis of the passions in this text was situated in a section of the work that aimed to provide practical advice on how to keep the spirits youthful and strong.[332] Although Bacon did not clearly spell out whether he was referring to the animate spirits that constituted the sensible soul or the inanimate spirits dispersed throughout tangible matter (he used the term *Spiritus* for both) one can assume that he was referring to the animate spirits.[333] Bacon began the section by noting how spirits had a tendency to damage the body by preying upon it and consuming its moisture.[334] He then stated how the spirits should be adjusted to a condition and level of activity whereby they did not soak up the body's juices but only sipped

[330] Francis Bacon*, Of the Advancement and Proficience of Learning,* 179.
[331] *Ibid*., 203.
[332] *The Oxford Francis Bacon, Volume XII*, 245-272.
[333] This is the view also taken by Graham Rees, see *The Oxford Francis Bacon, Volume XII.,* liv.
[334] As animate spirits consume the juices of the body, whereas inanimate spirits attempt to escape from the body, we can take this as further evidence that Bacon is referring to the animate spirits.

them, later adding 'the spirits should be so worked on and modified that they become dense, not rare in their substance'.[335]

For Bacon, the key to keeping the spirits in their optimal condition was by condensing them and he went on to list four methods by which this could be best done. The first method was by concentrating the spirits with Bacon mentioning how ingesting opiates could help with such a procedure.[336] The second method involved cooling the spirits and this was best accomplished using nitre and other substances with similar properties.[337] The third way to condense the spirts was by soothing them with Bacon listing a vast variety of substances that could assist with this including oregano, myrrh and elderflower.[338] However it was the fourth and final method, which was by curbing the motion of the spirits, that the passions were able to affect the activity of the spirits.

For Bacon, operating on the spirits and renewing them by the various methods he described was the easiest and most direct route to the prolongation of life. Managing emotions was an especially effective way of improving one's health as the passions 'worked directly on the spirits' which in turn worked directly on the body.[339] Rather than providing a general statement on how the passions affected the spirits, Bacon listed particular passions and their specific influence on the spirits. He first discussed the passion of joy and stated that 'great joys attenuate and diffuse the spirits and shorten life' while 'ordinary happiness strengthens the spirits by summoning them up without dispersing them.'[340] Immediately we can see one major similarity with the standard medical view prevalent at the time. The idea that inordinate joy could shorten life echoed statements often found in popular regimens and passion treatises. In addition to describing the effects of joy, Bacon explained how supressed rage vexed the spirits

[335] *The Oxford Francis Bacon, Volume XII,* 245, 247.
[336] *Ibid.,* 247-253.
[337] *Ibid.,* 253-259.
[338] *Ibid.,* 259-264.
[339] *Ibid.,* 273.
[340] *Ibid.,* 265.

which caused them to prey on the body's juices. Envy was labelled the worst emotion as it 'preys on the spirits which in turn prey on the body' and Bacon found this passion particularly damaging because of its incessant nature which 'never takes a day off'.[341] Bacon viewed slight shame as harmless since it contracted the spirits only slightly, whereas long-running shame arising from deep humiliation contracted the spirits to the point of suffocation and had the potential to be lethal. Hope was designated the most beneficial of emotions and contributed most of all to the prolongation of life. Admiration was likewise wonderful for prolonging life as it engaged the spirits in such a way as to stop them from becoming turbulent, restless or difficult. Bacon pointed to Plato, Democritus and Parmenides as examples of individuals who were so entranced by the marvellous things around them that they ended up living well into old age. When Bacon moved on to discussing grief and sadness, he stated how these emotions actually tended to prolong life, provided they were devoid of fear and anguish. The method by which these emotions extended life was by contracting the spirits which Bacon calls a kind of condensation (*Condensationis Genus*).[342]

It is possible that Bacon's saw a parallel between the idea of condensing spirits to prolong life in humans and the activities of alchemists when they condensed spirits in their laboratories. The influence of the alchemical tradition on Bacon's account of human physiology can be detected in some of the language he used when he wrote about the workings of the human body and soul. At the start of the section on the spirits in the *Historia Vitae et Mortis* Bacon claimed that 'the spirits are the craftsmen and workers who do everything that happens in the body. This is confirmed by general consent and countless instances.'[343] The language of craftsmen and workers (*Fabri sunt atque Opifices*) resembled the language used in alchemical

[341] *Ibid.,* 267.
[342] *Ibid.,* 264.
[343] *Ibid.,* 245.

treatises dealing with the action of seeds and spirits within the human body.[344] The analogy between alchemical practitioners in their laboratory and the spirits within the internal laboratory of the human body was a common feature within alchemical literature and one which would go on to be present in medical thought in England in the second half of the seventeenth century.[345]

One of the central practices of alchemy was distillation.[346] This process often aimed at capturing the inner essence of a substance through the processes of heating and cooling. Physicians who were heavily influenced by the alchemical tradition, such as Petrus Severinus and Joseph Duchesne, were especially concerned with extracting the spirits of substances so that they could then be used for medical purposes. Heating substances within an alchemical still caused them to become rarefied or attenuated. Cooling a substance, on the other hand, resulted in its condensation. It was this condensation which allowed the purified spirits to be collected and ultimately used. Bacon's language concerning the effects of the passions on the spirits centres on the ideas on condensation and attenuation. Recently, Sergius Kodera has suggested that the practice of distillation often served as a technological model for human physiology and pointed to Francis Bacon to argue his case.[347] The alchemist's condensation and rarefaction of spirits in the laboratory through the application of heat and cold (to produce the elixir of life for instance) can be seen to mirror the condensation and rarefaction of the spirits within humans as they managed their emotions to prolong their life. Indeed, for Bacon, the body benefitted most when emotions were adjusted to condense the spirits. This led them

[344] See Shackelford, *A Philosophical Path for Paracelsian Medicine,* 178-180; Shackelford, 'Seeds with a Mechanical Purpose', 23-26.
[345] See Clericuzio, 'The Internal Laboratory', 51.
[346] Robert Multhauf, 'The Significance of Distillation in Renaissance Medical Chemistry.' *Bulletin in the History of Medicine* 30, No. 4 (1956): 329-346.
[347] Sergius Kodera, 'The Art of Distillation of 'Spirits' as a Technological Model for Human Physiology. The Case of Marsilio Ficino, Joseph Duchesne, and Francis Bacon', in *Blood, Sweat and Tears: The Changing Concepts of Physiology from Antiquity into Early Modern Europe*, ed. by M. Horstmanshoff, H. King, and C. Zittel (Leiden: Brill, 2012), 139-170.

to consume the juices of the body in a more restrained manner which produced positive health results.

In addition to examining human emotions in *Historia vitae et mortis*, Bacon also analysed the passions in a work published soon after his death, the *Sylva Sylvarum*. Despite its Latin title, the work was written in English and carried the subtitle '*A Natural History in Ten Centuries*'. The work can best be thought of as a 'forest of materials' divided into ten sections, with each section containing observations drawn from a series of experiments on a wide variety of topics. The natural histories range from being a few lines long, such as the one concerning subterranean fires, to occupying multiple pages, as with the observation on music. The work was compiled by Bacon's chaplain and literary executor William Rawley, who added a preface in which he referred to the natural histories as an 'undigested heap of particulars'.[348] According to Rawley, the natural histories were intended as the foundations to a 'building of a true philosophy'.[349] While the natural histories were to be the clay and straw that would provide the bricks of the building, the *Novum Organum* was to supply the instruments and directions for the construction of the edifice.

It was in fact in the *Novum Organum* that Bacon first hinted at his intention to compile a natural history of the passions, and in this work he explicitly stated his intention to compile a 'history of feelings, like anger, love, diffidence, etc.'[350] The various natural and experimental histories that examine the passions in *Sylva Sylvarum* were the closest he would come to accomplishing such a task. A comprehensive natural history of the passions would only fully appear in the 1670s with Walter Charleton's *A Natural History of the Passions*.[351]

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[348] Francis Bacon, *Sylva Sylvarum*, in 'To the Reader'.
[349] *Ibid.* On Rawley's role in the alteration and publication of Bacon's text see Doina-Cristina Rusu and Christoph Lüthy, 'Extracts from a Paper Laboratory: the Nature of Francis Bacon's *Sylva Sylvarum.' Intellectual History Review* 27, Issue 2 (2017): 171-202.
[350] *The Oxford Francis Bacon, Volume XI*, 481.
[351] This text will be examined in the final chapter of this thesis.

In the eighth century of *Sylva Sylvarum*, one of the experiments listed by Bacon carried the title 'Of the impressions upon the body from several passions of the mind'.[352] This experiment was the longest in the century and took up ten out of the one hundred sections. Each section detailed how a particular passion affected the body, with the particular passions discussed being: fear, grief, joy, anger, dislike, shame, pity, wonder, laughing and lust. Each section of the natural history also followed a set pattern. Bacon first listed the bodily changes brought about by each passion, then he discussed the physiological processes underlying each change. For instance, when he discussed anger, he first stated that this passion caused paleness, trembling, and the hairs to stand erect. He then explained how paleness was caused by blood running inward to succour the heart. Trembling was explained by the inward flight of the spirits which left the outward parts destitute. The erection of hair meanwhile was caused by the shutting of the pores of the skin.

Bacon also suggested that as well as altering physiological processes, passions had the capacity to affect facial expression and bodily gestures too. Alongside blushing, shame often resulted in the casting down of the eyes which was caused by the 'reverence man beareth to other men', a phrase which betrays the intrinsically ethical dimension of the passions.[353] Wonder, on the other hand, caused a person to lift up their hands and cast their eyes towards the heavens. Bacon explained 'the casting up of the eyes, and the lifting up of the hands, is a kind of appeal to the deity; which is the author and power and providence of strange wonders'.[354]

Bacon concluded the history by asserting the fundamental role that spirits played in the processes of physiological change and explained to the reader how the spirits travelled to the body parts most affected by the passions. For instance, in lust the spirits moved to the eyes and

[352] Bacon, *Sylva Sylvarum*, 184-187.
[353] *Ibid.,* 186.
[354] *Ibid.*

'venerous parts', whereas in fear and anger they moved to the heart. In shame they travelled to the face, and in dislike they moved to the head.[355] Always practically minded, Bacon tells the reader to make good note of this fact as 'great use may be made of the observation'.[356]

For Bacon, emotions did not just affect the body and soul of the individual experiencing them. Later in the *Sylva Sylvarum* he would go on to describe how emotions arising within a person could affect someone else at a distance.

Emotions at a distance

The tenth and final century of *Sylva Sylvarum* is largely dedicated to examining the phenomenon of action at a distance and the various powers of the human imagination. Topics discussed in this section of the work included the transmission of infections, the operations of the loadstone, the influxes of heavenly bodies, and the workings of the weapon salve.[357] Within the scholastic tradition it was generally thought that action at a distance between two distinct bodies could not truly occur. Instead, anything that seemed to act at a distance was understood to take place through indirect contact action via a medium.[358] However, the alternative view – that bodies could act upon each other without any intervening medium – was endorsed in some of the Neoplatonic and Hermetic texts that later played an important role in the development of the Renaissance magical tradition.

According to these alternative traditions, one of the ways bodies could act on each other at a distance was through the transmission of immaterial rays which did not require a medium for their travel. In addition to Al-Kindi's work *On Stellar Rays*, another text that put forward

[355] *Ibid*., 187.
[356] *Ibid.*
[357] *Ibid.,* 244-246. The debates about the workings of the weapon salve will be discussed in next chapter.
[358] See John Henry, 'Action at a Distance in Early Modern Natural Philosophy', in *Encyclopedia of Early Modern Philosophy and the Sciences*, ed. by D. Jalobeanu and C. T. Wolfe (Cham: Spinger, 2020), https://doi.org/10.1007/978-3-319-20791-9_39-1

the idea that all bodies emitted rays which could influence other objects across vast distances was tenth of the book of the *Corpus Hermeticum* translated by Marsilio Ficino and entitled 'The Key'.[359] Francis Bacon discussed such rays in an essay entitled 'Pan; or Nature' in his 1609 work *De sapientia veterum* and did so specifically in the context of bodies acting at a distance. In this work he wrote:

> The body of Nature is most elegantly and truly represented as covered with hair; in allusion to the rays which all objects emit; for rays are like the hairs or bristles of nature; and there is scarcely anything which is not more or less radiant. This is very plainly seen in the power of vision, and not less so in all kinds of magnetic virtue, and in every effect which takes place at a distance. For whatever produces an effect at a distance may be truly said to emit rays.[360]

In addition to rays, another method by which action at a distance was thought to occur within the Renaissance magical tradition was through a world soul present throughout the cosmos which could instantaneously transmit an action happening in one part of the world to another.[361] As previously mentioned, the Platonic idea of a world-soul had been revived by Marsilio Ficino and was taken up by a number of thinkers in the Renaissance.[362] In *Sylva sylvarum*, Bacon criticized the notion of a world soul and considered it to be the product of a monstrous imagination.[363] He specifically attacked the idea that the world was 'One, Entire, Perfect, Living Creature' that possessed a single spirit or soul.[364] He was also especially critical

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[359] *Ibid.,* 2. Brian P. Copenhaver, *Hermetica: The Greek Corpus Hermeticum and the Latin Asclepius in a New English Translation, with Notes and Introduction* (Cambridge: Cambridge University Press, 1992), 30-36.
[360] *The Works of Francis Bacon*, *Volume 6*, 710.
[361] On the ancient origins of the idea of a world soul see *World Soul – Anima Mundi: On the Origins and Fortunes of a Fundamental Idea*, ed. by C. Helmig (Berlin: De Gruyter, 2020). On the associated notion of cosmic sympathy see René Brouwer, 'Stoic Sympathy', in *Sympathy: A History*, ed. by E. Schliesser (Oxford: Oxford University Press, 2015), 15-35; In the same volume see also Eyjólfur K. Emilsson, 'Plotinus on *sympatheia'*, 36-60; On the reception of the idea of the world soul and cosmic sympathy in the Renaissance see also in the same volume Ann E. Moyer, 'Sympathy in the Renaissance', 70-101.
[362] See previous discussion at p. 86.
[363] Bacon, *Sylva Sylvarum*, 241.
[364] *Ibid.*

of those philosophers who used the concept of a world-soul to explain how action could be transmitted between two distant locations such as Europe and China.[365] By the time Bacon came to write *Sylva Sylvarum* in the mid-1620s he had worked out his own system of speculative natural philosophy. When he discussed action at a distance in this work, he did not call upon a world soul nor did he speak of rays, instead he gave prominence to his own original ideas about spirits and their transmissions.

In *Sylva Sylvarum* Bacon divided his discussion of the various phenomena that operated by transmission of spirits and imagination, and that 'Worke at Distance, and not at Touch' into eight sections. The fifth section specifically examined the emissions of spirits 'of the Minde of Man, upon other Spirits'. In particular it studied the 'operations of the affections, if they be vehement; and the operations of the imagination, if it be strong', with Bacon recognising that the affections and imagination were so tightly coupled that the two topics should be discussed together.[366]

In this section, Bacon described how individuals of a melancholy temperament inclined those around them to become sad, whereas those of a jovial nature tended to make those around them merry and cheerful. He explained that this was because there were 'Light Effluxions from Spirit to Spirit' when people were in the presence of one another.[367] Bacon also noted how the passions of envy, love, fear and shame could also be transmitted between individuals. For Bacon, envy emitted a malign and poisonous spirit which could take hold of the spirit of another person. An individual experiencing glory, triumph or joy was most susceptible to being struck down by the evil eye. This was because such positive feelings caused the spirits to spread to the outer parts of their body which in turn made them more exposed to the envious emissions coming from others.[368] When a person was experiencing the affection of love, Bacon explained

[365] *Ibid.*
[366] *Ibid*., 245.
[367] *Ibid.,* 251.
[368] *Ibid.*

how the spirit of the lover could pass into the spirit of the beloved instigating the appetites of contact and conjunction within them.[369]

In a recent article on Francis Bacon's account of action at a distance and fascination, Doina-Cristina Rusu has noted how Bacon rejected traditional accounts of how action at a distance occured, instead putting forward his own views on how such phenomena took place.[370] Unlike the philosophers who believed in the immaterial rays or the presence of a world soul, in his mature works Bacon tended to discuss action at a distance as occurring through the emission of material spirits from bodies across a circumscribed distance. Moreover, Rusu has suggested that what the emitted spirits transferred to the receiving body were not the occult qualities of the scholastics, rather they were the underlying motions or appetites of matter.[371] Bacon's account of the passion of love instigating the appetites of contact and conjunction within a beloved are in keeping with Rusu's argument and add further support to the view that Bacon believed spirits transferred appetites across distances.

So far in this chapter, the discussion of Bacon's account of the passions has been limited to the *spiritus* (or sensible soul) and the human body. Bacon never went on to clearly address the issue of whether the passions existed in the rational soul. However, in a recent analysis of Bacon's account of the motions of the mind, Sorana Corneanu has convincingly argued that Bacon did indeed consider appetites and passions to occur in the rational soul. Through a careful analysis of Bacon's writings she has observed that incorporeal substances such as angels and rational soul, which were part of the created order, could themselves be the sources of motions and natural activity.[372] Moreover, she has pointed to Bacon's ideas about action at a distance to explain how motions arising in the rational soul would be able to interact with the

[369] *Ibid.*
[370] Doina-Cristina Rusu, 'Fascination and Action at a Distance in Francis Bacon.' *Early Medicine and Science* 27, Issue 5 (2022): 403-425.
[371] *Ibid.,* 417-424.
[372] Sorana Corneanu, 'Francis Bacon on the Motions of the Mind', in *Francis Bacon on Motion and Power*, 210-230: 210.

sensible soul, noting how Bacon considered the *spiritus* to be 'the 'instrument' of the rational soul, and one with which the latter stands in a relation of 'sympathy.''[373]

Conclusion

In this chapter I have attempted to outline some of the key features of Francis Bacon's theory of emotion. I have also tried to situate Bacon's writings on the passions within the context of his wider philosophical and medical views. Bacon rejected the Aristotelian natural philosophy and Galenic medicine that continued to be taught at the universities in his day. However, he did not go on to adopt a mechanical vision of nature like other scientific innovators of the seventeenth century such as René Descartes and Thomas Hobbes. Instead, Bacon drew on a wide range of alternative intellectual currents when he constructed his own vision of nature and man.

Bacon did not regard matter as being composed of inert particles, nor did he see it as a substrate to receive substantial forms. Rather, he viewed matter as containing a host of internal appetites which ultimately gave rise to the various phenomena of nature. For Bacon, matter was able to perceive its immediate environment and moved to and from the things that attracted or repulsed it. Bacon's natural philosophy was, in large part, drawn from the writings of the Italian naturalist philosopher Bernardino Telesio. And like Telesio, Bacon saw human passions as ultimately deriving from the same appetites that gave rise to the various motions of matter.

Bacon's vision of the cosmos was also largely informed by his engagement with the alchemical tradition. In particular, Bacon's notion of spirit was shaped by his reading of alchemical texts. For many alchemists all tangible bodies contained an inner core of active material spirits. Bacon's conception of spirit also drew upon traditional medical ideas. In

[373] *Ibid.,* 213. For Corneanu's argument regarding Bacon's ideas about action at a distance and their relevance to the transmission of motions between the rational and sensible souls see pp. 209-211.

addition to being present throughout the cosmos, Bacon understood there to be two kinds of spirits within the human body: the animate and the inanimate spirits. Bacon considered the sensible soul of animals and humans to consist of a continuous network of animate spirits 'residing chiefly in the head, running along the nerves, and refreshed and repaired by the spirituous blood of the arteries.' Whenever Bacon wrote about the passions, he spoke of them in the context of the spirits that made up the sensible part of the human soul. In texts such as *Historia vitae et mortis* and *Sylva sylvarum*, Bacon explained how different passions condensed or attenuated the spirits and altered their various motions. Bacon was also acutely aware that the passions had the capacity to influence the health of the body and provided advice on how they could be best managed in order to prolong life.

The tradition of natural magic also informed Bacon's theory of the passions. Bacon believed that passions experienced by one person could act at a distance and affect another person. He wrote about how the affections made 'the *Spirits* more *Powerfull* and *Active*', and he noted how a person's confidence could enable them to bring about 'some *Secret Biding*, and *Stooping* of other *Mens Spirits'*.[374] In *Sylva sylvarum* Bacon proposed his own theories about how action at a distance came about, and when it came to the transmission of emotions between people, he proposed that it occurred through the emissions of the spirits from one person to another. Although Bacon did not provide a detailed analysis of what exactly was being transmitted by the spirits, it is possible to deduce (as Doina Cristina-Rusu has argued) that it was the spirit's inner motions and appetites that were being transmitted from one person to another.

Having analysed Francis Bacon's theory of emotion in some detail we are now in a position to see how his account of the passions compared to the traditional Scholastic account. Within the scholastic tradition, the passions were defined as motions of the sensitive appetite,

[374] Bacon, *Sylva Sylvarum*, 251.

caused by the apprehension of good or evil in the imagination, accompanied by a change in the body. Passions were also thought to involve both the soul and the body. This was the case for Bacon too, however, he rejected the traditional Aristotelian understanding of matter and form. Moreover, Bacon did not locate the passions in one of its specific faculties. Instead, Bacon saw appetites and passions as underlying features of matter in general. When they arose in human beings, in the familiar forms of love, fear, and envy for example, Bacon explained how they arose within a person's animate spirits (or their *spiritus*) which for him constituted the sensible part of the human soul.[375] The traditional scholastic definition of the passions also saw them as arising after an initial value judgement made by the faculty of the imagination. For Bacon however, it was not just the human (or animal) imagination that discerned whether something in the environment was good or bad. Rather, the ability to perceive the beneficial or harmful nature of the surrounding area was one of the core features of matter itself.

From a physiological viewpoint, the traditional medical account of the passions related them to the Galenic theory of the four humours, with certain temperaments predisposing individuals towards feeling certain emotions. Bacon's medical theories on the other hand tended to avoid any reference to the four-humour theory of the Galenic physicians. Instead, Bacon's physiology of the body was dominated by his notion of spirits enclosed in matter, and it was these spirits (both animate and inanimate) which seemed to play the main role in his medical philosophy rather than the four humours. One place where Bacon's theory of emotion did coincide with the mainstream medical view regarded his position as to where in the body the passions were thought to arise. Like physicians working in the Galenic tradition, Bacon thought that passions originated within the heart. In his essay 'On Friendship', in a part of the text added to the 1625 edition of *The Essays*, Bacon wrote:

[375] As outlined in the previous chapter, Scholastic authors did account for emotions in the rational part of the soul as well. As far as I can tell Bacon never explicitly discussed this matter, but as previously mentioned, it is likely he also held this view.

> A principal fruit of friendship is the ease and discharge of the fulness and swellings of the heart, which passions of all kinds do cause and induce. We know diseases of stoppings and suffocations are the most dangerous in the body; and it is not much otherwise in the mind; you may take sarza to open the liver, steel to open the spleen, flower of sulphur for the lungs, castareum for the brain; but no receipt opens the heart like a true friend to whom you may impart griefs, joy, fears, hopes, suspicions and counsels, and whatsoever lies upon the heart to oppress it…[376]

Francis Bacon believed that conversation with a good friend could alleviate the burdensome passions residing within the heart. In other places in *The Essays,* he wrote about the passions in relation to rhetoric and ethics.[377] For Bacon, the passions were a phenomenon that permeated many different spheres of human existence. Nevertheless, he grounded his theory of emotion within a highly original vitalist system of natural philosophy that he developed over the course of his life. In the next chapter we will investigate how the development of a mechanical philosophy of nature gave rise to an alternative set of theories of the passions around the middle decades of the seventeenth century.

[376] *The Works of Francis Bacon*, *Volume 6*, 437.
[377] See for instance his essays 'Of Envie' and 'Of Negotiating' in Francis Bacon, *The Essayes* (1625).

CHAPTER THREE. KENELM DIGBY'S THEORY OF EMOTION: RELIGION, ANATOMY AND THE MECHANICAL PHILOSOPHY

The establishment of the mechanical philosophy is generally considered to be one of the main features of the scientific revolution of the seventeenth century.[378] Accordingly, a number of recent studies investigating the passions in the early modern period have revealed the profound impact the mechanical philosophy had on seventeenth-century theories of emotion.[379] These studies have often identified René Descartes and Thomas Hobbes as the pioneering figures in the development of new theories of emotion based on a mechanical conception of nature. For instance, in a recent article, Gábor Boros observed that 'one of the trademarks of philosophy in the early modern period is the renewal of the theory of the passions on the basis of the new mechanical-corpuscular philosophy', and further stated that 'it is helpful to think in terms of the period which begins with Descartes's *Passions of the Soul* (1649) and Hobbes' *Leviathan* (1651), and embraces the later contributions of Spinoza, Pascal, Malebranche, Locke and Leibniz'.[380] However, prior to these works of Descartes and Hobbes, there was another publication which proposed a theory of emotion in the context of a mechanical philosophy of nature. This frequently overlooked source is Kenelm Digby's *Two Treatises,* first published in English in Paris in 1644.[381]

Kenelm Digby was a third important figure who, alongside Descartes and Hobbes, constructed an original theory of emotion in the context of a mechanical natural philosophy. Over the course of his lifetime, however, Digby was influenced by a wide variety of intellectual

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[378] For a helpful analysis of the various complexities of the mechanical philosophy as a historiographical category see Sophie Roux, 'What to do with the Mechanical Philosophy?', in *The Cambridge History of the Philosophy of the Scientific Revolution*, ed. by D. M. Miller and D. Jalobeanu (Cambridge: Cambridge University Press, 2022), 75-95.

[379] See James, *Passion and Action*; Deborah Brown, 'Power and Passion in Hobbes, Descartes and Spinoza', in *The Routledge Companion to Seventeenth Century Philosophy*, ed. by D. Kaufman (New York, NY: Routledge, 2018) 334-353; Amy Schmitter, '17th and 18th Century Theories of the Emotions'.

[380] Gábor Boros, 'The Passions', in *The Oxford Handbook of Philosophy in Early Modern Europe*, ed. by D. M. Clarke and C. Wilson (Oxford: Oxford University Press, 2011), 182-200: 183,199.

[381] Kenelm Digby, *Two Treatises in the One of which, the Nature of Bodies; In the Other, the Nature of Mans Soule, is Looked Into: In Way of Discovery, of the Immortality of Reasonable Soules* (Paris: Gilles Blaizot, 1644).

traditions, including Neoplatonism, Paracelsian medicine and natural magic.[382] Indeed, one of his most popular works, *A Late Discourse…Touching the Cure of Wounds by the Powder of Sympathy* (1658) was about a powdered version of the weapon salve – a medical treatment associated with the Paracelsian tradition – whose curative effects were thought to work at a distance.[383] Digby's particular version of the mechanical philosophy differed from his two contemporaries Descartes and Hobbes. Whereas the latter two made a show of rejecting the ancient authorities, Digby attempted to reconcile his mechanistic physics with the traditional teachings of Aristotle.[384] Digby also believed that natural bodies radiated streams of particles, or effluvia, which he argued were responsible for a variety of natural processes.[385] In this chapter, I argue that, in addition to the mechanical philosophy, various other factors went into shaping Digby's theory of emotion, including his religious commitments, his keen interest in human anatomy and his deep engagement with chemical medicine and natural magic. Moreover, I use the case of Digby to demonstrate that the development of seventeenth-century theories of emotion should not be seen only as a transition from an Aristotelian account to one based on mechanical principles, but that instead, as I outline in this chapter, several different intellectual traditions were often at play.

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[382] For instance, see Sergius Kodera, 'Translating Renaissance Neoplatonic Panpsychism into Seventeenth-Century Corpuscularism: the Case of Sir Kenelm Digby (1603-1665).' *Intellectual History Review* 34, No. 1 (2023): 1-19; Bruce Janacek, 'Catholic Natural Philosophy: Alchemy and the Revivification of Sir Kenelm Digby', in *Rethinking the Scientific Revolution*, ed. by M. J. Osler (Cambridge: Cambridge University Press, 2000), 89-118; Lawrence M. Principe, 'Sir Kenelm Digby and his Alchemical Circle in 1650s Paris: Newly Discovered Manuscripts.' *Ambix* 60, No. 1 (2013): 3-24; Seth Lobis, 'Sir Kenelm Digby and the Power of Sympathy.' *Huntington Library Quarterly* 74, No. 2 (2011): 243-260.

[383] Kenelm Digby, *A Late Discourse Made in Solemne Assembly of Nobles and Learned Men at Montpellier in France…Touching the Cure of Wounds by the Powder of Sympathy; With Instructions how to make the said Powder; whereby many other Secrets of Nature are unfolded* (London: printed for R. Lownes and T. Davies, 1658).

[384] For an overview of Digby's thought including his efforts to combine Aristotelianism and mechanism see John Henry, 'Sir Kenelm Digby, Recusant Philosopher', in *Insiders and Outsiders in Seventeenth-Century Philosophy*, ed. by G. A. J. Rogers, T. Sorrell and J. Kraye (New York: Routledge, 2010), 43-75.

[385] See John Henry, 'Matter in Motion: The Problem of Activity in Seventeenth-Century English Matter Theory', PhD diss. (The Open University, 1983), 114-126; Dana Jalobeanu, 'On Bodies and Their Orbs: Kenelm Digby's Use of a Metaphysics of Light to Ground an Experimental Physics', in *The Philosophy of Kenelm Digby (1603-1655),* ed. by L. Georgescu and H. T. Adriaenssen (Cham: Springer, 2022), 183-202.

This chapter is divided into five sections. The first section introduces the figure of Digby and sets out the important events in his life, highlighting some of the key features of his intellectual formation. The second section describes the more famous theories of emotion proposed by Descartes and Hobbes in order to position Digby's ideas in the context of the intellectual advances of the period. The third section shows how Digby's commitment to Catholicism, and his efforts to further the Catholic cause in England, informed his views about natural philosophy, the human soul and the passions. The fourth section takes a closer look at Digby's account of the passions as put forward in his *Two Treatises* of 1644 and examines some of the medical issues discussed there. The fifth and final section examines one of Digby's final publications, *A Late Discourse,* and explains how his mature views about the passions of the soul, and their seeming ability to act at a distance, were influenced by his engagement with Paracelsian medicine and natural magic.

The life of Kenelm Digby

Kenelm Digby was born in 1603 into a wealthy Catholic family and grew up in Gayhurst House in Buckinghamshire. His parents, Everard Digby and Mary Mulsho, were both raised as Protestants but converted to Roman Catholicism under the encouragement of the Jesuit priest John Gerard. When Kenelm was just two years old, Everard Digby was executed for his involvement in the Gunpowder Plot. The death of his father would mark Kenelm for the rest of his life.[386] The young Digby was brought up by his mother in Buckinghamshire, where he was tutored by local Jesuit priests as well as by the astrologer and medical practitioner Richard Napier.[387]

[386] On the events of Digby's early life see Joe Moshenska, *A Stain in the Blood: The Remarkable Voyage of Sir Kenelm Digby* (London: Windmill Books, 2016).
[387] See Michael Foster, 'Kenelm Digby (1603-1665)', in *Oxford Dictionary of National Biography* (Oxford: Oxford University Press, 2004), Volume 16, 152-158.

In 1618, Digby went to Oxford and studied at Gloucester Hall, an academic hall and annexe of St John's College. Gloucester Hall did not enforce conformity in religion, which meant that Digby was able to attend without compromising his Catholic faith. There, Digby became a student of the mathematician and astrologer Thomas Allen (1542-1632), who had been an associate of John Dee. According to the seventeenth-century biographer, John Aubrey, Allen was one of the most learned men in England and a great collector of good books.[388] Allen was clearly impressed by Digby's intellectual abilities and is said to have called Digby 'the *Mirandula* of his age', an allusion to the precocious Florentine scholar Giovanni Pico della Mirandola. Digby acquired Allen's extensive library upon his death and donated its contents to the newly established Bodleian Library. Allen's interest in mathematics was closely tied to Pythagoreanism, numerology and occult knowledge; and it is very likely that Digby acquired a fascination with these topics from his teacher. For instance, in the 1620s Digby wrote a work which analysed a section of Edmund Spencer's *Faerie Queene*,[389] in which he interpreted an enigmatic passage of the poem which mentioned a partly circular and partly triangular frame 'proportion'd equally by seven and nine' as a cryptic reference to the relationship between the human body and soul.[390] Digby would ponder the nature of this relationship throughout his life and repeatedly addressed the subject over the course of his writing career.

He left Oxford in 1620 without a degree and spent the next few years on the Continent. In *Loose Fantasies*, an unpublished autobiographical romance which he wrote when he was twenty-five, he recounted how Marie de Médicis fell in love with him when he was living in Paris. In order to escape her advances he faked his death and set sail for Livorno. In Tuscany

[388] John Aubrey, *Aubrey's Brief Lives*, ed. by O. Lawson Dick (London: Secker and Warburg, 1958), 97.
[389] Kenelm Digby, *Observations on the 22. Stanza in the 9th Canto of the 2d Book of Spencers Faery Queen. Full of Excellent Notions concerning the Frame of Man, and his Rationall Soul* (London: printed for Daniel Frere, 1643).
[390] This stanza and its association with architectural principles are discussed in Frances A. Yates, *The Occult Philosophy of the Elizabethan Age* (London: Routledge and Kegan Paul, 1979), 97.

he joined the *Accademia dei Filomati* under the pseudonym 'Il Fiorito' (the flowery one).[391] During his time in Italy, he met Galileo and became familiar with his writings. In Siena, he delivered lectures on a variety of topics, including the mysteries of human language, secret modes of ancient communication and – once again – the relationship between the body and soul.

After being summoned to Madrid by his cousin to join the marriage negotiations between the Prince of Wales (the future King Charles I) and the Spanish Infanta, Digby came to know the soon-to-be monarch, became a member of his private chamber and was knighted. Upon his return to England in 1623, Digby married his childhood sweetheart Venetia Stanley. Soon after his marriage, Digby embarked on a career as a privateer, spending many years raiding French and Spanish ships throughout the Mediterranean. After a particularly successful raid in 1628 at the port of Scanderoon (modern day Iskanderun), where he seized a number of French and Venetian vessels, he gave up his buccaneering lifestyle and settled down in London. Keen to advance his social position, he converted to Anglicanism in 1630.

In 1633 tragedy struck when his beloved wife was suddenly taken ill and died.[392] John Aubrey noted that, after his wife's death, Digby 'retired to Gresham College at London, where he diverted himselfe with his Chymistry and the Professors good conversation. He wore there a long mourning cloake, a high crowned hatt, his beard unshorne, look't like a Hermite, as signes of sorrowe for his beloved wife.'[393] Digby stayed for the next two years at Gresham College, where he constructed an alchemical laboratory. During this time, he became increasingly gripped by the idea of palingenesis – the attempt to resurrect life from the ashes of plants and animals – an interest that may have been related to the recent loss of his wife.[394]

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[391] Niall Dilucia, 'Salvation and Sir Kenelm Digby's Philosophy of the Soul.' *History of European Ideas* 49, Issue 3 (2022): 506-522.
[392] Digby called his friend Anthony Van Dyck to make a portrait of Venetia Stanley soon after she died. The portrait is currently at the Dulwich Picture Gallery.
[393] *Aubrey's Brief Lives*, 99.
[394] Paul S. MacDonald, *Kenelm Digby's Two Treatises* (Woking, Surrey: The Gresham Press, 2013), 8.

In 1635 Digby converted back to Catholicism after discussing the issue at length with his friend William Laud, the Archbishop of Canterbury. Soon after his reconversion, he left London for Paris, where he befriended Marin Mersenne and became a member of his intellectual network. It was during his time in France that Digby made friends with Hobbes and became familiar with the work of Descartes. Inspired by some of the new ideas he was learning about on the Continent, he began to develop a mechanical philosophy of his own. In 1640 Digby travelled to Holland and met with Descartes. They discussed the composition of the human body as well as techniques to aid the prolongation of life.[395] Digby's *Two Treatises*, which was published in 1644 but likely written between 1641 and 1642, referred to many of Descartes' unpublished medical views, suggesting that Digby may have gained access to manuscript versions of Descartes' works before composing his own text. Descartes was sufficiently impressed by Digby that he requested Princess Elisabeth of Bohemia (niece to Charles I) to translate parts of the *Two Treatises* from English into Latin for him soon after it came out.

At the onset of the Civil War in 1642, Digby was arrested by parliamentary forces and imprisoned for almost a year. It was during this period that he wrote much of his *Two Treatises* as well as a short commentary on Thomas Browne's *Religio Medici*.[396] After his release, Digby moved to France; and when Queen Henrietta-Maria's court went into exile in 1644, she made Digby her chancellor. With the triumph of the parliamentary forces at the conclusion of the Civil War, Digby's position may have seemed under threat; however, he gained the favour of Oliver Cromwell and became an important intermediary between the Lord Protector and Cardinal Mazarin in France.

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[395] *Ibid*.
[396] Kenelm Digby, *Observations Upon Religio Medici* (London: printed by R. C. for Lawrence Chapman and Daniel Frere, 1644).

Digby's philosophical publications were well received during the years of the Protectorate. When John Webster argued for reform of university learning in his 1653 tract *Academiarium Examen*, he mentioned Digby's *Two Treatises* and spoke of its author in glowing terms.[397] Seth Ward, the Savilian Professor of Astronomy at Oxford at the time, wrote a rebuttal to Webster's publication, in which he suggested that Hobbes gained some of his ideas by reading Digby among others.[398] John Wallis, who was Savilian Professor of Geometry at Oxford, dedicated his edition of mathematical letters to and from his friends, entitled *Commercium Epistolicum* (1658), to the 'most illustrious and most noble' Kenelm Digby.[399]

Digby continued to pursue his scientific interests in his later life. A speech he delivered at Montpellier on the 'powder of sympathy' was published in London in 1658. In 1660, he returned to Gresham college and gave a lecture about the germination and reproduction of plants. The lecture was printed the following year as *A Discourse Concerning the Vegetation of Plants* (1661), which was the first text to be published by the newly formed Royal Society, of which Digby was an original fellow.[400]

Digby died at his home in Covent Garden in 1665. Around this time, his former friend Hobbes was entering into a series of disputes with various members of the Royal Society.[401] One area where Hobbes and Digby held opposing views was on the relationship between philosophy and religion. For Hobbes, it was important that we should live 'without mingling our religion with points of natural philosophy'.[402] Nothing could be further from the truth for

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[397] See Allen G. Debus, *Science and Education in the Seventeenth-Century: the Webster-Ward Debate* (New York: History of Science Library, 1970), 107. John Webster had studied alchemy under the Hungarian Johannes Hunyades with whom Digby had constructed his laboratory at Gresham College.
[398] Debus, *Science and Education,* 247.
[399] Johannes Wallis, ed., *Commercium Epistolicum de Quaestionibus quibusdam Mathematicis nuper habitum* (Oxford: printed by A. Lichfield, 1658), sig. A2^{r-v}: "Illustrissimo nobilissimo viro, D. Kenelmo Digby, equiti Anglo."
[400] Kenelm Digby, *A Discourse Concerning the Vegetation of Plants … At a Meeting of the Society for promoting Philosophical Knowledge by Experiments* (London: printed by J. C. for John Dakins, 1661).
[401] See Noel Malcolm, *Aspects of Hobbes* (Oxford; Oxford University Press, 2002), 317-335.
[402] Thomas Hobbes, *The English Works of Thomas Hobbes of Malmesbury,* Volume 6, ed. by W. Molesworth (London: John Bohn, 1840), 236.

Digby. Throughout his life, he used the power of reason to justify the doctrines of his faith. Over the course of his writing career, he deployed philosophical arguments about matter, the soul and the passions to defend his religious views. In so doing, as we shall see in a later section, he was following the teachings of his mentor, the Catholic priest Thomas White.

Descartes, Hobbes and the passions of the soul

Kenelm Digby's most detailed analysis of the passions appeared in his *Two Treatises* of 1644. This work was published five years before Descartes' *Les Passions de l'âme* (1649) and seven years prior to Hobbes' *Leviathan* (1651). Nevertheless, when Digby began to compose his *Two Treatises*, he was already well acquainted with the ideas of these two thinkers. Indeed, it was Digby who first sent Hobbes a copy of Descartes' *Discourse on Method* when it was published in France in 1637.[403] As a result, when Digby began to elaborate his own theories about the workings of the natural world and the functions of the human body and soul in the early 1640s, his thinking was already shaped by the views of both men. Therefore, in order to understand how Digby came to formulate his theories, it is worth briefly examining some of the main ideas put forward by Descartes and Hobbes, paying special attention to how they conceptualised the passions of the soul.

René Descartes (1596-1650) touched upon the topic of the passions many times over the course of his writing career.[404] His most detailed examination of the subject appeared in his treatise, *Les passions de l'âme*, published in Paris in 1649.[405] The treatise was translated into English and printed in London the following year as *The Passions of the Soule*. Descartes dedicated the work to Princess Elisabeth of Bohemia, one of his regular correspondents, who

[403] *Kenelm Digby's Two Treatises,* ed. by MacDonald, 8.
[404] See supplementary document on 'Descartes on the Emotions' in Schmitter, '17th and 18th century Theories of Emotions', in *The Stanford Encyclopedia of Philosophy* (Summer 2021 Edition), ed. by E. N. Zalta, https://plato.stanford.edu/entries/emotions-17th18th/LD2Descartes.html
[405] René Descartes, *Les Passions de l'âme* (Paris: chez Henry Le Gras, 1649).

had challenged him on various aspects of his philosophy, including the nature of the passions.[406] In one the prefatory letters to his treatise, Descartes stated that his 'designe was not to lay open the passions like an oratour, nor yet a morall philosopher, but onely as a physician'.[407] Therefore it would appear that, unlike other treatises on the passions which tended to discuss emotions in the context of rhetoric and moral philosophy, Descartes was keen to put forward his theory of the passions primarily in the context of his mechanical system of natural philosophy.[408]

For Descartes, the natural world was not made of featureless prime matter which acquired its various properties and motions through the acquisition of immaterial substantial forms – as was the case for the Scholastics. Rather, he was one of a growing number of seventeenth-century thinkers who preferred to use mathematical principles such as shape, size and the arrangement of parts to explain the processes of change in the physical world.[409] A key feature of Descartes' natural philosophy was the view that the cosmos was made up of particles of matter, or corpuscles. These corpuscles were extended in space, that is, they possessed the basic properties of height, breadth and depth. For Descartes, particles of matter were inert and did not possess the power to move themselves. Instead, motion was imparted to the universe by the action of God, who created the universal laws of motion which determined how the particles of matter moved. In the Cartesian system, corpuscles moved with a given speed and direction, collided with each other, and combined and separated to produce all the phenomena in the natural world.

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[406] On this exchange see *The Correspondence between Princess Elisabeth of Bohemia and René Descartes*, ed. and trans. by Lisa Shapiro (Chicago: The University of Chicago Press, 2007); Daniel Garber, 'Understanding Interaction: What Descartes should have told Elisabeth.' *Southern Journal of Philosophy* 21, Issue S1 (1983): 15-32.

[407] René Descartes, *The Passions of the Soule* (London: printed for A. C., sold by J. Martin and J. Ridley, 1650), 'In answer to the second Letter'.

[408] For previous discussion on seventeenth-century treatises on the passions see pp. 31-32.

[409] For a summary of Descartes' matter theory see Andrew Pyle, 'The Theory of Matter', in *The Routledge Companion to Seventeenth Century Philosophy*, ed. by D. Kaufman (London and New York: Routledge, 2018), 410-446: 417-424.

In addition to the material objects that made up the natural world, Descartes believed in the existence of immaterial substances such as God, angels and human souls. The separation of reality into two kinds of entities meant that Descartes' philosophical system was fundamentally dualistic. If the essential feature of material objects was their extension in space (*res extensa*), then the essential feature of immaterial substances was their capacity to think (*res cogitans*). For Descartes, every human being was a combination of an extended, unthinking material body and a thinking, non-extended immaterial soul.[410]

At the very start of *The Passions of the Soul* Descartes separated out the functions carried out by the body from those performed by the soul.[411] Digestion, for instance, was a process carried out by bodily processes alone – a view which stood in contrast to the traditional Scholastic account in which digestion was co-ordinated by the soul's nutritive power. Thinking, on the other hand, was an activity exclusively undertaken by the immaterial soul. Having differentiated between the various functions of the body and soul at the beginning of his work, Descartes then turned his attention towards examining the passions and explained how they functioned across the physiological and psychological domains.

In contrast to the Scholastic tradition, which tended to focus on the role played by the soul's sensitive faculties in the generation of emotion, Descartes laid much greater emphasis on the body in the production of the passions. This is most evident when we turn to the twenty-seventh article of *The Passions of the Soul*, where he provided a new definition of the passions. Here, Descartes described passions as 'perceptions, or sensations, or emotions of the soul that we refer particularly to the soul itself, and that are caused, sustained and fortified by some movement of the spirits'.[412]

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[410] On Descartes' account of the human as a *unity* of mind and body see Deborah J. Brown, *Descartes and the Passionate Mind* (Cambridge: Cambridge University Press, 2006).
[411] René Descartes, *The Passions of the Soul*, trans. by M. Moriarty (Oxford: Oxford University Press, 2015), 195-206.
[412] *Ibid*., 206.

The 'spirits' which Descartes viewed as causing, sustaining and fortifying the passions were the physiological spirits of the medical tradition, as previously discussed in Chapter 1.[413] Descartes drew upon the Galenic system of spirits, adapting it to his own mechanical system. He gave particular prominence to the animal spirits, which he understood to be minute particles of matter that were primarily located in the ventricles of the brain, and which flowed back and forth through nerves to carry out the functions of movement and sensation. Later on in his treatise, Descartes stated that the passions were 'nothing other than the vibration imparted by the animal spirits to the little gland in the middle of the brain'.[414] He believed that the pineal gland (which he referred to as the 'little gland in the middle of the brain') housed the human soul. According to Descartes, this was the location where the thinking soul interacted with the unthinking corpuscles of matter that constituted the human body. Hence, for him, it was the speed and direction of the animal spirits hitting the pineal gland which largely determined which passions were felt in the human soul.

However, before a passion arose in the soul, a judgement had to be made about the object which first caused the animal spirits to move. Descartes' new taxonomy of the passions emphasised this point, as it was organised according to the kinds of judgement made about an object during the production of an emotion. For Descartes, there were six fundamental passions: wonder, love, hatred, desire, joy and sorrow.[415] This taxonomy was a significant departure from the well-established Scholastic and Stoic classifications,[416] as was Descartes' decision to list wonder as the first of the passions.[417]

Descartes' system of classification was intricately bound up with his views regarding the physiological underpinnings of the passions. Diverging from the medical orthodoxy of the

[413] See p. 57.
[414] Descartes, *The Passions of the Soul*, 219.
[415] *Ibid*.
[416] See chapter 1, p. 71.
[417] Descartes, *The Passions of the Soul*, 220.

day, he rejected the idea that the heart was the seat of the passions.[418] Rather, he saw the cavities of the brain, and the animal spirits contained in them, as the key location for the production of the passions.[419] This relocation of the seat of the passions was most evident when he discussed wonder, which he maintained arose when an object took an individual by surprise and was judged to be new. Importantly, it appeared before the object was deemed to be beneficial or harmful. Since wonder was not determined by whether an object was good or bad, Descartes stated that 'it has no relationship with the heart or the blood, on which all the good of the body depends, but only with the brain.'[420]

Descartes held that, in contrast to wonder, the passions of desire, love, hatred, joy and sadness, and those that derived from them, significantly affected the heart, blood and other bodily viscera. He suggested that the passions had long been associated with the heart because a 'little nerve that descends to it from the brain' caused people to 'feel' alterations in the organ.[421] When discussing the physiological effects of fear, for example, he described how this particular passion caused spirits in the brain to flow into 'the nerves that contract or expand the orifices of the heart'.[422] And in a later passage documenting how love moves the blood and spirits in the body, he reported that 'the brain sends animal spirits, through the nerves of the sixth pair, towards the muscles of the intestine and stomach'.[423]

The nerves of the sixth pair were one of seven pairs of nerves, recognised since antiquity, which emerged from the brain and which travelled down through the body to innervate its various structures.[424] Descartes had observed the nerves of the sixth pair and 'the little nerve of the heart' during his own animal dissections, and his decision to include these

[418] *Ibid.*, 209.
[419] *Ibid.*, 211.
[420] *Ibid.*, 224.
[421] *Ibid.*, 209.
[422] *Ibid.*, 210.
[423] *Ibid.*, 236.
[424] J. M. S. Pearce, 'Naming the Cranial Nerves: A Historical Note.' *Advances in Clinical Neuroscience and Rehabilitation* 16, No. 5 (2017): 12-13.

structures in his theory of the passions marked a significant departure from traditional medical accounts of emotion.[425] Importantly for Descartes, emotions did not just travel from the brain to the heart and other parts of the body. The physiological changes in the body brought about by the passions were communicated back to the brain and the pineal gland. As a result, changes in the body were able to reinforce and strengthen the experience of an emotion in the soul. Love, for instance, was thought to condense the blood circulating around the body, and this caused large and agitated spirits to enter back into the brain, which in turn reinforced the experience of this passion.[426] From a physiological perspective, therefore, Descartes understood emotions to be generated in the brain; and, with the exception of wonder, they then spread to the heart and the rest of the body. Their peripheral effects in the body were then communicated back to the brain and to the pineal gland, through which they could further influence the workings of the immaterial soul.

With regard to their function in the immaterial soul, Descartes explained that the main role of the passions, brought about by the movement of the animal spirits, was to 'dispose the soul to will those things that nature determines are useful to us, and to persist in so willing'.[427] And though he believed the will to be 'so free of its own nature that it can never be compelled', he also acknowledged that the soul could not entirely control its passions.[428]

In addition to the passions arising in the soul as a result of the motion of the animal spirits in the brain, Descartes also discussed, in Articles 147 and 148 of his treatise, the presence of 'internal emotions' in the soul. He stated that these emotions were not caused by a movement of the animal spirits but instead were 'produced in the soul by the soul itself'.[429] Moreover, he

[425]Annie Bitbol-Hésperiès, 'De toute la nature de l'homme: De *L'homme* à *La description du corps humain*, la physiologie des *Passions de l'âme* et ses antécédents médiceaux', in *Les* Passions de l'âme *et leur réception philosophique*, ed. by G. Belgioioso and V. Carraud (Turnhout: Brepols, 2020), 67-100: 88-89.
[426] *Ibid*.
[427] Descartes, *The Passions of the Soul*, 219.
[428] *Ibid*., 212-214.
[429] *Ibid*., 255.

viewed these emotions as potentially having greater power over individuals as they had the capacity to 'touch us more closely' than the passions instigated by movements of the body.[430]

The distinction Descartes made between the internal emotions (which were produced solely by a judgement in the soul) and the passions of the soul ordinarily understood (which were produced by the motions of the animal spirits in the brain in conjunction with a judgement) reveals the dualistic nature of his vision of the human being. Descartes' philosophical system accommodated immaterial substances such as human souls alongside the mechanistic world of material bodies. This was not, however, the case for all the seventeenth-century mechanical philosophers.

Thomas Hobbes (1588-1679), who is often regarded as the second great pioneer of seventeenth-century theories of emotion, saw reality in exclusively materialist terms and as a result he dismissed the existence of immaterial human souls. When he came to develop his theory of the passions, he did so in the context of his monist and materialist system of mechanical philosophy. Hobbes first wrote about the passions in *The Elements of Law*, which he circulated in manuscript in 1640.[431] He also addressed the topic in many of his later works, including *De Cive* (1642), *Leviathan* (1651), *De Corpore* (1655) and *De Homine* (1658).[432]

In his earliest written account of the origin of human emotions, Hobbes described how a conception in the mind, which he saw as nothing other than a 'motion in some internal substance of the head', would proceed to the heart, where it helped or hindered an individual's vital motion.[433] Hobbes would later identify this vital motion with the circulation of blood

[430] Descartes, *The Passions of the Soul*, 256.
[431] Part of the manuscript was later printed without Hobbes' permission under the title *Humane Nature: Or, The fundamental Elements of POLICIE. Being a DISCOVERIE Of the Faculties, Acts, and Passions of The Soul of Man, from their original causes, According to such PHILOSOPHICAL PRINCIPLES as are not commonly known or affected* (London: printed by T. Newcomb, 1649).
[432] See supplementary document on 'Hobbes on the Emotions' in Schmitter, '17th and 18th Century Theories of Emotion', in *The Stanford Encyclopedia of Philosophy* (Summer 2021 Edition), ed. by E. N. Zalta, https://plato.stanford.edu/entries/emotions-17th18th/LD3Hobbes.html
[433] Hobbes, *Humane Nature: Or, the fundamental Elements of POLICIE*, 69.

around the arteries and veins.[434] If the bodily motions brought about by a conception in the head helped this vital motion, then the result would be delight, contentment or pleasure. If, however, a conception in the head brought about motions that weakened or hindered the vital motion, then pain and hatred would arise. Hobbes described states such as pleasure and pain as nothing 'but motion about the heart', in the same way that conceptions were 'nothing but motion in the head'.[435] He stated:

> This motion, in which consisteth *pleasure* or *pain*, is also a *solicitation* or provocation either to draw *near* to the thing that pleaseth, or to *retire* from the thing that displeaseth; and this solicitation is the *endeavour* or internal beginning of *animal* motion, which when the object *delighteth*, is called *appetite*; when it *displeaseth* it is called *aversion*.[436]

The notion of endeavour, or *conatus* in Latin, would go on to form an important part of Hobbes' general theory of matter, where it signified the striving of a body to resist change from an external source and its inclination to enhance its own power.[437] It also lay at the root of his theory of emotion, which in turn lay at the root of his theory of human action.

Hobbes would elaborate on his notion of endeavour in *Leviathan* (1651), where he provided an account of the passions in the larger context of the generation of voluntary motion in living beings.[438] Here, he explained how voluntary motion (or animal motion) was driven by appetite and aversion. For Hobbes, an appetite or aversion arose in an individual when an object in his environment struck his sense organs. These organs would transmit their newly

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[434] See Thomas Hobbes, *The English Works of Thomas Hobbes*, *Volume. 1*, ed. by W. Molesworth (London: John Bohn, 1839), 407.
[435] Hobbes, *Humane Nature: Or, the fundamental Elements of POLICIE*, 70.
[436] *Ibid*., 70-71.
[437] On the notion of endeavour in Hobbes see Douglas Jesseph, 'Hobbes on "Conatus": A Study in the Foundations of Hobbesian Philosophy.' *Hobbes Studies* 29, No. 1 (2016): 66-85; Deborah Brown, 'Power and Passion in Hobbes, Descartes, and Spinoza', in *The Routledge Companion to Seventeenth Century Philosophy*, ed. by D. Kaufman (New York, NY: Routledge, 2018), 337-344.
[438] Thomas Hobbes, *Leviathan, or the Matter, Forme & Power of a Commonwealth, Ecclesiasticall and Civill* (London: printed for Andrew Crooke, 1651), 23-29.

acquired motions to the imagination, which was located in the middle of the brain. This in turn provided the small, almost indiscernible, beginnings of animal motion, which Hobbes called endeavour. The endeavour towards something was termed appetite, and the endeavour 'fromward' something was called aversion.[439] Hobbes termed the consideration of appetites and aversions deliberation. When the process of deliberation finally came to an end and an individual decided to act, the last appetite or aversion immediately preceding the action was, for Hobbes, 'that wee call the will'.[440] Therefore, according to him, the will was not some immaterial power that had the ability to constrain the bodily passions; instead, it was merely the final step in a series of thoughts that preceded bodily action.

The theories of emotion developed by Descartes and Hobbes demonstrate the different ways the passions could be conceptualised in the context of the new mechanical philosophy. As we have seen, Digby was familiar with the ideas of both these thinkers when he composed his *Two Treatises* at the start of the 1640s. When he came to develop his own system of philosophy, he followed Descartes' example and constructed a dualistic philosophical system in which human bodies were part of the mechanistic natural world, while immaterial souls were distinct from it. Digby's views about the nature of the human body and soul, however, were shaped not only by his philosophical theories but also by his religious convictions, which will now be examined.

Reformed Catholic eschatology and the passions of the soul

The Catholic priest Thomas White (1593-1676) played an important role in Digby's spiritual and intellectual development. The pair first met in the 1630s, when Digby was in the process

[439] *Ibid*., 23.
[440] *Ibid*., 28. For a helpful analysis of Hobbes' account of the passions in *Leviathan* see James, *Passion and Action*, 133-136.

of returning to the Catholicism of his birth, and the two would go on to form a friendship that lasted for decades.[441] White was head of the Blackloists – Blacklo was White's alias – a group of English Catholic thinkers whose aim was to bring about some form of reconciliation between Canterbury and Rome.[442] As part of their ecumenical efforts, the Blackloists sought to develop a reformed Catholic theology that was amenable to English Protestant thought. In their attempts to persuade others of the validity of their doctrines, the Blackloists referred to the authority of Scripture and church tradition; but they also aimed to justify their ideas through the power of reason.[443] White was especially keen on using philosophical arguments to support his theological views, as is demonstrated by the title of one of his later works: *Religion and Reason, mutually corresponding and assisting each other*.[444]

As a member of the Blackloist group, Digby was keen to use philosophical arguments to justify his positions on certain religious topics. In his *Two Treatises* of 1644 Digby developed a mechanical system of natural philosophy, not for its own sake, but to prove the immortality of the human soul. This intention was made clear in the work's full title: *Two Treatises in the One of which, the Nature of Bodies; In the Other, the Nature of Mans Soule, is Looked Into: In Way of Discovery, of the Immortality of Reasonable Soules.* Digby restated the purpose of the work in his dedicatory epistle, in which he indicated that he studied corporeal things insofar as 'the knowledge of them serveth to the knowledge of the soul'.[445]

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[441] On the relationship between Digby and White see John Henry, 'Atomism and Eschatology: Catholicism and Natural Philosophy in the Interregnum.' *The British Journal for the History of Science* 15, No. 3 (Nov. 1982): 211-239: 217; Dorothea Krook, *John Sergeant and his Circle: A Study of Three Seventeenth Century English Aristotelians* (Leiden: Brill, 1993); Sarah Hutton, *British Philosophy in the Seventeenth Century* (Oxford: Oxford University Press, 2015), 81-85; Jill Kraye, 'British Philosophy Before Locke', in *A Companion to Early Modern Philosophy*, ed. by S. Nadler (Oxford: Blackwell, 2002), 283-297: 299.

[442] See Stefania Tutino, *Thomas White and the Blackloists: Between Politics and Theology during the English Civil War* (Aldershot: Ashgate, 2008).

[443] Henry, 'Atomism and Eschatology', 223.

[444] Thomas White, *RELIGION AND REASON mutually corresponding and assisting each other. FIRST ESSAY. A Reply to the vindicative Answer lately publisht against a Letter, in which the sence of a Bull and Council concerning the duration of Purgatory was discust* (Paris: s.n., 1660). When a critic commented that it was not possible to know where White's philosophy ended and his theology began, White replied: 'I see not how you could give a schollar a greater praise'; see Henry, 'Atomism and Eschatology', 217.

[445] Digby, *Two Treatises*, 'To my sonne Kenelme Digby'.

Around the time Digby was writing his works, different Christian groups in England were adopting widely diverging views regarding what happened to the human soul after death. In his appeal to philosophy, and in particular his mechanical system of natural philosophy, Digby argued on the grounds of reason that the soul was immortal, that it did not experience purgation in the afterlife and that the choices someone made on earth affected whether they would be saved or damned.

The idea that the human soul perished with the body at the moment of death and that both would be resurrected at the final judgement – an idea known as Christian mortalism – was a position promoted by Martin Luther and taken up by a number of English thinkers in the seventeenth century, including Thomas Hobbes and John Milton.[446] In his insistence on the immortal nature of the soul, Digby was trying to refute this increasingly popular doctrine. As well as opposing the view taken by Luther, Digby also challenged the traditional Catholic position on the afterlife by denying the existence of purgatory. For Digby, the soul was unable to undergo any sort of transformation once it had left the body – a view which essentially undermined purgatory's main function. In addition to deviating from the mainstream Catholic position, Digby's belief that a person's behaviour in the present life could affect their fate after death also clashed with Calvinist teachings about predestination. Digby's highly unorthodox views about the nature and fate of the soul were ultimately meant to dispel any confusion about the matter and to offer a set of ideas which could unite warring Christian factions. His thoughts on the immortality of the soul, the nature of matter and the passions an individual experienced (in this life and the next) were all therefore strongly influenced by his efforts to reform Catholicism for ecumenical ends.

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[446] On Christian mortalism see Norman T. Burns, *Christian Mortalism from Tyndale to Milton* (Cambridge MA: Harvard University Press, 1972); Bryan W. Ball, *The Soul Sleepers, Christian Mortalism from Wycliffe to Priestley* (Cambridge: James Clarke & Co, 2008); Michelle Pfeffer, 'Christian Materialism and the Prospect of Immortality', in *Science without God? Rethinking the History of Scientific Naturalism*, ed. by P. Harrison and J. H. Roberts (Oxford: Oxford University Press, 2019), 148-161.

By the mid-seventeenth century, when Digby was offering rational proofs for the immortality of the human soul, the topic had already been a contested issue for well over a century. In 1513, at the Fifth Lateran Council, Pope Leo X issued a papal bull which defended the position that each human being possessed an immortal soul. Around the time of the council, some philosophers maintained that the immortality of the soul could not be demonstrated through reason and that this doctrine could only be justified by faith. In response to the decree issued by Leo X, however, other philosophers attempted to give a rational demonstration of the immortality of the human soul; and for nearly two centuries individual immortality remained a pressing philosophical problem.[447] When Digby came to address the problem in the 1640s, he attempted to prove the soul's immortal nature by deploying his newly constructed mechanical philosophy of nature. To do this, he aimed to provide an exhaustive account of bodies and their properties based on mechanical principles.[448] This was, indeed, the objective of the first of his *Two Treatises*, in which he explained change in natural bodies in terms of the rearrangement of corpuscles of matter in space. Nevertheless, Digby made it clear that when it came to the operations of the rational soul, its particular functions were inexplicable in terms of the association or disassociation of corpuscles. He thereby set firm limits to what the mechanical philosophy could and could not explain. Digby asserted that change was a property of material bodies alone and argued that a soul, once it had been separated from the body at death, could not undergo dissolution or change.[449] His philosophical system was therefore, like that of his contemporary Descartes, strictly dualistic. Moreover, by denying that a disembodied soul could

[447] On this debate see Lorenzo Casini, 'The Immortality of the Soul', in *Philosophy of Mind in the Late Middle Ages and Renaissance*, ed. by S. Schmid (London: Routledge, 2018), 229-249.
[448] Digby drew on the Aristotelian *minima naturalia* tradition to create his idiosyncratic system of natural philosophy which combined Aristotelian thought with new mechanical principles. On *minima naturalia* see John Murdoch, 'The Medieval and Renaissance Tradition of Minima Naturalia', in *Late Medieval and Early Modern Corpuscular Matter Theories*, ed. by C. Luthy, J. E. Murdoch and W. R. Newman (Leiden: Brill, 2001), 91-131. On Digby's Aristotelian mechanical philosophy see John Sutton, 'Soul and Body in Seventeenth-Century British Philosophy', in *The Oxford Handbook of British Philosophy in the Seventeenth Century*, ed. by P. Anstey (Oxford: Oxford University Press, 2013), 292-295.
[449] Digby's argument is summarised in MacDonald, *Kenelm Digby's Two Treatises*, 30-31.

experience any sort of change, Digby was able to use his philosophical system to argue rationally against the notion of purgatory and the idea that the soul could be purified of its sins after its departure from the body. His insistence on the immortality of the soul, the capacity for change in the natural world and the absence of change in the afterlife are all elements that need to be taken into account in order to appreciate fully Digby's views about the nature of the passions.

Digby's writings on the passions were often bound up with his ideas about the nature of human salvation and the misery or joy an individual would inevitably experience in the afterlife.[450] Many times over the course of his writing career he addressed the question of what happened when a person died and the accompanying issue of post-mortem reward and punishment. In his first published work, *A Conference with a Lady About Choice of Religion* (1638), he attempted to set out his views on the topic.[451] In the opening pages of the text, he discussed the notion of beatitude in the afterlife, describing it as 'an intire, perfect, and secure fruition of all such objects as one hath vehement affections unto, without mixture of anything one hath aversion from'.[452] By associating 'vehement affections' and 'aversions' with the idea of beatitude, Digby indicated that the passions had an important role to play in relation to the fate of the soul in the afterlife. This association was made clear over the course of the text, as Digby explained how the 'vehement affections' the soul would feel in the world to come were directly related to the emotions it had experienced when still inhabiting a body.

According to Digby, any affections which the soul felt before a person died remained with them permanently: 'whatsoever judgment the soule once frameth in this life, that judgement and that affection will perpetually remaine in the soul'.[453] Digby viewed the soul as

[450] On the wider context of Digby's interest in salvation see Dilucia, 'Salvation and Sir Kenelm Digby's Philosophy of the Soul'.
[451] Kenelm Digby, *A Conference with a Lady About Choice of Religion* (Paris: [Widow of J. Blagaert], 1638).
[452] *Ibid*., 7.
[453] *Ibid*., 17.

having an ‘infinite capacity’ to retain a trace of every experience it had undergone. Consequently, the soul preserved a memory of all the affections a person felt when they were alive.[454] When a person died, these latent emotions became manifest:

> But as soone as the soule shall be released out of the body (which is like a darke prison to wall it in) then she will at one and the same instant actually knowe and love all those things she knewe, and loved in the body; with only this difference, that her knowledges will then be much more distinct and perfect and her affections much more vehement then they were in this life.[455]

This quotation illustrates Digby’s view that there was a direct link between the ultimate state of a soul and the affections it had felt when it was still in a body. He felt that people who had strong and predominant affections towards sensible and material objects during their lifetime would experience misery in the afterlife. This state of misery, moreover, was eternal and could never be ‘changed or blotted out’.[456] Consequently, such souls would ‘pine awaye … with perpetuall anguish and despaire of what they so impatiently, and enragedly desire and never can obtayne’.[457] To avoid this misery in the next life, Digby advised individuals to deny their ‘senses the content and satisfaction that they naturally desire in corporall things’, adding that ‘we must withdrawe our affections from all materiall objects’.[458]

Digby’s view that the passions someone experienced during their time on earth affected the fate of their soul in the afterlife was restated in his *Observations Upon Religio Medici* (1643). This work, written when Digby was briefly imprisoned during the Civil Wars, was a commentary on Thomas Browne’s recently published *Religio Medici* (1642), a meditative

[454] *Ibid*., 19-20.
[455] *Ibid*., 20-21.
[456] *Ibid*., 28.
[457] *Ibid*., 28.
[458] *Ibid*., 36.

essay in which Browne expressed his professional and religious beliefs.[459] In a passage discussing the immortal nature of souls, Digby reaffirmed his position that any misery a soul experienced after it left the body was a consequence of the passions it had felt while still in the body. For Digby, the misery of a damned soul 'is a necessary effect of the temper it is in, when it goeth out of the *Body*'.[460] Committed to the idea that 'in the state of eternity there is no succession, no change, no variety', he restated his position that damned souls must remain in a state of misery 'unvariably for all eternity'.[461]

According to Digby, the fate of a person's soul was determined once and for all at the moment of their death. Prior to this, however, an individual had the ability to influence what their eternal destiny would be by successfully managing their passions. He viewed a long life as a blessing, precisely because it gave an individual time to 'vent and boyle away the unquietnesses and turbulencies that follow our passions'.[462] Moreover, old age allowed a person to wean themselves 'from carnall affections', enabling them to finally to drop 'with ease and willingnesse, like ripe fruit from the Tree'.[463] At a later point in the work, Digby explained how 'carnal souls' which had been prematurely separated from their bodies and which yearned to be joined with them again, often reappeared in cemeteries and charnel houses.[464] These departed souls, which had not been purged of their passions, might therefore reappear as ghosts.

Digby was keen to let his readers know that a person could improve the fate of their soul if they paid attention to their passions and managed them responsibly. Although he generally thought that all impressions and affections a person experienced tended to remain in the soul, he also believed that individuals could 'expell' and 'obliterate' certain affections from

[459] Thomas Browne, *Religio Medici* (London: printed for Andrew Crooke, 1642).
[460] Digby, *Observations Upon Religio Medici*, 13.
[461] *Ibid*., 13, 16-17.
[462] *Ibid*., 44.
[463] *Ibid*, 44-45.
[464] *Ibid*., 46.

the soul if they deliberately mobilised opposing passions.[465] For instance, Digby believed that the act of contrition, which generated sorrow and hatred for past sins, could be used as a technique to improve the condition and destiny of the soul.[466] As people had the ability to control their own affections, Digby lamented that condemned souls might have experienced the inestimable and infinite good if only they had 'remained but in their right senses, and governed themselves according unto Reason'.[467] Their loss, in other words, was 'meerely by their own fault'.[468] Conversely, Digby celebrated the idea that a soul 'with affections settled upon intellectual goods as *Truth*, *Knowledge* and the like' and which had developed a dislike for the pleasures of the world would ultimately experience 'more contentment, more joy, more true happiness then it is possible for a heart of flesh … to comprehend'.[469]

Digby's ideas about the passions and their relation to the fate of the soul were echoed in a work by his mentor and close associate Thomas White, entitled *The Middle State of Souls from the Hour of Death to the Day of Judgment* (1659).[470] For White, this middle state lasted from the instant the soul left the body at death to the moment it regained a resurrected body at the last judgment. In this intervening disembodied state, White, following Digby, explained how the soul experienced an internal gladness or suffering, which ultimately resulted from the judgements and affections it experienced when it was embodied.[471] Only once the soul was reunited with the body at the last judgement, could it then experience the physical torments of hellfire or be admitted to heaven.[472]

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[465] *Ibid*., 60.
[466] *Ibid*.
[467] *Ibid*., 63.
[468] *Ibid*.
[469] *Ibid*., 65.
[470] Thomas White, *The Middle State of Souls from the Hour of Death to the Day of Judgment* (London: s.n., 1659). This work was originally published in Paris in Latin as *Villicationis suae de medio animarum statu ratio episcopo chalcedonensi reddita à Thoma Anglo, ex Albiis East-Saxonum* (Paris: s.n., 1653).
[471] Henry, 'Atoms and Eschatology', 226.
[472] *Ibid*., 226-227.

One of the main reasons why Digby paid so much attention to the passions was because they were inextricably bound up with the question of salvation and the fate of the individual in the afterlife. In his attempts to develop an ecumenical eschatology, he reframed the discourse on the passions as it stood around the middle of the seventeenth century. In his various works, Digby argued that the passions experienced by someone over the course of their lifetime left an enduring mark on their soul. During their time on earth, it was possible for someone to direct their passions towards intellectual goods or towards less worthy material pleasures. While the soul was still attached to a body, it had the ability to experience a host of changing passions. This was because change was a property of the physical realm; and when the soul was in the body, it remained immersed in matter. When, however, a person died, the soul separated from the body and could no longer undergo change, since it had left the material domain. Because change was a feature solely of the physical world, a soul separated from a body could not undergo purgation. The eternal state of a soul in the afterlife was therefore determined by the passions it had previously experienced when it was in a body. In this way, Digby used his mechanical natural philosophy, the dualistic worldview that accompanied it and his theory of the passions to defend his new vision of the afterlife.

Digby was not only intensely interested in the passions of departed souls but was also keen to understand the physical basis of the passions in the living body. In the *Two Treatises* he sought to outline the anatomy and physiology underlying bodily emotion, and it is to this topic that we now turn.

Anatomy, physiology and the passions

Digby's *Two Treatises*, as the title suggests, is divided into two main sections. The full title of the work makes it clear that the objective of the first part is to examine *The Nature of Bodies*, while the second part aims to investigate *The Nature of Mans Soule*. The division into two

sections reflects the dualism that lay at the heart of his philosophical system. In the first treatise, Digby explained how quantity, or extension, was the essential feature of bodies and described how change in the physical world was brought about by the rearrangement of corpuscles of matter in space. He also offered explanations for a wide variety of natural phenomena, including such topics as gravity and the nature of light and vision. In the second treatise, Digby aimed to show how the soul's various operations, such as apprehension, thinking and discoursing, were the activity of an immaterial substance.[473]

Digby addressed the passions in both parts of the *Two Treatises*. In the second section, which centred on the workings of the immaterial soul, he briefly discussed the relationship between reason and the passions, highlighting reason's ability to control the passions – even if it was not always successful in its attempts to do so.[474] In the first part of the treatise, which focused on the passions in the context of the human body, Digby provided a detailed description of the physiological basis of emotion. In making a clear distinction between the psychological and physiological aspects of the passions, Digby took an approach similar to the one later taken by Descartes in *The Passions of the Soul*. Yet it was Descartes who influenced the thought of Digby (rather than the other way round), as is clearly seen in the table of chapters at the beginning of the *Two Treatises*, which mentions 'Monsieur des Cartes' on multiple occasions.[475]

Digby outlined the physiological basis of the passions in Chapters 34 and 35 of the first part of the *Two Treatises*.[476] In these two chapters, he described the bodily processes underlying the generation of voluntary motion in human beings. His investigation of the passions in the *Two Treatises* was therefore part of a wider effort to understand the nature of human action.

[473] For a good summary of the contents and background of this work see MacDonald, *Kenelm Digby's Two Treatises*, 5-34.
[474] Digby, *Two Treatises*, 389-393.
[475] *Ibid*., 'A Table shewing what is contained in the severall Chapters and Sections'.
[476] *Ibid*., 292-306.

Digby did not possess any formal training in medicine; however, his deep interest in anatomy and the workings of the human body played a large part in shaping his account of human passion and action.

Digby viewed voluntary motion as originating in the brain; hence, his investigation into the nature of human action began with a description of the material composition of the brain. After initially likening its appearance to that of worms and maggots, he explained that the brain and its associated nerve structures were fundamentally composed of 'stringes'.[477] These strings contained spirits; and voluntary motion came about when spirits in the brain passed through nerves to enter various muscles. The entry of the spirits into the muscles caused them to swell up, and it was this action that ultimately brought about bodily movement.[478] After providing a very brief explanation of how voluntary movement originated in the brain, Digby then set himself the more ambitious task of detailing the sequence of steps that took place when an object in a person's environment provoked them to perform a certain action. The first step in this process was the apprehension of an external object by an individual's sense organs. Digby explained that, after an object 'striketh at the senses dore', it went into the brain and mingled with the spirits it found there.[479] The object then either conformed and agreed with the 'nature and temper' of the spirits in the brain, or it did not; accordingly, the object apprehended was 'eyther pleasing or displeasing to the living creature'.[480] The apprehension of a pleasing or displeasing object in the brain was then sensed by the heart, and it was in this moment that the first stirrings of passion arose.

Digby explained that the heart could sense an object perceived in the brain because it was joined to it 'by straight and large nerves, full of strong spirits which ascend from the

[477] *Ibid*., 288.
[478] *Ibid*., 289.
[479] *Ibid*., 293.
[480] *Ibid*. Digby also mentions that the object may be seen as indifferent. In this case, the object 'reboundeth to the circle of memory' and is associated with some other pleasing or displeasing thing. If the object still remains indifferent, it is of little use to animals; but in humans it can be stored in the memory for recall at a future date.

hart'.[481] He further noted that the apprehension of a pleasing or displeasing object in the brain caused 'the heart, or rather the spirits about it' to become dilated or compressed.[482] The dilation of spirits around the heart was brought about by the apprehension of a pleasing object, and this gave rise to the passion of pleasure. The compression of spirits around the heart was brought about by the apprehension of a displeasing object, and this gave rise to passion of grief. Although he never offered a formal taxonomy of the passions, Digby viewed pleasure and grief as fundamental passions because of their intrinsic relationship to the dilation and compression of the spirits. He stated that pleasure never failed to accompany 'those motions which are good as *Joy*, *Love*, *Hope*',[483] and that grief was 'common to *sorrow*, *feare, hate* and the like'.[484]

Keen to explain how passions brought about certain actions, Digby noted that when passions were aroused in a moderate fashion, a proportion of spirits travelled from the heart to the brain and then through the nerves to the muscles to coordinate various actions. For instance, when the passion of hope arose, the spirits travelled from the heart, via the brain and nerves, to the muscles causing an individual to move towards a pleasing object. Conversely, fear resulted in the spirits travelling from the heart to the muscles in a way that caused a person to move away from a displeasing object. Digby also pointed out that certain passions originated from a mixture of others. In the case of anger, he explained that this emotion arose when hope and fear were combined, and he noted that individuals in the grip of this passion often sought to avoid a problematic object by 'embracing and overcoming' it.[485] Recognising his inability to give a full explanation of how each of the passions instigated such a diverse range of bodily motions, he decided this task was better left to the 'Physitians and Anatomistes'.[486]

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[481] *Ibid*., 293.
[482] *Ibid*.
[483] *Ibid*., 294.
[484] *Ibid*.
[485] *Ibid*., 293.
[486] *Ibid*., 294.

Digby's medical approach to investigating emotions was even more pronounced in Chapter 35 of the first part of the *Two Treatises*, in which he tried to uncover the 'materiall instruments of knowledge and passion'.[487] The chapter begins with a detailed description of the structure of the brain, identifying the septum lucidum (a skin-like membrane hanging near the middle of the brain) as an especially important feature. Arguing against Descartes' decision to give priority to the pineal gland, Digby claimed that it was the septum lucidum that housed the common sense and fancy.[488] He then produced seven arguments as to why this was the case, including the suggestion that, because the septum lucidum had two sides, it was better suited to receive impressions from sense organs on both sides of the head. He further noted that all the nerves that emerged from the brain did so very close to the septum lucidum and surmised that it was probably through these nerves that motions from the fancy travelled to the heart. Digby identified two nerves that emerged from the brain which he identified as 'the sixt paire or couple' as the prime candidates for transmitting information from the brain to the heart.[489] He realised that the roots of these nerves consisted of many tiny branches which then grouped together to form two great bundles, which travelled down towards the centre of the body. Digby then stated that a branch of the nerves of the sixth pair 'reacheth to the hart; not only to the Pericardium, as Galen thought, but even to the very substance of the hart itself, as later Anatomistes have discovered'.[490] When referring to later anatomists, he almost certainly had in mind Descartes, who discussed the little nerve of the heart in his early unpublished treatise *L'Homme*, which Digby is likely to have read in manuscript around the time he met Descartes.[491]

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[487] *Ibid*., 296.
[488] *Ibid*.
[489] *Ibid*., 297.
[490] *Ibid*., 297-298.
[491] See René Descartes, *Treatise of Man*, ed. by T. Steele Hall (Cambridge MA: Harvard University Press, 1972), 70, 76.

The transmission of spirits 'from the fantasy or *septum lucidum*, upon the little rootes of the nerves of the sixt couple' to the heart signalled the first steps in the generation of emotion.[492] But for Digby, the true essence of a passion lay in the physiological changes brought about in and by the heart after the initial communication from the brain. The closest Digby came to offering a clear definition of a passion was the statement: 'for passion is nothing else, but a motion of the blood and spirits about the hart; and is the preparation or beginning of the animals working'.[493] For Digby, the passions were primarily located in the heart, and the main way they prepared animals (and humans) to begin their 'working' was by sending spirits from the heart back to the brain; for the brain was the organ that ultimately coordinated the actions of the muscles. Importantly, the initial downward motion of the spirits from the brain to the heart that led to a passion was followed by an immediate upward motion of the spirits from the heart back to the brain once a passion arose. And it was through the return movement of spirits from the heart back the brain, and from there to the rest of the body, that the passions carried out their effects.

Digby described many of these effects, in fine anatomical detail, in a subdivision of Chapter 35 entitled 'Of severall other effects caused naturally in the body by passions'.[494] He began by explaining how, when a passion arose in the heart, it caused spirits to move from there up through the arteries and towards the brain. He then described how these spirits entered the brain through a branching network of arteries called the '*plexus choroides'*.[495] Once in the brain, the spirits thickened, became heavy and moved down into a part of the brain called the '*medulla spinalis'*.[496] Many of the nerves that innervated different parts of the body arose from this structure. According to Digby, the bottom part of the medulla spinalis sent nerves to the

[492] Digby, *Two Treatises*, 298.
[493] *Ibid*., 306.
[494] *Ibid*., 300.
[495] *Ibid*.
[496] *Ibid.*, 301.

body's lower limbs, whereas the upper part sent nerves to the upper limbs. The passion of fear sent only a small quantity of spirits from the heart to the brain; and, because the spirits in the brain tended to move downward due to their weight, they sank to the bottom of the medulla spinalis and activated only the lower limbs. This explained why fear caused a person or animal to run away from whatever threatened it. When, however, the passion of hope arose alongside fear, then a greater number of spirits journeyed from the heart to the brain. The larger quantity of spirits meant that the nerves at the top of the medulla spinalis would be activated, enabling a person to use their upper limbs to defend themselves when faced with a threat.

For Digby, the whole process behind an individual moving towards or away from an object could essentially be explained in mechanical terms and he claimed that 'all the naturall operations of the body, do follow by naturall consequence out of the passions of the mind: without needing to attribute discourse or reason, eyther to men or beastes to performe them'.[497] Digby was eager to show that voluntary motion in animals and humans could occur without the intervention of a rational soul. He pointed out that although in some cases actions may seem to 'flow from a source of intelligence', in reality 'they all proceed from the due ranging and ordering of quantitative partes'.[498] Digby viewed the different steps that led an animal or person to perform a voluntary action as a kind of 'circuite'.[499] The first step in the circuit was the appearance of an object in the environment of an individual's senses. The motion stirred in the senses by the object then travelled to the common sense and fantasy and down towards the heart. Further motion stirred up in the heart by the passions then returned to the brain, which set various parts of the body to work, so that an individual moved towards, or away, from 'the object, that first caused all this motion'.[500]

[497] *Ibid*., 301-302.
[498] *Ibid*., 302.
[499] *Ibid*., 306.
[500] *Ibid*.

Digby understood passions to be at the core of the process that caused an individual to use their muscles to move towards, or away, from objects in their environment. However, the passions could also instigate a wide range of involuntary physiological changes in the body. He noted that passions tended to alter an individual's pulse, stating that 'Physitians do tell us, that every passion hath a distinct pulse'.[501] Passions could make a pulse quick or slow, regular or irregular and equal or unequal by changing the heart's motions and by altering the quantity of spirits leaving the heart. Fear, for instance, made the pulse beat in a 'quick, hard, and unequall' manner.[502] Digby also recognised that passions could initiate other involuntary bodily processes such as laughter and salivation.[503] He did not address the issue of how passions might improve or hinder a person's health in any great detail; however, he did observe that hope was 'the least hurtfull of all the passions' and the one most likely to prolong a person's life.[504]

Towards the end of his discussion of the passions, Digby turned his attention to the diaphragm, which, he argued, ultimately enabled a person to feel the passions that arose in their heart. He noted that one of the branches of the nerves of the sixth pair entered directly into the diaphragm, making it a highly sensitive organ. As the diaphragm was tightly fastened to the pericardium, Digby believed that any motion taking place in the heart would be transmitted to the diaphragm.[505] Consequently, when a passion arose in the heart, the resulting motions were 'imprinted and ecchoed' in the diaphragm, and these motions were carried back to the brain by the nerves of the sixth pair. After outlining the diaphragm's role in the perception of emotion, he concluded: 'thus it cometh about, that we feele and have sensation of all the passions, that are moved in our hart'.[506]

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[501] *Ibid*., 299.
[502] *Ibid*., 300.
[503] *Ibid*., 302.
[504] *Ibid*., 300.
[505] *Ibid*., 302.
[506] *Ibid*., 303.

In his account of the passions in the *Two Treatises*, Digby paid close attention to the different structures of the human body that were involved in the production of emotion. The septum lucidum, medulla spinalis, nerves of the sixth pair, heart and diaphragm all played an important part in his theory of the passions, showing that his theory of the passions was influenced by his interest in medicine.

The mechanical philosophy in England and the transmission of emotions

In the *Two Treatises* of 1644, Digby described the origin and effects of the passions within the human body. In a work published fourteen years later, *A Late Discourse … Touching the Cure of Wounds by the Powder of Sympathy*, he would go on to write about how emotions could be transmitted from one body to another. In this work Digby not only addressed the topic of the transmission of emotions between different people inhabiting the same environment but also discussed the mechanisms by which a pregnant woman's emotions could spread and leave their mark on a foetus in her womb.

In *A Late Discourse* Digby dealt head on with the question of action at a distance. The primary aim of the text – which was initially delivered as a lecture at a scientific academy in Montpellier – was to provide a rational explanation of the workings of a powdered version of the weapon salve.[507] Typically, the weapon salve was applied to an object that stood apart from the wound it was meant to heal, and its curative effects were thought to be brought about by action at a distance. The weapon salve was a cure that had strong associations with Paracelsian medicine; and because its effects came about by action at a distance, it had links to natural magic. In *A Late Discourse*, Digby set himself the challenge of demystifying the workings of

[507] For an overview of debates about the weapon salve see Sietske Fransen, 'Weapon Salve in the Renaissance', in *Encyclopedia of Renaissance Philosophy*, ed. by M. Sgarbi (Cham: Springer, 2018), https://doi.org/10.1007/978-3-319-02848-4_1109-1

the powder of sympathy by explaining how it functioned in the context of his mechanistic physics.

Near the beginning of the treatise, Digby let his readers know that his objective was to explain 'how the Powder, which they commonly call the Powder of Sympathy, doth naturally, and without Magick, cure wounds without touching them'.[508] At the heart of his explanation of how the powder worked was his view that all natural bodies emanated a stream of atoms into the atmosphere: 'every body sends forth a continuall emanation of atomes out if it self'.[509] It was this emanation of atoms from an object which came into contact with distant bodies and brought about a wide range of effects. Despite Digby's claim to leave magic aside, his view that bodies contained radiative powers was itself a modification of an idea that could be traced back to the tradition of natural magic. Stephen Clucas has recently pointed out the important role of 'radiation theory' in different attempts to establish new natural philosophical systems in the seventeenth century.[510] This theory ultimately derived from the writing of al-Kindi in the ninth century and was later adopted by medieval thinkers such as Roger Bacon and Robert Grosseteste and by Renaissance authors such as Marsilio Ficino and John Dee. It proposed that all bodies (both celestial and sublunary) emitted rays outwards from a central point to produce a sphere of activity.[511] As Clucas has noted 'in the second half of the seventeenth century, when natural philosophers were moving beyond the idea of mechanical collision as a universal causal explanation for natural phenomenon, radiative force was able to supply a possible alternative'.[512] Clucas has also shown that Kenelm Digby was one of the thinkers of the period who included this notion of radiative force in his system of physics and that it was this idea

[508] Digby, *A Late Discourse*, 3.
[509] *Ibid*., 86.
[510] Stephen Clucas, 'Astrology, Natural Magic and the Scientific Revolution', in *The Cambridge History of Philosophy of the Scientific Revolution*, ed. by D. M. Miller and D. Jalobeanu (Cambridge: Cambridge University Press, 2022), 167-183.
[511] See previous discussion at p. 80.
[512] *Ibid*., 182.

which lay at the basis of his explanation of how the powder of sympathy could bring about its actions on distant objects without appearing to touch them.

In addition to drawing on ideas from natural magic in *A Late Discourse*, Digby also made explicit references to notions from the alchemical tradition. At one point in the text, Digby agreed with position put forward by 'the Chymists' that there was a 'universal spirit which animates and perfects all that hath existence in this sublunary World'.[513] In his final publication, *A Discourse Concerning the Vegetation of Plants*, he would go on to quote the famous opening lines of the Emerald Tablet (Tabula Smaragdina) and stated that the universal spirit was 'homogeneall to all things' and, in effect, 'the Spirit of Life' in all plants and animals.[514] Digby's insistence on active and animating principles as part of his system of physics seems to be at odds with the mechanistic system he set out in the *Two Treatises*. However, recent scholarship on the mechanical philosophy in seventeenth-century England suggests that this combination of mechanical and non-mechanical perspectives was, in fact, typical of the period – in contrast to the strict forms of the mechanical philosophy put forward by Continental thinkers such as Descartes.[515] Richard Westfall was one of the first scholars to draw attention to this aspect of seventeenth-century English science when he stated that Isaac Newton constructed his system of natural philosophy 'by wedding the two traditions, the hermetic and the mechanical'.[516] Antonio Clericuzio has since written about the presence of active principles in the mechanical philosophy of Robert Boyle; and Daniel Garber has observed that when Boyle started using the term 'mechanical philosophy', he explicitly made

[513] *Ibid*., 142. On spirits within the alchemical tradition see p. 86.
[514] Kenelm Digby, *A Treatise Concerning the Vegetation of Plants* (London: Printed by J. C. for John Dakins, 1661), 69-70. ("That what is above, is like that what is below. The Sun is the Father, the Moon is the Mother; the Earth is, the Matrix wherein this product is hatched; and the Aire conveyed it thither").
[515] See John Henry, 'Occult Qualities and the Experimental Philosophy: Active Principles in Pre-Newtonian Matter Theory.' *History of Science* 24, Issue, 4 (1986): 335-381. See also Stephen Clucas, 'The Atomism of the Cavendish Circle: A Reappraisal.' *The Seventeenth Century* 9, Issue 2 (1994): 247-273; Levitin, *Ancient Wisdom in the Age of the New Science*, 329-330; Wang, *Occult Principles in the Making of Newton's Natural Philosophy*, 21-27.
[516] Richard S. Westfall, 'Newton and the Hermetic Tradition', in *Science, Medicine and Society in the Renaissance* 2, ed. by A. G. Debus (London: Heinemann, 1972), 183-198: 195.

room for the possibility of the presence of active principles in matter.[517] Given this trend, we can see that Digby was able to incorporate active and animating principles in his system because the strict form of the mechanical philosophy, which saw matter as intrinsically inert, did not take hold in England.

Alongside his acceptance of active principles, Digby, like many figures from the natural magic tradition, also had a high regard for the power of the human imagination, which he described as the 'General' and 'Mistresse' of the whole family of internal spirits.[518] He considered this faculty to be particularly capable of bringing about effects in the external world and stated that 'the strong imagination of one man doth marvailously act upon another man, who hath it more feeble and passive'.[519] He further maintained that if someone were to enter a house in which everyone was sad, they would become melancholic themselves because of the unpleasing 'contagion of the imagination'.[520] He went on to note that women and children were most at risk of being influenced by the feelings of others due to their 'very moist and passive' constitutions.[521] Among the further examples he related of instances where emotions appeared to be transmitted between people inhabiting the same environment was the case of a 'very melancholy woman, which was subject to the disease called the Mother'.[522] This 'woman of quality' had a group of 'young Gentlewomen' who developed various symptoms similar to hers and who were cured when they were separated from her presence. Digby also mentioned the 'passions that happened to the Nunnes at *Lodun*',[523] comparing the transmission of the feelings between them to 'two Lutes, or two Harps, near one another, both set to the same tune', and

[517] Antonio Clericuzio, 'A Redefinition of Boyle's Chemistry and Corpuscular Philosophy.' *Annals of Science* 47, (1990): 561-589; Daniel Garber, 'Remarks on the Pre-History of the Mechanical Philosophers', 5-10.
[518] Digby, *A Late Discourse*, 89.
[519] *Ibid*., 93.
[520] *Ibid*.
[521] *Ibid*.
[522] *Ibid*., 93-94. On the disease called 'the suffocation of the mother' and its connections to hysteria and witchcraft see Carroll Camden, 'The Suffocation of the Mother.' *Modern Language Notes*, Vol. 63, No. 6 (1948): 390-393.
[523] On this famous case see Michel de Certeau, *La possession de Loudun* (Paris: Gallimard/Julliard, 1980).

offering the observation that if the string of one harp is touched, then 'the other consonant harp will sound at the same time, though nobody touch it'.[524]

Digby also saw a 'strong and vehement imagination' at play when passions were transmitted from a mother to a foetus in her womb.[525] Referring to instances in which an object in a woman's imagination was imprinted on 'part of the body of the Infant',[526] he described how atoms in the mother's imagination 'flow forth by way of emanation' and 'so cause a reinforcement of the passion in them both'.[527] Digby also drew upon his knowledge of anatomy to further elucidate the physical mechanism by which passions were transmitted between the mother and the foetus. First of all, he pointed to the nerves between the brain and the heart, which he referred to as a 'great road' used by the imagination to send atoms to the heart. Moreover, he described how these atoms 'cause a dilation of the heart, and so gladden it, or they do contract it, so sadden it' and stated that these two differing and contrary actions 'are the first general effects, whence proceed afterwards the particular passions'.[528] Having noted the presence of the nerves between the brain and the heart, he went on to explain that: 'Besides these passages, which are common to all men and women, there is another that's peculiar only to females, which is, from the brain to the matrix.'[529] Digby then stated that it is via this channel that 'the spirits or atoms passe with greater liberty, and swiftness to the womb or matrix'.[530]

Illustrating his point, Digby proceeded to explain how King James I's fear of swords was the direct result of an experience that his mother Mary, Queen of Scots, underwent when she was pregnant with him. He recounted how a group of Scottish lords had burst into Mary's

[524] Digby, *A Late Discourse*, 95.
[525] *Ibid*., 95.
[526] On the ancient background to the belief in foetal contamination through the imagination, the so-called 'Andromeda Effect', see Michael D. Reeve, 'Conceptions.' *Proceedings of the Cambridge Philological Society* 215 (1989): 81-112. On Renaissance perspectives on this topic see Hiro Hirai, 'Imagination, Maternal Desire, and Embryology in Thomas Fienus', in *Professors, Physicians and Practices in the History of Medicine: Essays in Honor of Nancy Siraisi*, ed. by G. Manning and C. Klestinec (Cham: Springer, 2017), 239-254.
[527] Digby, *A Late Discourse*, 97-99.
[528] *Ibid*., 91-92.
[529] *Ibid*., 92.
[530] *Ibid*.

bedchamber when she was pregnant with James and violently executed her Italian secretary 'with naked swords'.[531] As a consequence of this event, the future king (although still in the womb) formed such a strong and life-long aversion to naked swords that he 'could not see one without a great emotion of the spirits'.[532] Even though Digby described James as 'otherwise couragious', he remarked how the king was never able to master 'his passions in this particular'; and recalling the occasion when he received his own knighthood, Digby told how he almost lost an eye because the king was unable to look at his sword during the ceremony.[533]

In his treatise on the powder of sympathy, Digby had recourse to his own system of physics to provide mechanical explanations for phenomena that had conventionally been seen as magical. Rather than regarding action at a distance as something brought about by a world-soul or immaterial virtues, he proposed that the atomistic emanations of bodies were primarily responsible for such occurrences. In the previous chapter, we saw how Francis Bacon devised his own theories of spirits and active matter to explain action at a distance. In this chapter, we have seen how Digby put forward his original system of natural philosophy to explain such events. It was in the context of debating the mechanism of action at a distance that both men addressed the topic of the power of an individual's emotions to affect others in their environment.

Conclusion

In this chapter I have argued that Kenelm Digby's theory of emotion was shaped by a variety of different factors, including religion, medicine, the mechanical philosophy and natural magic. Digby's desire to reform Catholic eschatology and his concern with personal salvation played

[531] *Ibid.*, 104.
[532] *Ibid.*, 105.
[533] *Ibid.*

a large role in his understanding of how the passions were located in the body and soul. Like Descartes, he held a dualistic position when it came to the relationship between the body and soul. For Digby, the physical realm was the domain of change brought about by the movement of particles in space. The human soul could undergo change as long as it was attached to the body and immersed in the world of matter; but once it had left the body, the soul was immutable and existed in a permanent and changeless condition. For Digby, the various passions an individual experienced in their bodily existence determined whether their soul would be eternally joyful of miserable after they died. Moreover, because he argued that change was a feature solely of the physical world, he was able to use his mechanical system of natural philosophy and his account of the passions to deny the existence of purgatory and defend his vision of the afterlife. His account of the passions was also heavily influenced by the medical tradition. Digby displayed a thorough understanding of the anatomy and physiology of the human body when he outlined the different bodily structures involved in the generation of emotion in the *Two Treatises*. His decision to include the nerves of the sixth pair in his account of the passions marked a departure from standard explanations of the time and was informed by his reading of Descartes' medical writings. The traditions of natural magic and alchemy also played a key part in the formation of Digby's system of natural philosophy. His ideas about the emanation of atoms from bodies and about the powers of the imagination ultimately had their basis in natural magic and contributed significantly to his conception of how emotions were transmitted between different bodies.

René Descartes and Thomas Hobbes are generally thought of as the two major pioneers in the development of mechanical theories of emotion. In this chapter, I have argued that Kenelm Digby was the third important figure to produce a theory of emotion based on a mechanical philosophy of nature. Digby's version of the mechanical philosophy, however, attributed various degrees of activity to matter and even left room for the possibility of an

animating universal spirit in the natural world. The strictly mechanical conception of the cosmos, as championed by Descartes, was not widely adopted in seventeenth-century England. Instead, a number of philosophers in the second half of the century continued to propose a vitalistic account of universe. This provided an alternative basis for understanding the nature of the passions, as will be investigated in the next chapter.

CHAPTER FOUR. MARGARET CAVENDISH'S THEORY OF EMOTION: VITALISM AND THE PASSIONS AND APPETITES OF MATTER

This chapter turns to Margaret Cavendish (1623-1673), who authored numerous works across a variety of genres around the middle decades of the seventeenth century. In addition to publishing plays, poems, short stories, collections of letters and a biography, Cavendish composed a series of treatises on natural philosophy between 1653 and 1668. Despite being aware of the various forms of the mechanical philosophy put forward by René Descartes, Thomas Hobbes and Kenelm Digby among others, Cavendish ultimately rejected a mechanistic and atomistic vision of nature and instead developed a vitalist system of natural philosophy over the course of her writing career. Over the past few decades, Margaret Cavendish's philosophical ideas have been the subject of much scholarship, and this is especially the case with regards to her views on natural philosophy.[534]

Recognising the renewal of interest in Cavendish, as well as the increase in scholarly attention to early modern theories of the passions, Jacqueline Broad and Maks Sipowicz have recently noted that 'no one has yet attempted a systematic account of Cavendish's own theory

[534] For studies on Cavendish's natural philosophy see Lisa T. Sarahson, 'A Science Turned Upside Down: Feminism and the Natural Philosophy of Margaret Cavendish.' *Huntington Library Quarterly* 47, No. 4 (1984): 289-307; Sarahson*, The Natural Philosophy of Margaret Cavendish: Reason and Fancy during the Scientific Revolution* (Baltimore: Johns Hopkins University Press, 2010); Deborah Boyle, 'Margaret Cavendish's Nonfeminist Natural Philosophy.' *Configurations* 12, No. 2 (2004): 195-227; Boyle, *The Well-Ordered Universe: The Philosophy of Margeret Cavendish* (Oxford: Oxford University Press, 2018); Karen Detlefsen, 'Atomism, Monism, and Causation in the Natural Philosophy of Margaret Cavendish', in *Oxford Studies in Early Modern Philosophy*, vol. 3, ed by. D. Garber and S. Nadler (Oxford: Clarendon Press, 2006), 199-240; Detlefsen, 'Reason and Freedom: Margaret Cavendish on the Order and Disorder of Nature.' *Archiv für Geschichte der Philosophie* 89, No. 2 (2007): 157-191; Detlefsen 'Margaret Cavendish on the Relation between God and the World.' *Philosophy Compass* 4, No. 3 (2009): 421-438; Stephen Clucas, 'The Duchess and The Viscountess: Negotiations Between Mechanism and Vitalism in the Natural Philosophies of Margaret Cavendish and Anne Conway.' *In-Between: Essays and Studies in Literary Criticism* 9, No. 1&2 (2000): 125-136; Clucas, 'Variation, Irregularity and Probabilism: Margaret Cavendish and Natural Philosophy as Rhetoric', in *A Princely Brave Woman: Essays on Margaret Cavendish, Duchess of Newcastle*, ed. by S. Clucas (Aldershot: Ashgate, 2003), 199-209; David Cunning, *Cavendish* (London: Routledge, 2016); Sarah Hutton, 'In Dialogue with Thomas Hobbes: Margaret Cavendish's Natural Philosophy.' *Women's Writing* 4, Issue 3 (1997): 421-432; Susan James, 'The Philosophical Innovations of Margaret Cavendish.' *British Journal for the History of Philosophy* 7, No. 2 (1999): 219-244; Eileen O'Neill, 'Introduction', in *Margaret Cavendish: Observations Upon Experimental Philosophy*, ed. by E. O'Neill (Cambridge: Cambridge University Press, 2001), x-xxxvi.

of the passions in her later works of natural philosophy.'[535] In their attempt to rectify this omission, Broad and Sipowicz have helpfully analysed Cavendish's account of emotion in relation to ancient Stoic thought and have pointed out the similarities between Stoic ideas about causation and those put forward by Cavendish.[536] Moreover, they have contrasted Cavendish's conception of the passions as voluntary actions with Descartes' view of the passions as passive perceptions, and in doing so have argued that Cavendish's philosophy 'anticipates Hume's eighteenth-century notion of the passions as actions of the mind itself'.[537] Rather than comparing Cavendish's theory of emotion to the philosophically more familiar figures of Descartes, Hume and the Stoics, it is my aim in this chapter to relate Cavendish's thinking about the passions to some of the more unfamiliar contexts of seventeenth-century thought in England. Specifically, I argue that the alchemical tradition, developments in medicine, ideas about cosmic sympathy, and vitalist theories of active matter were all important factors in shaping Cavendish's theory of emotion.

This chapter is divided into six sections. The first section examines the concept of vitalism – a concept which has come under increasing scrutiny in recent years – and shows how Cavendish's thought can be usefully associated with this term. The second section provides a brief biography of Cavendish and aims to show how her philosophical writings arose out of a particular social milieu. The third section argues that despite Cavendish's repeated misgivings towards alchemical practices, the alchemical tradition nevertheless informed her ideas about the workings of matter and the human body and soul. The fourth section concentrates on Cavendish's analysis of human emotions across a number of her writings and outlines her views about the physiological basis of the passions. The fifth section demonstrates

[535] Jacqueline Broad and Maks Sipowicz, 'Cavendish's Philosophy of the Passions: Theory and Practice', in *Margaret Cavendish: An Interdisciplinary Perspective*, ed by. L. Walters and B. R. Siegfried (Cambridge, Cambridge University Press, 2022), 83-97.
[536] *Ibid*., 87-89. See also Eileen O'Neill, 'Margaret Cavendish, Stoic Antecedent Causes, and Early Modern Occasional Causes.' *Revue Philosophique de la France et de l'Étranger* 203, No. 3 (2013): 311-326.
[537] *Ibid*., 96.

how Cavendish's vitalist natural philosophy resulted in her regarding passions and appetites as features of matter itself; and also discusses Cavendish's commitment to the notion of sympathy in nature and explains how the specific passion of love – in its cosmic dimension – was central to Cavendish's understanding of the workings of the natural world. The sixth and final section attempts to show how Cavendish's ideas about passions and appetites can be seen as part of a wider vitalist active matter tradition present in seventeenth-century England.

The concept of vitalism

In *The Matter of Revolution: Science, Poetry and Politics in the Age of Milton* (1996), John Rogers has argued that England underwent a short-lived 'vitalist moment' during the middle decades of the seventeenth century. Central to Roger's thesis is the idea that there was a close correspondence between the natural and political philosophy of the period, and that the vitalist philosophy of nature that emerged around the time of the English Civil War provided a conceptual framework for the new political philosophy of popular sovereignty and consensus.[538] Rogers associates the idea of self-moving matter, which was at the heart of the new vitalist natural philosophy, with the republican ideal of decentralised political agency. This association between vitalism and self-government, he argues, stood counter to the alliance between the mechanical philosophy and monarchy most commonly associated with Thomas Hobbes. While vitalists preferred to view matter as intrinsically active and able to move itself, mechanists such as Hobbes saw matter as inert and only able to move if compelled by an external force.[539] Among the authors Rogers examines are the poet John Milton, the physician William Harvey, and Cavendish herself who is identified as a 'vitalist' philosopher.[540] More

[538] John Rogers, *The Matter of Revolution: Science, Poetry and Politics in the Age of Milton* (Ithaca: Cornell University Press, 1996), 1-16.
[539] *Ibid*., 4.
[540] *Ibid*., 177-211.

recent studies of Cavendish continue to label her as a vitalist and her natural philosophy has been said to exhibit a 'vitalist materialism'.[541] However, the very concept of 'vitalism' has come under increasing scrutiny in recent years.[542]

The term 'vitalism' was not used in seventeenth-century England. The word first appeared in France, as *vitalisme*, in the second half of the eighteenth century and was used by figures associated with the Faculty of Medicine at the University of Montpellier.[543] Within this context the term signified the view that living beings differed from the rest of the physical universe due to their possession of an additional vital principle or life-force. In England, the term 'vitalism' only started to be used at the beginning of the nineteenth century, keeping the same meaning originally given to the term in France. The *Oxford English Dictionary* defines vitalism as 'the doctrine or theory that the origin and phenomena of life are due to or produced by a vital principle, as distinct from a purely chemical or physical force' and notes its first appearance in the English language in 1822.[544]

As Charles T. Wolfe has recently noted, in the past few decades the term vitalism has been retrospectively applied in some English-language scholarship to certain strands of early modern philosophy. Wolfe has helpfully suggested that we periodise our thinking about vitalism, noting the differences between varying forms of vitalism across time. When it is applied to periods before the eighteenth century, vitalism tends to refer to a view that sees the entire universe, or matter in general, as alive in some sense. When the term is applied to the eighteenth century onwards (and is used by the historical actors themselves) it no longer relates to theories of matter or the universe as a whole. Instead, the scope of vitalism is narrower, and

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[541] The term 'vitalist materialism' is discussed in Deborah Boyle, *The Well-Ordered Universe*, 17. See also Sarasohn, *The Natural Philosophy of Margaret Cavendish,* 55-56.

[542] See Charles T. Wolfe, 'Vitalism in Early Modern Medical and Philosophical Thought', in *Encyclopedia of Early Modern Philosophy and the Sciences*, ed by. D. Jalobeanu and C. T. Wolfe (Cham: Springer, 2021), 1. https://doi.org/10.1007/978-3-319-20791-9_314-1

[543] *Ibid*.

[544] 'vitalism, n.', in *OED Online* (Oxford University Press, June 2022), https://www.oed.com/view/Entry/224022

is specifically concerned with the origins and nature of life in living organisms alone. Vitalism, as the term is applied to seventeenth-century England, is therefore concerned with the entirety of nature and theories of matter in general, and it is in this context that Cavendish's vitalism must be understood.[545]

In an article examining Cavendish's philosophical innovations, Susan James has stated that 'Margaret Cavendish can be placed among a collection of English vitalists who, to varying degrees, were not persuaded that all natural phenomena are mechanically explicable by appeal to the motions and impacts of inert particles of matter, and who inferred that matter must possess some kind of active or vital power', further adding that for Cavendish 'the whole of nature consists of infinite self-moving matter which is in some sense thinking'.[546] The idea that matter is self-moving and in some sense thinking is often taken to characterise the vitalist strand of thought in seventeenth-century England. Reinforcing this point Charles T. Wolfe has stated that when the term vitalism is used in scholarship on early modern philosophy it tends 'to refer to a kind of "active matter" view, in which matter is not reducible to the (mechanistic) properties of size, shape and motion, possessing instead some internal dynamism or activity', further stating that 'early modern "English" vitalism … yields a consistent concept of matter as possessing sensation, perception and knowledge'. [547]

The idea that some form of vitalism flourished in seventeenth-century England was notably put forward by Carolyn Merchant in *The Death of Nature: Women, Ecology and the Scientific Revolution* (1980). For Merchant, the term vitalism signified an organic view of nature, one that stood in opposition to the mechanical conceptions of nature that were developing during the period. More specifically, vitalism designated 'the unity of matter and

[545] Wolfe has suggested restricting the term vitalism to the eighteenth century onwards and has proposed using the term 'protovitalism' to refer to periods prior to this. However, providing the terms are clearly defined, I contend that the term 'vitalism' can be helpfully applied to seventeenth-century accounts of the natural world. See Wolfe, 'Vitalism in Early Modern Medical and Philosophical Thought', 11.
[546] James, 'The Philosophical Innovations of Margaret Cavendish', 219.
[547] Wolfe, 'Vitalism in Early Modern Medical and Philosophical Thought', 1.

spirit as a self-active entity, in which the spiritual kernel is considered the real substance and the material "cover" a mere phenomenon.'[548] Merchant's use of the term vitalism, whereby 'matter and spirit are unified into a single, active vital substance' was adopted by scholars within the field of literature studies who went on to analyse the links between vitalism and the poetic and literary productions of the period.[549] Merchant described the vitalism espoused by seventeenth century English thinkers as 'monistic' in that it saw matter and spirit as fundamentally unified. Merchant identified individuals such as the philosopher Anne Conway and the physician Francis Glisson as advocates of this monistic vitalism.[550] For Merchant and her followers, vitalism entailed a view of matter that was active.

However, figures such as the Cambridge Platonists Henry More and Ralph Cudworth have also recently been characterised as vitalists.[551] For these thinkers matter was inert and was only made active through immaterial spiritual principles that permeated nature, such as the 'spirit of nature' in the case of More and 'plastic natures' in the case of Cudworth. In a recent article examining the different kind of vitalism present in seventeenth-century England, Veronika Szanto has helpfully suggested that vitalist thinkers of the period can be classified as either monist or dualist vitalists.[552] The monist vitalists, as identified and described by Merchant, saw matter as active and endowed with vital properties. For dualist vitalists, such as Henry More and Ralph Cudworth, the term vitalism did not signify the inherent activity of

[548] Carolyn Merchant, *The Death of Nature: Women, Ecology and the Scientific Revolution* (New York: HaperOne, 2020), 117.
[549] See Stephen M. Fallon, *Milton among the Philosophers: Poetry and Materialism in Seventeenth-Century England* (Ithaca: Cornell University Press, 1991), 111; Rogers, *The Matter of Revolution*. See also the collection of essays in *Milton and the New Scientific Age: Poetry, Science, Fiction*, ed. by C. Gimelli Martin (New York: Routledge, 2021), especially Leah S. Marcus, 'Paracelsian Medicine, Vitalism and Samson Agonistes', 192-210 and Stephen M. Fallon, 'John Milton, Isaac Newton, and the Life of Matter', 211-237.
[550] Merchant, *The Death of Nature*, 253.
[551] See Hutton, *British Philosophy in the Seventeenth Century*, 150-152.
[552] Veronika Szanto, 'Vitalistic Approaches to Life in Early Modern England.' *Theory of Science* 37 (2015): 209-230.

matter but rather the notion that life was universal (incorporating the inorganic and organic realms) and irreducible to mechanical properties of matter.[553]

With this distinction in mind, Szanto has placed Cavendish into the camp of monist vitalists as she viewed matter as brimming with activity. Cavendish's vitalist thought is succinctly expressed in a letter contained in *Philosophical Letters: or, Modest Reflections Upon Some Opinions in Natural Philosophy* (1664) where she states, 'Nature is a self-moving substance, and by self-motion divides and composes herself several manners or ways into several forms and figures, yet being a knowing, as well as a living substance, she knows how to order her parts and actions wisely'.[554] In the same letter she also states that, 'all the several Parts of Nature are Living and Knowing, and that there is no part that has not Life and Knowledge' latter adding, 'matter is not meerly Passive, but always Active'.[555] Cavendish explicitly sees matter as active and self-moving, and she regards all its parts as possessing life and knowledge of some kind.

Cavendish's brand of vitalism can also be described as materialist in that she refuses to explain change in the physical world by recourse to immaterial principles or beings. She explained, 'I fear the opinion of Immaterial substances in Nature will at last bring in again the Heathen Religion, and make us believe a god *Pan*, *Bacchus*, *Ceres*, *Venus*, and the like, so as we may become worshippers of the Groves and shadows, Beans and Onions, as our Forefathers.'[556] Cavendish's vitalist materialism places her in the same group as Anne Conway and Francis Glisson as one of the monist vitalists in seventeenth-century England.[557]

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[553] A recent conference on 'Vitalism in Early Modern Philosophy' held at the University of Cambridge on 29-30th March 2019 adopted this more expansive view of vitalism. See https://www.phil.cam.ac.uk/events/vitalism-conference

[554] Margaret Cavendish, *Philosophical Letters* (London: s.n., 1664), 144.

[555] *Ibid*., 143, 145.

[556] *Ibid*., 145. On the association between immaterial and vital principles in nature and pagan thought see Levitin, *Ancient Wisdom in the Age of the New Science,* 398-445. On Cavendish's aversion to immaterial substances see Emma Wilkins, "Exploding' Immaterial Substances: Margaret Cavendish's Vitalist-Materialist Critique of Spirits.' *British Journal for the History of Philosophy* 25, No. 5 (2016): 858-877.

[557] Szanto, 'Vitalistic Approaches to Life in Early Modern England', 209.

In the *Philosophical Letters*, Cavendish did not just put forward her own views about the workings of nature, she also challenged the ideas of leading thinkers of the age including René Descartes, Thomas Hobbes, Henry More, Jan Baptist van Helmont and William Harvey. In the seventeenth century it was extremely rare for a woman to engage in debates with men on matters of natural philosophy. To understand how Margaret Cavendish was able to access the philosophical ideas of her contemporaries, and also to argue against them in print, requires a brief look at some of the events in her life.

Margaret Cavendish's social context

Margaret Cavendish was born Margaret Lucas in Essex in 1623 and was the youngest of eight children born to Sir Thomas Lucas and his wife Elizabeth. The Lucas family had acquired the grounds of St John's Abbey near Colchester soon after the dissolution of the monasteries and Margaret grew up in a large manor that stood on the site. Margeret's childhood was marked by the death of her father when she was just two years old. Her education was typical for girls of her rank: she learned to read, write, dance and sing, but she did not receive any formal education in philosophy, the natural sciences or Latin – a language she claims never to have mastered.[558] Her elder brother John, who would go on to become one of the first Fellows of the Royal Society, was an important influence in her early intellectual development.[559]

Margaret's life was deeply affected by the events of the English Civil War. Her family was staunchly Royalist, and her older brothers took up arms to fight on behalf of the king. At the outbreak of the war the family home in Essex was attacked and the Lucas household moved to the Royalist stronghold of Oxford in 1642. The following year, Margaret successfully

[558] Project Vox Team, 'Margaret Cavendish, Duchess of Newcastle-upon-Tyne.' *Project Vox (*Duke University Libraries, 2019), https://projectvox.org/cavendish-1623-1673/

[559] See Cavendish's brief autobiography under the title 'A true Relation of my Birth, Breeding, and Life' in *Natures Pictures* (London: printed for J. Martin and J. Allestrye, 1656), 368-391.

applied to join Queen Henrietta Maria's court in Oxford as a maid of honour, and when the court left for Paris in 1644 Margaret went with them.[560] In 1645, the course of Margaret's life completely changed following the arrival of William Cavendish at Henrietta Maria's court in Paris.[561]

William Cavendish, Marquis of Newcastle, was a major patron of the arts and a loyal servant to the Stuarts. He had been appointed governor to the Prince of Wales (the future Charles II) towards the end of the 1630s. When the Civil War began, Newcastle took command of the royalist forces in the north of England. However, when his army was heavily defeated at the Battle of Marston Moor, Newcastle went into exile in Europe along with his sons from his first marriage. When he met Margaret in Paris, Newcastle was a widower and thirty years her senior. After a brief courtship the pair married, with this union proving to be important for Margaret both socially and intellectually.

Following her marriage Margaret Cavendish left the services of the queen and joined the household of her new husband. Between the years 1645-1648, and around this new setting in Paris, a group of notable intellectuals began to gather into a network now dubbed the 'Cavendish Circle' or the 'Newcastle Circle'.[562] A key member of this network was William Cavendish's younger brother Charles, who was a skilled mathematician.[563] Another prominent member of this group was Thomas Hobbes. Many other thinkers associated with the Cavendish Circle were other important figures in the development of the new mechanical and corpuscular philosophies. Among them was the subject of the previous chapter, Kenelm Digby, whose ideas

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[560] On the intellectual climate and the centrality of Platonic thought at the court of Henrietta Maria see Anna Battigelli, *Margaret Cavendish and the Exiles of the Mind* (Lexington: The University Press of Kentucky, 1998), 11-38.

[561] A useful chronology of Cavendish's life can be found in Margaret Cavendish, *Political Writings*, ed. by S. James (Cambridge: Cambridge University Press, 2003), xxx-xxxiii.

[562] See Clucas, 'The Atomism of the Cavendish Circle: A Reappraisal'; Lisa Walters, 'Epicurus and Gender in the British Newcastle Circle: Charleton, Hobbes, and Margaret Cavendish', in *A Companion to the Cavendishes*, ed. by L. Hopkins and T. Rutter (Amsterdam: ARC Humanities Press, 2020), 181-198.

[563] On Charles Cavendish's intellectual pursuits see Noel Malcolm and Jacqueline Stedall, *John Pell (1611-1685) and His Correspondence with Sir Charles Cavendish: The Mental World of an Early Modern Mathematician* (Oxford: Oxford University Press, 2005), 329-586.

about quantity were criticised by Margaret Cavendish.[564] Walter Charleton, one of the subjects of the next chapter and an advocate of Epicurean atomism, was also a friend of the Duke and Duchess who would go on to translate Margaret's biography of her husband from English into Latin.[565] French thinkers involved within the circle included René Descartes, Marin Mersenne and Pierre Gassendi.

Margaret Cavendish claimed to have barely spoken to the illustrious men who visited her household, nor could she read any of their Latin publications. Instead, she reports to have gained an understanding of their ideas through conversations with her husband and brother-in-law. In addition to these conversations, she would often have parts of their Latin works translated into English for her. Cavendish was fascinated by the various versions of the corpuscular philosophy that she learnt about during her time in Paris. After the Cavendish household relocated to Antwerp in 1648, moving into the former home of the artist Peter Paul Rubens, Margaret returned to England for two years in order to reclaim some of her husband's confiscated lands.[566] It was during this period that she composed what were to be her first published works: *Poems and Fancies* (1653) and *Philosophical Fancies* (1653). The former contained a nearly fifty-page poem on the creation of the world through the combination of atoms.[567] However her enthusiasm for atomism would soon wane, and in one of her later works she would reflect that 'the opinion of atoms, is fitter for a poetical fancy, than for serious philosophy; and this is the reason I have waived it in my philosophical works'.[568]

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[564] See Laura Georgescu, 'Bodies and Their Potential Parts: The Not-So-Friendly Reception of Digbean Quantity', in *The Philosophy of Kenelm Digby (1603–1665),* ed by. L. Georgescu and H. T. Adriaenssen (Cham: Springer, 2022), 223-246: 241-242. A letter of thanks from Digby to Cavendish was included in a collection of tributes to Cavendish and her husband in *A Collection of Letters and Poems: Written by several Persons of Honour and Learning, Upon divers Important Subjects, to the Late Duke and Dutchess of Newcastle* (London: printed for Langley Curtis, 1678), 65.

[565] Margaret Cavendish, *De Vita et Rebus Gestis nobilissimi illustrissimique principis, Guilielmi Ducis Novo-Castrensis* (London: printed by T. Milbourne, 1668).

[566] Eileen O'Neill has suggested that neo-Stoic ideas may have influenced Cavendish thought during her stay at Antwerp, see Margaret Cavendish, *Observations upon Experimental Philosophy*, ed. by Eileen O'Neill (Cambridge: Cambridge University Press, 2001), xiv.

[567] Margaret Cavendish, *Poems and Fancies* (London: T. R. for J. Martin and J. Allestrye, 1653), 1-46.

[568] Cavendish, *Observations on Experimental Philosophy*, 129.

Cavendish first presented her more systematic natural philosophical views in *Philosophical Fancies* (1653), which came out just a few months after *Poems and Fancies*. Cavendish set down some of the basic principles of her natural philosophy in this work, which would go on to form the basis of three of her further volumes on natural philosophy: *The Philosophical and Physical Opinions* (1655), an extended and significantly altered second edition of *Philosophical and Physical Opinions* (1663), and *Grounds of Natural Philosophy* (1668). In all these works, Cavendish rejected the corpuscular philosophy that was being proposed by many of the members of the Cavendish Circle. This is most clearly evident in the original version of *The Philosophical and Physical Opinions* which featured 'A Condemning Treatise of Atomes' placed just before the main body of the text.[569] In it she stated how a theory of matter based on atoms would 'make such uncertainties, such disproportioned figures, and confused creations, as there would be an infinite and eternal disorder'.[570] She later added how 'the old opinions of atoms seems not so clear to my reason, as my own, and absolutely new opinions …[which] seem to be most probable'. Cavendish's own opinion was that matter existed as a continuum, not as a collection of corpuscles.[571]

Cavendish admitted that one of the driving forces behind the writing of her philosophical works was her desire for fame and recognition. As a political exile on the continent and as a woman writer on natural philosophy, she was eager for her work to be formally recognised. A short letter addressed 'To the Two Universities' of Oxford and Cambridge at the start of *The Philosophical and Physical Opinions* (1655) made this fact clear. In it she asked 'the wise School-men to receive her work without scorn … for the good incouragement of our sex, lest in time we should grow as irrational as idiots'.[572] The letter also

[569] Margaret Cavendish, *The Philosophical and Physical Opinions* (London: printed for J. Martin and J. Allestrye, 1655).
[570] *Ibid*., see 'A Condemning Treatise of Atoms' which precedes the main body of the text.
[571] On Cavendish's continuum theory of matter see Cavendish, *Observations upon Experimental Philosophy*, xxv-xxviii.
[572] Cavendish, *The Philosophical and Physical Opinions,* in prefatory letter 'To the Two Universities'.

pronounced that if right judgement, true understanding and respectful civility live anywhere then it must be in the universities, where 'nature is best known' and 'where truth is oftenest found'.[573] In the case that her work was not deemed worthy of praise, Cavendish requested that the universities bury her in silence, and stated 'to lie intombed under the dust of a University will be honour enough for me' adding 'who knows after my honourable burial, I may have a glorious resurrection in following ages, since time brings strange and unusual things to passe'.[574] Cavendish's desire to be well thought of by the universities was twinned with a distaste for the new gentlemanly societies conducting experiments in natural philosophy. Her criticisms of the Royal Society are most prominent in a pair of works published together in 1666: *Observations Upon Experimental Philosophy* and *The Blazing World*.[575]

Her desire to ally herself with the traditional institutions of learning may have extended to the field of medicine too. Cavendish maintained a life-long interest in medicine and her works are filled with reflections on the topic.[576] Cavendish's medical views combined aspects of traditional Galenic thought with the newer iatrochemistry that was becoming increasingly popular in her day. Despite her adoption of many Paracelsian techniques and ideas, Cavendish's writings were repeatedly critical of the chemical physicians. Deborah Boyle has suggested that 'part of her antipathy may be explained simply by her membership in the English nobility and her commitment to Royalism; this class membership may have inclined her to identify with the elite group of Galenist physicians rather than the iatrochemists, who tended to come from the ranks of the Puritans'.[577] However, despite her rhetoric against the chemical physicians, the alchemical tradition played a significant role in shaping her system of natural philosophy.

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[573] *Ibid*.
[574] *Ibid*.
[575] On the class and gender relations between Cavendish and the Royal Society see Peter Dear, 'A Philosophical Duchess: Understanding Margaret Cavendish and the Royal Society', in *Science, Literature and Rhetoric in Early Modern England*, ed by. D. Burchell and J. Cummins (London: Routledge, 2007), 125-144.
[576] On Cavendish's engagement with the medical tradition see Justin Begley and Benjamin Goldberg, *The Medical World of Margaret Cavendish* (Cham: Palgrave Macmillan, 2023); Boyle, *The Well-Ordered Universe*, 215-237.
[577] Boyle, *The Well-Ordered Universe*, 221.

Cavendish's matter theory and the alchemical tradition

Cavendish's views about the nature of human passions and appetites were intimately bound up with her vitalist theory of matter. In recent years, scholars have noted a connection between the alchemical tradition and vitalist attitudes towards the natural world during the early modern period.[578] Cavendish's earliest attempts to develop a system of natural philosophy privileged the notion of material spirits. These spirits played a central role in her initial theory of matter and Cavendish's earliest writings reveal that her notion of active, material spirits in nature was informed by her familiarity with alchemical ideas and practices.

Recent scholarship that has examined Cavendish's relationship with the alchemical tradition has tended to emphasise her negative attitudes towards it. For instance, Stephen Clucas has recently highlighted Cavendish's critical attitude towards the writings of the Dutch alchemist and physician Jan Baptist van Helmont in the *Philosophical Letters*.[579] Clucas has shown that one of the reasons why Cavendish attacked Van Helmont – whose ideas were rapidly taking hold in England – was because of Van Helmont's position that immaterial substances were responsible for the processes of change in the natural world.[580] Cavendish emphatically rejected this doctrine and excluded the presence of immaterial entities within her own system of natural philosophy. Clucas has also pointed out Cavendish's disapproval of the obscure language often found in alchemical texts. Referring to Van Helmont's writings in particular, Cavendish described how he used 'such strange terms and unusual expressions as

[578] See Kevin Chang, 'Alchemy as Studies of Life and Matter: Reconsidering the Place of Vitalism in Early Modern Chymistry.' *Isis* 102, No. 2 (2011): 322-329; Marina Paola Banchetti-Robino, 'Ontological Tensions in Sixteenth and Seventeenth Century Chemistry: Between Mechanism and Vitalism.' *Foundations of Chemistry* 13, Issue 3, (2011): 173-186.
[579] Stephen Clucas, 'Margaret Cavendish's Materialist Critique of Van Helmontian Chymistry.' *Ambix* 58, No. 1 (2011): 1-12.
[580] On the rise of Helmontian thought in England see Clericuzio, 'From Van Helmont to Boyle', 303-334.

may puzzle any body to apprehend the sense and meaning of them'.[581] In another recent article, Sarah Hutton has also shown how Cavendish was sceptical about new alchemical ideas around fermentation – a concept that was becoming increasingly used by alchemically aligned natural philosophers and physicians in their attempts to explain the workings of nature and the human body.[582]

Focussing on some of the more positive influences alchemy may have had on Cavendish's thought, Tien-yi Chao has recently stated that 'despite her dismissal of alchemical practices, Cavendish was influenced by some medieval and contemporary alchemical theories that celebrated the idea of 'nature before art". [583] Alongside many figures within the alchemical tradition, Cavendish held the view that objects produced by artificial means were inferior to those produced by nature and in one of her works she claimed that 'it is impossible for Art to work as Nature doth; for Art makes of natural Creatures artificial Monsters, and doth oftener obscure and disturb Natures ordinary actions'.[584] Susan James has similarly investigated Cavendish's thoughts on the relationship between art and nature and has also suggested that alchemy may have shaped her ideas on this topic. However, Cavendish's relation to the chemical tradition is still painted in a generally negative light with James describing her 'resolutely critical attitude to the alchemical tradition', before going on to state 'it is rare for a seventeenth-century writer to reject chemistry as wholeheartedly as Cavendish does.'[585]

The tendency to see Cavendish as someone who rejected chemistry comes from an exclusive focus on her writings from 1660 onwards. From this date, Cavendish appears to be highly critical of ideas and practices associated with the alchemical tradition. In her writings

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[581] Cavendish, *Philosophical Letters*, 234.
[582] Sarah Hutton, 'Alchemy and Cultures of Knowledge Among Early Modern Women.' *Early Modern Women* 15, No. 2 (2021): 93-102. The centrality of fermentation in chemical natural philosophy will be discussed in the next chapter, see p. 202.
[583] Tien-yi Chao, "Between Nature and Art' – The Alchemical Underpinnings of Margaret Cavendish's Observations Upon Experimental Philosophy and The Blazing World.' *EurAmerica* 42, No. 1 (2012): 45-82.
[584] Cavendish, *Philosophical Letters*, 283.
[585] Susan James, ''Hermaphroditical Mixtures': Margeret Cavendish on Nature and Art', in *Early Modern Women on Metaphysics*, ed. by E. Thomas (Cambridge: Cambridge University Press, 2018), 31-48: 34, 40.

from before this date, however, Cavendish portrays a much more sympathetic towards alchemical techniques and ideas.[586] In *The Worlds Olio*, published in 1655 (though mostly written five years prior) Cavendish's familiarity with alchemy is demonstrated on a number of occasions.[587] The work consists of a miscellaneous collection of writings on a variety of topics and one of the subjects Cavendish discussed was the production of human tears in moments of sadness and joy.[588] In her description of the generation of tears she stated that it was the motion and heat of 'the Spirits' that brought about tears, and explained that heat was able to rarify and separate thin from thick substances 'as Chymists know right well'.[589] She then compared the human body to an alchemical still, likening the heart to 'the Pan of the Still, where the several Passions, as Several Herbs, are put in', and the head to 'the Cover of the Still, where the Vapour of herby Passions' ascend.[590] She also equated the eyes to a spout which collected the vapours and from which the tears would drop. Further observing that 'all Passions are apt to pump out Tears' she compared the human head to a 'Limbeck, which extracts the thinner parts from the thicker' and which produced 'Tears, which are the Essence of Spirits' and a 'kind of Vitriol'.[591]

On numerous occasions in her writings, Cavendish made references to alchemy when she brought up the topic of spirits. In the 1655 edition of *The Philosophical and Physical Opinions*, Cavendish likened her way of thinking to the alchemical practice of distillation and stated that her 'opinions are like Chymistrie, that from a gross substance, extract the substance and essence, and spirits of life'.[592] In the same text, she described the animal spirits present in living creatures as a particularly strong kind of spirit 'being of a higher extract … in the

[586] One recent work that highlights the role of the chemical tradition on Cavendish's matter theory is Justin Begley, 'Margaret Cavendish, The Last Natural Philosopher', PhD diss. (The University of Oxford, 2016), 90-143.
[587] Margaret Cavendish, *The Worlds Olio* (London: printed for J. Martin and J. Allestrye, 1655), see 'An Epistle to the Reader'.
[588] *Ibid*., 199.
[589] *Ibid*.
[590] *Ibid*.
[591] *Ibid*.
[592] Cavendish, 'A Condemning Treatise of Atomes', in *The Philosophical and Physical Opinions*.

Chymistry of Nature'.[593] She also posed the question of whether 'the sun be of an higher Extract then the rationall Spirits, and be like Glasse, which is a high Extract in Chymistry.'[594]

The concept of spirit played a central role in Cavendish's early system of natural philosophy, and her ideas about the nature of spirits were clearly shaped by their association with alchemy.[595] When she discussed 'the spirits, or Innate Matter' near the beginning of *The Physical and Philosophical Opinions* she described how 'The Spirits, or Essences in Nature are like Quick-Silver'.[596] Later on in the work she referred to the spirits as 'the Vitrioll' of nature, and when commenting on the ability of the thinner spirits to cut and carve thicker matter into several figures she stated how like 'Aqua-fortis' they were able to 'eate into the hardest Iron, and divide it into small parts.'[597]

Cavendish first outlined her matter theory in *Philosophical Fancies* (1653) and *The Physical and Philosophical Opinions* (1655), with the text of the former being used again to form the first sections of the latter. In these texts, nature was said to be made of one continuous kind of matter that came in 'degrees' of different thickness, hardness and weight.[598] Cavendish specifically distinguished three different degrees of matter. The first degree consisted of 'dull matter' which Cavendish described as thick and unable to move on its own.[599] The second degree consisted of material 'sensitive spirits' which were thinner than dull matter and had the capacity for self-motion. The third degree consisted of material 'rationall spirits' which Cavendish called 'the essence of spirits' and the 'spirit of spirits.'[600] The sensitive spirits and the rational spirits that made up the two higher degrees of matter were also termed 'innate

[593] *Ibid*., 21.
[594] *Ibid*., 24.
[595] On spirits in the alchemical tradition see previous discussion at p.88, 109.
[596] Cavendish, *The Philosophical and Physical Opinions*, 6.
[597] *Ibid*., 18.
[598] Cavendish, *Philosophical Fancies*, 9.
[599] *Ibid*.
[600] *Ibid*., 30.

matter' because they contained internal motions which directed their activity. Dull matter, on the other hand, contained no internal motions and by itself was inert.[601]

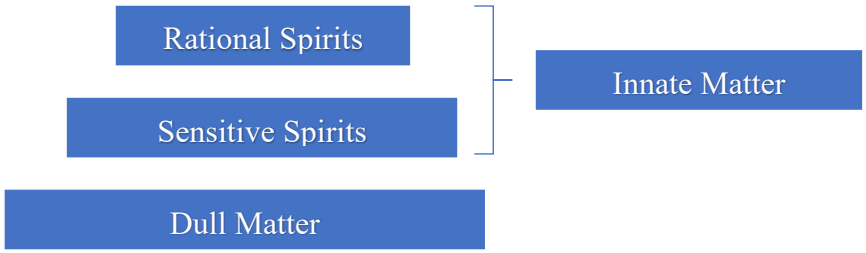

Figure 9. Cavendish's Matter Theory Pre-1660.

The concept of motion was central to Cavendish's natural philosophy.[602] Crucially, it was the presence of motions within the sensitive and rational spirits which imbued them with their various powers and activities. Motions present within the sensitive spirits gave them the power to cut and divide the dull matter that was around it; and it was the action of sensitive spirits upon dull matter that produced the various objects found throughout nature. At one point Cavendish compared the sensitive spirits to workmen who built houses and dull matter to the wood out of which the houses were built.[603]

Rational spirits, which were one degree higher than sensitive spirits and two degrees higher than dull matter, did not directly interact with dull matter, rather they were present among the sensitive spirits and directed them in the management of dull matter.[604] The relationship between the rational and sensitive spirits differed from that between the sensitive spirits and dull matter in one important way. Dull matter was completely compliant to the actions of the sensitive spirits as it possessed no motions of its own. Sensitive spirits meanwhile

[601] *Ibid.*, 12.
[602] Cavendish's conception of 'motion' will be discussed in further detail in the final section of this chapter.
[603] *Ibid.*, 18.
[604] *Ibid.*, 38.

had the power to oppose, and even overcome, the motions that came from the rational spirits. While the relationship between sensitive spirits and dull matter was compared to that of a workman and his materials, the bond between rational spirits and sensitive spirits was likened to that of a father and son. Cavendish stated 'though the Father rules by command, and the son obeies through obedience, yet the Father out of love to his Son, as willing to please him, submits to his delight although it is against his liking. So the rational spirits oftimes agree with the motions of the sensitive spirits, although they would rather move another way'.[605]

In the natural philosophical works published before 1660, Cavendish was willing to think of nature in alchemical terms, and the two highest degrees of matter were compared to spirits extracted through the alchemical process of distillation. After 1660, however, Cavendish stopped using the term spirits to refer to the two highest degrees of matter. Upon returning to England after the restoration of Charles II, Cavendish outlined her mature natural philosophical views in the highly revised second edition of *Philosophical and Physical Opinion* (1663), the *Philosophical Letters* (1664), *Observations upon Experimental Philosophy* (1666), and *Grounds of Natural Philosophy* (1668). These works built on the foundations laid in her pre-1660 publications, but with some notable differences compared to the matter theories from the earlier period.[606] While Cavendish maintained three degrees of matter in her later works, in her writings from 1660 onwards the three types of matter were thought to be completely intermixed, which meant that any and all objects in the universe contained all three types of matter.[607] Another change between the writings from these two periods regards the terms she used to designate the three types of matter. After 1660, dull matter was renamed Inanimate or

[605] *Ibid*., 36-37.
[606] A good summary of the changes between Cavendish's matter theory between these two periods can be found in Boyle*, The Well-Ordered Universe*, 64-78.
[607] Boyle, *The Well-Ordered Universe*, 73.

Unanimate matter, while the sensitive spirits and rational spirits were now rebranded sensitive animate matter and rational animate matter.[608]

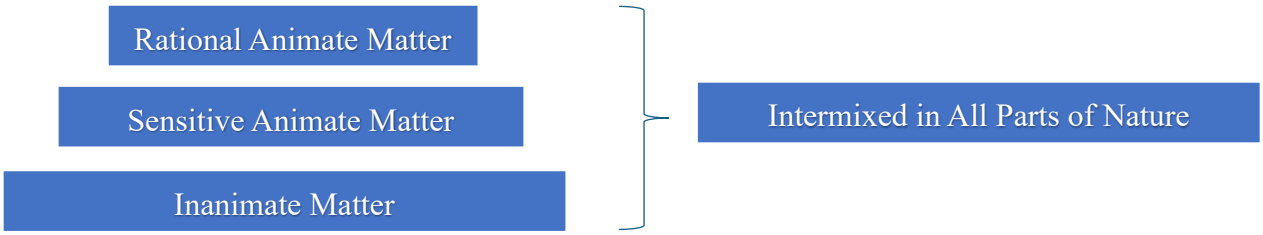

Figure 10. Cavendish's Matter Theory Post-1660.

In the *Philosophical Letters*, published in 1664, Cavendish explicitly stated that she was influenced by the medical and alchemical traditions when she referred to spirits in her early natural philosophical works. She explained that when she used the term spirits previously she had in mind 'Material, not Immaterial Spirits', adding that 'Learned Men do discourse much of Animal Spirits, which are Material, and that also high extracts in Chymistry are called Spirits'.[609] Explaining why she stopped using the term spirits in her works she stated that she did so 'lest my Readers should think I meant Immaterial Spirits'.[610]

As previously mentioned, Cavendish was adamant that her system of philosophy excluded any immaterial principles in nature. It was ultimately her emphatic denial of the presence of immaterial substances in the natural world that led to her decision to stop using the term spirits in her later natural philosophical writings. Arguing against figures such as Henry More, who put forward an immaterial 'Spirit of Nature' as an organising force in the material world, Cavendish was keen to restate her position against immaterial spirits in nature, and in

[608] Cavendish, *Philosophical and Physical Opinions* (London: printed by William Wilson, 1663), 3-5.
[609] Cavendish, *Philosophical Letters*, 232.
[610] *Ibid.*, 233.

the *Philosophical Letters* she stated: 'I have discoursed of Immaterial Spirits, and declared my meaning, that I do not believe them to be natural Creatures, or parts of Nature'.[611]

In addition to replacing the terms spirits with animate matter in her later natural philosophical works, Cavendish also removed a number of alchemical references in the second edition of *Philosophical and Physical Opinions* (1663). The reference to the 'chymistry of nature' that appeared in the 1655 edition was no longer present in the latter publication. Similarly, the comparison of the two higher degrees of matter to quicksilver, vitriol and aqua-fortis was also removed. In the *Philosophical Letters* of 1664 Cavendish heavily criticised the ideas of Jan Baptist van Helmont – whose natural philosophy was deeply grounded in the alchemical tradition. Cavendish attacked Van Helmont because of his advocacy for the presence of immaterial substances in nature; but considering the growing number of Helmontians in England, it also possible that Cavendish may have wanted to disassociate her natural philosophy from the alchemical tradition for religious and political reasons.[612]

In her later writings Cavendish was increasingly harsh towards the practice of alchemy which she termed 'the art of fire'.[613] In the *Philosophical Letters* she objected to the view, held by many alchemists, that their art was able to access the secrets of nature better than any other method.[614] She also challenged the notion that alchemists were able to produce things that nature could not, and stated 'I am sure, that the Art of Fire cannot create and produce so, as Nature doth, nor dissolve substances so as she doth, nor do any effects like Nature; And therefore I cannot admire this Art as other do … it rather doth shut the Gates of Truth, then unlock the Gates of Nature'.[615] In the conclusion to *Grounds of Natural Philosophy* she also remarked how chymists had wasted their time and estates trying to gain the philosopher's stone

[611] *Ibid*., 232.
[612] On the religious and political reasons why Cavendish may have wanted to distance herself from the ideas of Van Helmont see Clucas, 'Margaret Cavendish's Materialist Critique of Van Helmontian Chymistry.'
[613] Cavendish, *Philosophical Letters*, 281.
[614] *Ibid*., 282-286.
[615] *Ibid.*, 283.

and elixir, adding that 'many men of good Estates, have been undone, in following their Rules in *Chymistry*'.[616] Nevertheless, in her later writings Cavendish insisted that she did not 'absolutely condemn the art of Fire', rather she believed her own opinions on natural philosophy could 'give light to that art'.[617] She also maintained the view that alchemical medicines could be of use and admitted 'I do verily believe, that some of the Chymical medicines do, in some desperate cases, many times produce more powerful and sudden effects then the medicines of the Galenists'.[618]

Cavendish's written works reveal a life-long interest in medicine and the workings of the human body, and her theory of matter provided the foundation for her views about the physiological constitution of human beings. Her notion of the activity of sensitive and rational spirits – later called sensitive animate and rational animate matter – informed her thinking about the origin of human emotions. It is to this topic we now turn.

Human passions and appetites

According to Cavendish's mature system of natural philosophy, all objects in the natural world were composed of an intermixture of three degrees of matter: inanimate matter, sensitive animate matter and rational animate matter. The same was also true when it came to the composition of human beings. Cavendish associated the rational innate matter (the highest degree of matter) with the human mind or soul, and across her natural philosophical works Cavendish wrote about the soul as if it were a material entity.[619] On the other hand, Cavendish

[616] Cavendish, *Grounds of Natural Philosophy*, 310.
[617] Cavendish, *Philosophical Letters*, 286.
[618] *Ibid*., 285-286.
[619] On Cavendish's separation between natural philosophy and theology and her thoughts about the possibility of an immaterial human soul see Holly Faith Nelson, '"A Good Christian and a Good Natural Philosopher": Margaret Cavendish's Theory of the Soul(s) in the Early Enlightenment.' *Studies in Philology* 113, No. 4 (2016): 947-968.

associated the body with the sensitive innate matter and the inanimate matter (the lower two degrees of matter).

When it came to discussing the issue of human emotions and desires, Cavendish repeatedly spoke of human passions and appetites, and she used these two terms in a very precise sense. In the *Philosophical Letters* she wrote 'in my opinion, Passions and Appetites are very different, Appetites being made by the motions of the sensitive Life, and Passions, as also Imagination, Memory &c. by the motions of the rational Life.'[620] Cavendish saw appetites as products of sensitive animate matter, whereas passions were produced by rational animate matter. Associating the sensitive matter with the body and the rational matter with the mind, Cavendish went on to state that 'Appetites belong more to the actions of the Body than the Mind.'[621]

The idea that appetites belonged to the body and passions to the mind was reiterated in a play by Cavendish entitled 'The Unnatural Tragedy', featured in her *Playes* of 1662. In a scene where a group of 'sociable virgins' rapidly discuss different topics including reason, bashfulness, and justice, one of the sociable virgins suggests they talk of the passions. In response to this suggestion, another member of the group replies 'It is easier to talk of them, than to conquer and govern them, although it is easier to conquer the perturbed passions of the Mind, than the unruly Appetites of the Body; for as the Body is grosser than the Soul, so the Appetites are stronger than the Passions.'[622]

Cavendish wrote about the appetites and passions in some detail in *Grounds of Natural Philosophy*, which was the final statement of her natural philosophical thought. While she acknowledged a distinction between them, Cavendish also repeatedly spoke of the close relationship they had, stating 'the Sensitive Appetites and the Rational Passions do so resemble

[620] Cavendish, *Philosophical Letters*, 46.
[621] *Ibid*.
[622] Margaret Cavendish, *Playes* (London: printed by A. Warren, for John Martyn, James Allestry, and Tho. Dicas, 1662), 341.

each other, as they would puzzle the most wise Philosopher to distinguish them; and there is not only a Resemblance, but, for the most part a sympathetical Agreement between the Appetites, and the Passions; which strong conjunction, doth often occasion disturbances to the whole life of man.'[623] The 'sympathy' that existed between the different types of matter explained the closeness of the relationship between the sensitive appetites and the rational passions. This aspect of Cavendish's thought was already present her earliest natural philosophical writings, and in the *Philosophical Fancies* (1653) Cavendish discussed how the sympathies and antipathies of the sensitive and rational spirits (as she still called them then) were involved in producing passions such as love and hate.[624]

Throughout her writing career, Cavendish associated passions with the motions of rational matter. Rather than positioning reason and the passions in opposition to one another, she viewed passions as arising out of the motions inherent within rational matter. This idea can be detected even in her early writings, where the influence of the chemical tradition upon her thought still shines through. In a section of the *Philosophical Fancies* dedicated to examining the passions of the mind, Cavendish asks the reader to 'Imagine the rational essence, or Spirits, like little spherical bodies of Quick-Silver' moving in different patterns. Cavendish compared the rational spirits, imagined as quicksilver, to the mind, and the patterns they formed to 'the Passions, and Affections.'[625] She then proceeded to 'guess' how the small bodies of quicksilver arranged themselves when certain passions arose. Love was imagined to move the small bodies of quicksilver in an even measure, whereas fear was thought to heap them together in a disorderly fashion. The passion of constancy was said to move the little bodies of quicksilver in a circular motion, while hope was thought to move them one after another 'like wilde Geese.'[626]

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[623] Cavendish, *Grounds of Natural Philosophy*, 63.
[624] Cavendish, *Philosophical Fancies*, 33-36.
[625] *Ibid*., 38-39.
[626] *Ibid*., 39.

Cavendish imagined the passions of the mind as configurations of the rational spirits (or rational animate matter) present within the human body. Around the time Cavendish was composing her works one of the questions being debated was whether the passions arose in the heart or the head. Cavendish had read parts of René Descartes' *The Passions of the Soul* soon after it was translated into English in 1650.[627] In this work, as we saw in the last chapter, the passions were explicitly said to arise in the brain.[628] In her own work, however, Cavendish went along with the more traditional view and located the passions in the heart. In a section addressing this topic in the *Philosophical and Physical Opinions* entitled 'Whether the Passions are made in the Head or the Heart?', Cavendish stated 'Some are of Opinion, the Passions are made in the Head; others, that they are made in the Heart; for my part, I am of the Latter Opinion, that is, that all Passions are made in the Heart, as Love, Hate, Fear, Anger, Grief, Jealousie, Envy, Malice, and the like.'[629] Defending her view that the passions of the mind were made in the heart, she added: 'the Mind or Soul, which is the Rational Animate Matter, lies as much in the heart as the head.'[630]

In one of her final publications, *Grounds of Natural Philosophy* (1668), Cavendish entitled one section of the text 'Of the Motions of Human Passions, and Appetites; as also, of the Motions of the Rational and Sensitive Parts, towards Forrein Objects.'[631] In-keeping with the Scholastic theory of the passions, as well as with more modern accounts by authors such as Bacon, Digby, Hobbes and Descartes, Cavendish primarily saw passions as responses to objects in an individual's environment. In her analysis of the motions of passions and appetites, Cavendish detailed how the sensitive and rational parts of matter moved in relation to each other when certain feelings arose. Love, for instance, arose when the rational and sensitive

[627] Cavendish, *Philosophical and Physical Opinions*, see 'An epilogue to my Philosophical Opinions.'
[628] See previous discussion on pp. 131-132.
[629] Cavendish, *Philosophical and Physical Opinions*, 258.
[630] *Ibid*., 260.
[631] Margaret Cavendish, *Ground of natural philosophy divided into thirteen parts: with an appendix containing five parts* (London: printed by A. Maxwell, 1668), 71.

parts moved sympathetically towards an object; hate, on the other and, came about when the same parts moved antipathetically to an object.[632] Cavendish also explained that when the 'Rational Motions move after a dilating manner, it is Joy. If after a contracting manner, it is Grief'.[633] She then went on to describe the motions associated with anger, hope, doubt, admiration, pride among others in a similar manner.[634]

In addition to thinking that emotions could arise in response to an object in the environment, Cavendish also believed that they could be generated as a result of the motions inherent within the rational and sensitive parts of matter – even if there was no external object to bring them about. In *Observations on Experimental Philosophy,* she stated how there are some 'interior actions both of sense and reason, which are made without the presentation of exterior objects…As for example, Imaginations, Fancies, Conceptions, Passions, and the like; are made by the rational, corporeal, figurative motions, without taking any copies of foreign objects.'[635]

Whether passions were provoked by the appearance of external objects or arose spontaneously out of the motions inherent within matter, Cavendish understood that they had the capacity to change the physical configuration of the rational matter that constituted the mind. For instance, Cavendish described how the passions of love, hope and joy caused the rational animate matter to spread and dilate itself. On the other hand, passions such as hate, envy and spite caused the rational animate matter to contract itself together.[636] And although the passions were primarily located in the heart, Cavendish was also interested in the relationship between the passions and the body more generally.

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[632] *Ibid*., 71-72.
[633] *Ibid*., 72.
[634] *Ibid*., 72-3.
[635] Cavendish, *Observations on Experimental Philosophy*, 210.
[636] Cavendish, *Philosophical and Physical Opinions*, 260-261.

Cavendish wrote about medicine and the human body at great length in many of her works. She thought highly of the medical profession and claimed that 'the Art of Physick has never floursih'd better than now, neither has any age had more skillful, learned and experienced Physicians, then this present.'[637] She praised both Galenic and Paracelsian physicians stating them to be 'both excellent in their kinds, especially when joyned together.'[638] Cavendish's own views on the make-up of the human body were shaped by both the Galenic and chemical traditions. She believed that the four natural humours of blood, phlegm, melancholy and choler were present within the human body. However, she was no orthodox Galenist, and equated phlegm with the radical moisture, choler with the radical heat, and melancholy with the animal spirits describing the latter as 'the highest extract'.[639] She described those who were naturally melancholic as having the soundest judgment, the clearest understanding, the readiest wits, and also the strongest passions.[640]

Cavendish was sensitive to the idea that the workings of the body could affect the mind, but also understood that the converse was also true. A section of *Philosophical and Physical Opinions* carried the title 'Of the Agreeing and Disagreeing of Humours, Senses and Passions.'[641] In this section she described how the humours of the body could influence the passions of the mind, stating 'sometimes the Distempered humours of the Body make a Disordered Mind, as we see those that have Cholerick humours, Cholerick passions; Melancholy humours, melancholy passions.'[642] But she was also aware that the passions of the mind were able to affect the workings of the body and observed how 'many times Humours are Expulsed by Passions'.[643] In a section of *Observations on Experimental Philosophy* which

[637] Cavendish, *Philosophical Letters*, 352.
[638] *Ibid*.
[639] Cavendish, *Philosophical and Physical Opinions*, 313.
[640] *Ibid*., 314.
[641] Cavendish, *Philosophical and Physical Opinions*, 431.
[642] *Ibid*.
[643] *Ibid*.

also discussed the effect of the passions on the body she stated that passions such as fear and anger can alter the body to such an extent that is it not 'rightly composed again for a good while', noting how in some cases where passions arise 'there follows a total dissolution of the whole figure, which we call death'.[644]

When it came to how states of mind could cause specific diseases, Cavendish was especially interested in the power of the imagination. According to Cavendish, many people who imagined that they had smallpox, measles or the plague commonly fell sick of those diseases even if they did not come anywhere near the infection.[645] Cavendish explained this phenomenon with reference to her tripartite theory of matter. For Cavendish, imaginations and conceptions arose as motions within the rational animate matter that constituted the mind (as was the case for the passions). These motions would then shape the motions of the sensitive animate matter which in turn directed the basic physiological process of the body. Consequently, an overactive imagination had the power to bring on severe physical disease. In addition to recognising the power of the imagination to bring about disease, Cavendish also engaged in the contemporary debates about the power of the imagination upon developing foetuses.[646]

For Cavendish, imagination and the passions were products of the rational animate matter that constituted the human mind. This rational matter would act upon the sensitive matter in the human body which would conform to, or be in conflict with, the rational matter depending on the nature of its own appetites. Cavendish acknowledged the important role passions and appetites played in the life of humans, but she also considered them to be an essential feature of the matter that constituted the physical world in general.

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[644] Cavendish, *Observation on Experimental Philosophy*, 61.
[645] *Ibid*., 312.
[646] See Jacqueline Broad, 'Cavendish, Van Helmont and the Mad Raging Womb' in *The New Science and Women's Literary Discourse*, ed. by J. A. Hayden (Cham: Springer, 2011), 47-63. See also discussion on this topic on p. 156.

Sympathy, love and the passions and appetites of matter

Cavendish saw matter as inherently active, and it was her view that the appetites and passions felt by human beings were ultimately derived from the appetites and passions that filled and moved the matter of the cosmos. Cavendish maintained a belief in universal sympathy – a doctrine commonly associated with the tradition of Renaissance natural magic.[647] Accordingly, she held the view that distant parts of the universe were attracted to each other (or repulsed by each other) due to the presence of hidden bonds present throughout the cosmos. In the *Philosophical Letters*, Cavendish wrote a letter in which she explained her thoughts on cosmic sympathy and antipathy.[648] She began the letter by stating how various authors had given different explanations for the presence of sympathy and antipathy throughout the universe. Some authors, she noted, had posited an 'unknown Spirit as the mover', while others had suggested that the stars or 'certain formal Vertues' were responsible for bringing the phenomenon about. Cavendish instead thought that the sympathies and antipathies of matter were 'nothing else but plain ordinary Passions and Appetites.'[649]

She went on to explain how the sympathies and antipathies of matter could, like all passions and appetites, be further reduced to the motions present within the various parts of matter. She explained that sympathy was brought about by the presence of 'agreeable' motions in one part of matter causing fancy, love or desire in another part. Antipathy, meanwhile, was said to arise when disagreeable motions produced dislike, hate and aversion in different parts of matter.[650] Cavendish listed many instances of sympathy in nature, such as that between a needle and the north-pole, as well as antipathies, including that which existed between a sheep

[647] See previous discussions of sympathy on p. 114, 153. On Cavendish and the natural magic tradition see John Shanahan, 'Natural Magic in the Convent of Pleasure', in *God and Nature in the Thought of Margaret Cavendish*, ed by. B. R. Siegfried and L. T. Sarasohn (Farnham: Ashgate, 2014), 141-160; Lisa Walters, *Margaret Cavendish: Gender, Science, Politics* (Cambridge: Cambridge University Press, 2014), 100-137.
[648] Cavendish, *Philosophical Letters*, 289-297.
[649] *Ibid*., 289.
[650] *Ibid*.

and a wolf. After providing a list of examples Cavendish restated her view: 'as I said in the beginning, Sympathy is nothing else but natural passions and appetites, as Love, Desire, Fancy, Hunger, Thirst &c. and its effects are Concord, Unity, Nourishment and the like: But Antipathy is Dislike, Hate, Fear, Anger, Revenge, Aversion, Jealouise &c. and its effects are Discord, Division, and the like'.[651] Distinguishing between passions and appetites, Cavendish stated that 'Passions are made by rational animate Matter, and the Appetites by the Sensitive'.[652] The distinction Cavendish made between the passions that arose in rational matter and the appetites that arose in sensitive matter, was therefore applicable to the cosmos as well as the human being.

Love held a unique position for Cavendish amongst all the various passions, a stance which is evident in her earliest writings. Cavendish's first publication, *Poems and Fancies* featured a discourse on love, 'the Parent of Passions', and in this short text love was said to create all the other passions.[653] In *The World's Olio*, however, Cavendish suggested that it was a particular type of love, namely self-love, that was in fact more fundamental and she claimed that 'all love is from self-love.'[654] This idea was again repeated in one of Cavendish's plays where one of the characters, in the middle of a long speech about the passions, claimed how love towards all other things and pure love were themselves derived from self-love.[655] According to Cavendish, love and self-love did not just hold a primary place within the human realm: it was also one of the prime ingredients in the workings of nature itself.[656]

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[651] *Ibid*., 293.
[652] *Ibid*., 297.
[653] Cavendish, *Poems and Fancies*, 92. See previous discussion on the idea of love as the root of all the passions on p. 70.
[654] Cavendish, *The World's Olio*, 146.
[655] Cavendish, *Playes*, 141. The character Lady Sanspareille states: "my discourse is, as I said on the passions, which I will first divide, as the Ancient Philosophers, into two, love and hate, First, I will treat of pure love, which is self-love, for love to all other things is but the effects thereof. And is derived therefrom, self-love is the sole passion of the soul, it is a passion pure in itself, being unmixt, although all other passions do attend it, this passion, called self-love, is the legitimated Child of Nature, being bred in infinite, and born in eternity."
[656] See Julia Borcherding, "I Wish My Speech Were Like A Lodestone' Cavendish on Love and Self-Love.' *Proceedings of the Aristotelian Society* 121, Issue 3 (2021): 381-409.

Cavendish believed that all objects in the natural world were 'associations' in which the parts were joined together by mutual desire, and the motivation to preserve the association was ultimately brought about by love.[657] Cavendish compared the love that bound together a human society with the love that bound together the various parts of a human body:

> In every Regular Human Society, there is a Passionate Love amongst the Associated Parts, like fellow students of one colledg, or fellow-Servants in one House, or Brethren in one Family, or Subjects in one Nation, or Communicants in one Church: So the Self-moving Parts of a Human Creature, being associated, love one another, and therefore do endeavour to keep their Society from dissolving.[658]

For Cavendish, every natural body possessed an innate love for itself, and it was through this love that different parts of matter were able to develop and preserve themselves.[659] At one point Cavendish claimed, 'certainly everything hath Self-love, even Hard stones, although they seem Insensible'.[660]

In addition to being present in stones, the passion of self-love manifest itself in human beings in a singular way. It was this passion that was ultimately responsible for the uniquely human desire for fame.[661] Cavendish discussed her own desire for fame in multiple places in her own work. Cavendish viewed this pursuit for public recognition, born out of self-love, as being completely natural. However, she was keen to distinguish between a virtuous quest for fame and a dishonourable one. She sought the former, and in her *Sociable Letters* defended the

[657] On the central role of self-love for the association of parts see Boyle, *The Well-ordered Universe*, 91-95.
[658] Cavendish, *Grounds of Natural Philosophy*, 75.
[659] On the natural instinct for self-preservation and their association with the passions see previous discussion on p. 70.
[660] Cavendish, *Philosophical and Physical Opinions*, 194.
[661] See Boyle, *The Well-ordered Universe*, 125-137.

wish for fame, denying its sinful nature and explaining how it proceeded from 'pure self-love' which was also the 'Root or Foundation of the Love of God and all Moral Virtues'.[662]

Cavendish's belief that love, or any other passion or appetite, could be present in seemingly insensible and inanimate objects was certainly not unique in seventeenth-century England. Rather, Cavendish can be seen as part of a group of thinkers who considered appetites to be a fundamental property of matter itself.

Emotions and the vitalist active matter tradition

In his article comparing Margaret Cavendish's natural philosophical views to those of Francis Bacon, Daniel Garber has drawn attention to the fact that many intellectuals continued to formulate vitalist systems of natural philosophy over the course of the seventeenth century. Moreover, he has argued that the vitalism of the period was part of a live tradition:

> The vitalist active matter tradition has certainly been shunted aside in many histories of philosophy and histories of science until fairly recently, and the complicated history of the period replaced by a caricature in which the philosophical and scientific revolution of the seventeenth century was conceived of as the replacement of an Aristotelian world of active powers by the so-called mechanical philosophy. Though the mechanical philosophy was certainly visible and important, and perhaps more widely accepted than vitalist views like Cavendish's, the vitalist alternative never went away. And it is important to appreciate that even though there are some idiosyncratic elements to her natural philosophy, it was part of a live tradition.[663]

Characterising vitalist thought as entailing a view of matter as 'inherently active and even inherently perceptive', Garber recognises the presence of a number of strands of vitalist thought

[662] Margaret Cavendish, *CCXI Sociable Letters* (London: printed by William Wilson 1664), 163.
[663] Garber, 'Margaret Cavendish among the Baconians', 68.

in seventeenth-century matter theory.[664] However, despite the variety, it is possible to identify a specific vitalist active matter tradition which argued that matter possessed an internal source of motion, contained inner appetites, and had the ability to perceive its surroundings.

Cavendish's account of matter contained each of these three attributes. For Cavendish, the various activities of matter arose from the different types of motions present within natural bodies.[665] These motions explained the complex behaviours of matter, and for Cavendish a natural body was inseparable from its internal motions. In *Philosophical and Physical Opinions,* she listed six types of motion for sensitive animate matter: attraction, contraction, retention, digestion, dilation, and expulsion.[666] In the same work she listed the motions of rational animate matter which included 'Thinking, Contemplating, Conceiving, Examining, Reasoning, Judging, Knowing, Understanding, Memory, Remembrance, and the like, as also Love, Hatred, Fear, Doubt, Hope, Anger, Envy, Joy, Grief, and many the like'.[667] The motions listed above, from love onwards were many of the traditional passions; and as has already been discussed, Cavendish saw appetites and passions present throughout material realm. In addition to seeing matter as containing internal motions, and possessing various appetites, Cavendish also thought that matter had the ability to perceive.[668]

As we saw in chapter two, the idea that matter perceived, possessed appetites, and contained an internal source of motion was also characteristic of Francis Bacon's vitalist theory of matter.[669] Garber has tentatively raised the question of whether Cavendish may have derived

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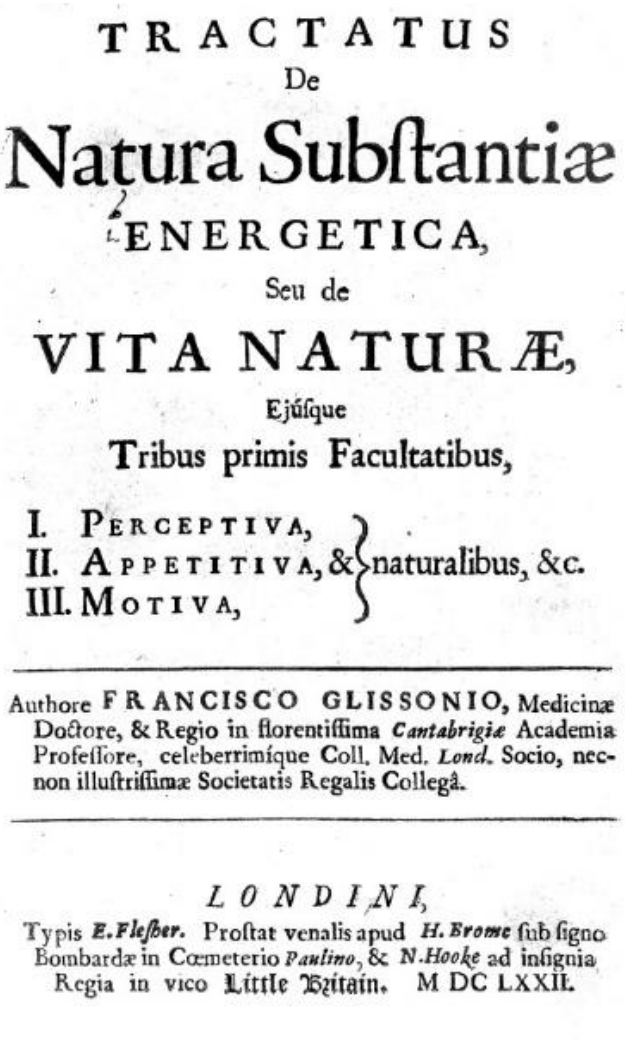
[664] *Ibid*., 67.
[665] On Cavendish's account of the motions of matter see Garber, 'Cavendish Among the Baconians', 62-67, 75-78.
[666] Cited in Garber, 'Cavendish Among the Baconians', 62. Garber notes that a seventh motion of respiration is added to the list in Cavendish, *Grounds of Natural Philosophy*, 166.
[667] *Ibid*.
[668] See Stephen Clucas, '"A double Perception in all Creatures": Margaret Cavendish's Philosophical Letters and Seventeenth-Century Natural Philosophy', in *God and Nature in the Thought of Margaret Cavendish*, ed by. B. R. Siegfried and L. T. Sarasohn (Farnham: Ashgate, 2014), 121-140; Deborah Boyle, 'Margaret Cavendish on Perception, Self-Perception, and Probable Opinion.' *Philosophy Compass* 10, (2015): 438-450; James, 'The Philosophical Innovations of Margaret Cavendish'; Garber, 'Cavendish Among the Baconians', 65.
[669] See pp. 92-97.

her matter theory from Bacon pointing to the similarity of their ideas regarding the topics of motion and their distinction between different kinds of matter. For instance, Cavendish's views about inanimate and animate matter closely resembled Bacon's tangible and spiritual matter.[670] However, Cavendish rarely mentioned Bacon herself. This may have been due to the fact that she was always keen to emphasise the originality of her ideas, and she claimed that she would 'rather be forgotten, then scrape acquaintance, or insinuate myself into the company of others'.[671] Consequently, there are very few direct references to the writings of Francis Bacon in her oeuvre. One place where she does mention him is in the *Sociable Letters,* where she wrote a letter discussing her 'Opinions of Lord Bs. Works'.[672] In it she stated how Bacon seemed 'Learned, Eloquent, Witty and Wise', however she felt that his writings had recently been 'Manuring other mens Brains'.[673] She compared his works to meats that had become corrupt, and further stated how they had recently started to breed maggots and worms. Nevertheless, she was keen to excuse Bacon himself, stating that the same fate had befallen the works of Homer. Cavendish was likely thinking of the experimental philosophers attached to the Royal Society when she wrote of the men who had corrupted Bacon's original works. For Cavendish, it was Bacon's forgotten vitalist matter theory, rather than his more famous experimentalism, that would have been of interest.

In addition to Bacon and Cavendish, there were other thinkers in seventeenth-century England who argued that matter could perceive, contained appetites, and possessed an internal source of motion. Oana Mattei has examined the writings of Ralph Austen (1612-1676), a member of the Hartlib Circle who authored treatises on gardening and husbandry, and has

[670] Garber, 'Cavendish Among the Baconians', 70-79.
[671] Cavendish, *Philosophical and Physical Opinions*, epilogue.
[672] Cavendish, *Sociable Letters*, 146.
[673] *Ibid*.

outlined the vitalist underpinnings of his theory of matter.[674] Similarly, Guido Giglioni has examined the natural philosophical theories of the physician Francis Glisson (1597-1677) and has detailed his views about the activity of matter.[675] Glisson's natural philosophical treatise *Tractatus de natura substantiae energetica* outlined a vitalist conception of nature whose three faculties of perception, appetite and motion were listed on the title-page of the work.[676]



TRACTATUS
De
Natura Substantiæ
ENERGETICA,
Seu de
VITA NATURÆ,
Ejúſque
Tribus primis Facultatibus,

I. PERCEPTIVA,
II. APPETITIVA, & } naturalibus, &c.
III. MOTIVA,

Authore FRANCISCO GLISSONIO, Medicinæ Doctore, & Regio in florentiſſima *Cantabrigiæ* Academia Profeſſore, celeberrimíque Coll. Med. *Lond.* Socio, necnon illuſtriſſimæ Societatis Regalis Collegâ.

LONDINI,
Typis *E. Flesher.* Proſtat venalis apud *H. Brome* ſub ſigno Bombardæ in Cœmeterio *Paulino*, & *N. Hooke* ad inſignia Regia in vico Little Britain. M DC LXXII.

Figure 11. Titlepage of Francis Glisson's *Tractatus de natura substantiae energetica*

[674] Oana Matei, 'Appetitive Matter and Perception in Ralph Austen's Projects of Natural History of Plants.' *Early Science and Medicine* 23, Issue 5-6 (2018): 530-549. On other figures possibly influenced by Bacon's matter theory in seventeenth-century England see Dana Jalobeanu and Oana Matei, 'Treating Plants as Laboratories: A Chemical Natural History of Vegetation in 17th-Century England.' *Centaurus* 62, Issue 2 (2020): 542-561.
[675] On Glisson's theory of matter see Guido Giglioni, 'Francis Glisson's notion of confœderatio naturæ in the context of hylozoistic corpsucularianism.' *Revue d'histoire des sciences* 55, No. 2 (2002): 239-262; Giglioni, 'The "Hylozoistic" Foundations of Francis Glisson's Anatomical Research', in *Religio Medici: Medicine and Religion in Seventeenth-Century England*, ed by. O. Grell and A. Cunningham (Aldershot: Scolar Press, 1996), 115-135; Levitin, *Ancient Wisdom,* 403-407.
[676] Francis Glisson, *Tractatus de natura substantiae energetica, seu de vita naturae* (London: E. Flesher, H. Brome, N. Hooke, 1672).

The perceptive, appetitive and motive qualities of matter that appear in the seventeenth-century vitalist active matter tradition in England can also be detected in the writings of earlier thinkers such as Bernadino Telesio. Telesio's ideas had a significant reception in the seventeenth century with Francis Bacon being just one of many figures whose ideas about matter were shaped by the Italian.[677] Sabrina Ebbersmeyer has recently shown how Telesio's vitalistic conception of matter formed the basis of his vitalist conception of the passions.[678] As I have attempted to show in this chapter, and building on my previous analysis in chapter two, Francis Bacon and Margaret Cavendish can be seen as part of a tradition that believed, with Telesio, that the emotions felt by men and women were the human instantiation of the appetites and passions present throughout the material realm.

Conclusion

Over the course of the 1650s and 1660s, Margaret Cavendish published a series of treatises on natural philosophy in which she argued for the inherent activity of matter. Through her social network Cavendish was able to learn about, and challenge, many of the views of some of the most prominent intellectuals of her day. She was highly critical of the inert conception of matter put forward by Descartes. She was also against the notion of immaterial substances in nature proposed by the alchemical physician Van Helmont. Her own 'materialist vitalism' which saw matter as perceptive, appetitive, and containing internal motions can be seen as part of a wider vitalist active matter tradition present in seventeenth-century England. Cavendish's unique account of human passions and appetites developed out of her wider philosophical commitments regarding the nature of matter.

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[677] See Daniel Garber, 'Telesio's Among the Novatores: Telesio's Reception in the Seventeenth Century', in *Early Modern Philosophers and the Renaissance Legacy*, ed by. C. Muratori and G. Paganini (Cham: Springer, 2016), 119-133. For previous discussion on Telesio see pp. 90-92.
[678] See Ebbersmeyer, 'Telesio's Vitalisitic Conception of the Passions'.

During the seventeenth century, as the Aristotelian system of natural philosophy was becoming increasingly unpopular and various forms of the mechanical philosophy were starting to take shape, a number of English thinkers, with Cavendish among them, were attempting to establish a vitalist account of the natural world. Thus far in this thesis, I have demonstrated how theories of the passions were inextricably bound up with the natural philosophical frameworks in which they were produced. In the second half of the seventeenth century, it was possible for thinkers to draw upon, and mix together, different intellectual traditions when they came to formulate their views across different topics. As we shall see in the next chapter, this was indeed the case for two philosophically inclined physicians who wrote about the passions towards the latter stages of the century.

CHAPTER FIVE. THOMAS WILLIS AND WALTER CHARLETON: THEORIES OF EMOTION IN THE LATER SEVENTEENTH CENTURY

So far in this thesis, I have shown how a wide variety of intellectual traditions – including Aristotelian natural philosophy, Galenic medicine, alchemy, vitalist theories of active matter, the mechanical philosophy and anatomy, among others – contributed to the development of theories of emotion during the seventeenth century. In this chapter I argue that many of the different strands of thought previously discussed came together in two figures, Thomas Willis (1621-1675) and Walter Charleton (1619-1707), who drew upon the writings of their predecessors in different ways, and whose originality lay in their eclectic merging of earlier and contemporary traditions. Willis and Charleton were prominent physicians who wrote about the passions of the soul in the latter decades of the seventeenth century. In addition to composing a number of treatises on a range of medical topics, both men also authored highly innovative and influential tracts on natural philosophy near the beginning of their writing careers. Willis and Charleton's theories of emotion were deeply influenced by their engagement with natural philosophy and medicine, and each wrote about the passions in works printed in the 1670s. Thomas Willis outlined his most detailed account of emotion in a work on the nature of the soul entitled *De anima brutorum* in 1672,[679] and Walter Charleton drew extensively from this text when he published *Natural History of the Passions* two years later in 1674.[680]

Willis and Charleton's account of the passions was closely related to their ideas about the nature of spirits – as has been the case for all the figures studied thus far. In chapter one, I outlined how spirits were a well-established topic within the tradition of Galenic medicine.[681] In chapter three I discussed how philosophers such as Descartes and Digby retained and

[679] Thomas Willis, *De anima brutorum quae hominis vitalis ac sensitiva est, exercitationes duae* (London: Gulielm. Wells and Rob. Scot, 1672). An English translation of this work was published posthumously as *Two Discourses Concerning the Soul of Brutes, which is that of the Vital and Sensitive of Man*, translated by S. Pordage (London: printed for Thomas Dring and John Leigh, 1683).
[680] Walter Charleton, *Natural History of the Passions* (London: printed for T. N for James Magens, 1674).
[681] See p. 57.

adapted the notion of spirits and incorporated them into their mechanical systems of nature.[682] In chapters two and four, I showed how Bacon and Cavendish understood material spirits to constitute part of the human soul.[683] Moreover, I suggested that their conception of spirits was influenced by ideas stemming from the alchemical tradition. In this chapter I show how Thomas Willis's views about the nature of spirits were undeniably shaped by his engagement with alchemy. I also outline how Willis – like Bacon and Cavendish – believed material spirits to constitute part of the human soul. As a result, Willis's account of the passions was inextricably bound up with his theory of spirits.

Willis was also a highly skilled anatomist, and his *Cerebri Anatome* (1664) was a ground-breaking work of neuroanatomy which provided the most complete and accurate account of the nervous system that had appeared up to that point.[684] Previously I discussed how Descartes and Digby used their knowledge of anatomy to argue for the importance of the nerves of the sixth pair in the transmission of passions between the brain and heart.[685] In this chapter I document how Willis identified a set of new nerve structures which would go on to become foundational for all future medical accounts of the passions – and which continue to form the basis of our contemporary understanding of the neurophysiology of emotion.

When Walter Charleton came to compose his treatise on the passions he pointed his readers to Willis's recent anatomical discoveries. Charleton also explicitly mentioned how he largely drew his ideas about the nature of the soul from Willis's book on the topic. However, Charleton's views were also informed by a wide range of thinkers including a number of philosophers residing on the European Continent, with Pierre Gassendi (1592-1655) foremost

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[682] See p. 131, 146.
[683] See p. 97, 182.
[684] Thomas Willis, *Cerebri anatome: Cui accessit nervorum description et usus* (London: Jo. Martin and Ja. Allestrye, 1664). An English translation of this work was published in *The Remaining Medical Works of that Famous and Renowned Physician Dr Thomas Willis*, translated by S. Pordage (London: T. Dring, C. Harper, J. Leigh, and S. Martyn, 1681). See sections entitled '*The Anatomy of the Brain*' and '*The Description and Uses of the Nerves'*.
[685] See p. 132, 148.

among them. Charleton was also familiar with the writings of Descartes and quoted lengthy passages from Descartes' *The Passions of the Soul* in his own treatise on the topic.

Willis and Charleton were pioneering natural philosophers and their ideas about the nature of matter influenced their theories of emotion. Willis compared the matter theories of Descartes and Digby near the beginning of *De anima brutorum*,[686] and in an analysis of what he termed the 'physical passions' later on in his treatise he adopted the latter's position regarding the emission of 'effluvia' from natural bodies.[687] Following Willis, Charleton also incorporated Digby's views about the radiative powers of matter and applied them to his own theories on the passions. Charleton was also familiar with some of the vitalist active matter theories circulating during the period. In one of his later works on human physiology, he commented on Francis Glisson's view that matter could perceive, move itself and contained inner appetites However, in the final analysis, Charleton ultimately rejected the view that appetites and passions were a property of matter itself.

In this chapter, which is divided into six sections, I examine how many of the ideas and authors previously discussed influenced Thomas Willis and Walter Charleton as they developed their views about nature, the human being and the passions of the soul. The first section investigates how alchemical ideas and corpuscular theories of matter shaped Willis's views about material spirits and the human soul – both of which lay at the heart of his theory of emotion. The second section shows how Willis's medical background and his experimental anatomical work in Oxford allowed him to make original discoveries regarding the physiological basis of emotion. The third section analyses the details of Willis's account of the passions as described in *De anima brutorum*. The fourth section turns to the writings of Walter Charleton and outlines some of the key events in his intellectual formation, including his move

[686] Willis, *Two Discourses Concerning the Soul of Brutes*, 3.
[687] *Ibid*., 46.

away from the alchemical tradition and his adoption of the theories of Pierre Gassendi. The fifth section examines how Charleton's engagement with medicine and natural philosophy shaped his theory of emotion as presented in *Natural History of the Passions*. The sixth and final section explores how the different active matter theories of the period influenced, and failed to influence, Willis and Charleton's theories of emotion.

Thomas Willis and the alchemical tradition

Thomas Willis was born in 1621 on his parents' farm in Great Bedwyn, Wiltshire. He began his university studies at Oxford in 1636 and graduated M.A. from Christ Church college in 1642. He undertook his medical training during the period of the Civil Wars, gained his medical degree in 1646 and briefly served as a royal physician to Charles I. He remained an unwavering royalist and a devout Anglican over the course of his life.[688] In 1650 he joined the Oxford Experimental Philosophical Club which operated a chemical laboratory at Wadham College, under the sponsorship of the college president John Wilkins – a future founding member of the Royal Society.[689] By the mid-1650s, Willis was acknowledged by his colleagues to be a leader in chemistry.[690] A young Robert Hooke served as an assistant to Willis in his chemical laboratory and John Lydall, a member of the Oxford Experimental Club, wrote a letter to John Aubrey in which he referred to Willis as 'our Chymist.'[691] In 1660, soon after the restoration of the monarchy, Willis was appointed Sedleian Professor of Natural Philosophy at Oxford. In 1663 he was appointed a Fellow of the Royal Society and in 1664 he was made an Honorary

[688] On the relationship between Willis's medical works and his religious and political commitments see Louis Caron, 'Thomas Willis, the Restoration and the First Works of Neurology.' *Medical History* 59, No. 4 (2015): 525-553.
[689] On the Oxford Experimental Club see Robert G. Frank Jr., *Harvey and the Oxford Physiologists: Scientific Ideas and Social Interaction* (Berkely: University of California Press, 1980), 51-57.
[690] Robert L. Martensen, 'Willis, Thomas (1621-1675)', in *Oxford Dictionary of National Biography* (Oxford: Oxford University Press, 2004), Volume 59, 391-394.
[691] See Caron, 'Thomas Willis, the Restoration and the First Works of Neurology', 529.

Fellow at the College of Physicians. In 1667, Willis moved to London and set up a highly successful medical practice. When he died in 1675, he was considered, by one author at least, to be the most 'famous physician of his time.'[692]

Willis wrote on a variety of topics over the course of his lifetime, and his ideas about the passions were bound up with his more general theories about the nature of the soul. He presented his views about the soul in *De anima brutorum* which he wrote towards the end of his life. In this work, Willis claimed that human beings possessed two distinct souls: a superior soul, which was immaterial, rational and given to them by God; and an inferior material soul, which they held in common with animals.[693] It was this material soul which was the primary subject of study in *De anima brutorum*.

Willis's views about the material composition of the lower soul, which was the part of the soul he primarily associated with the passions, were in large part shaped by his engagement with the alchemical tradition.[694] His involvement with the latter is most evident in his first publication, the *Diatribae duae medico-philosophicae*, which first appeared in 1659.[695] This work contained a treatise on fermentation in which Willis outlined his views about the general state of natural philosophy at the time. Near the beginning of the work, Willis remarked that there were numerous opinions regarding 'the beginnings of Natural things' but considered three of them as deserving attention above the rest.[696] The first of these views belonged to 'the

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[692] Anthony Wood, *Athenae Oxoniensis: An Exact History of All the Writers and Bishops Who Have Had Their Education in the Most Ancient and Famous University of Oxford*, Volume 3, ed. by Philip Bliss (London: 1817), 1048.

[693] Willis outlined his theory of man's two souls at the beginning of the treatise. See Willis, *Two Discourses Concerning the Soul of Brutes*, The Preface to the Reader.

[694] On the influence of alchemy upon Willis's thought see Allen G. Debus, *Chemistry and Medical Debate: van Helmont to Boerhaave* (Canton MA: Science History Publications, 2001), 64-73; Antonio Clericuzio, 'Mechanism and Chemical Medicine in Seventeenth-Century England: Boyle's Investigation of Ferments and Fermentation', in *Early Modern Medicine and Natural Philosophy,* ed by. P. Distelzweig, B. Goldberg and E. R. Ragland (Dordrecht: Springer, 2015), 271-293: 282-284; Levitin, *Ancient Wisdom*, 287-290.

[695] Thomas Willis, *Diatribae duae medico-philosophicae* (London: Jo. Martin, Ja. Allestrye, Tho. Dicas, 1659). An English translation of part this work entitled *A Medical-Philosophical Discourse of Fermentation, or, of the Intestine Motion of Particles in Every Body* was included in *The Remaining Medical Works of that Famous and Renowned Physician Dr Thomas Willis*.

[696] Willis, *A Medical-Philosophical Discourse of Fermentation*, 2.

Peripateticks', who understood all things to be made from the four elements of earth, water, air and fire. The second corresponded to the opinions of Democritus and Epicurus, which Willis noted had recently 'been revived in our Age', and according to which all natural effects depended upon the 'Conflux of Atoms diversly figured'.[697] The third view regarding the origin of natural things was 'introduced by Chymistry' and it resolved all bodies into 'Particles of Spirit, Sulphur, Salt, Water and Earth.'[698]

Willis was critical of Peripatetic philosophy, complaining that it explained the phenomena of nature in a dark manner and paid little respect to the more secret recesses of nature.[699] He was more impressed with the Epicurean philosophy, which he thought 'doth happily and very ingeniously disintangle some difficult Knots of the Sciences.'[700] Willis judged this philosophy to be deserving of praise in that it 'undertakes Mechanically the unfolding of things' without 'running to Occult Qualities, Sympathy and other refuges of ignorance.'[701] However, Willis criticised the Epicurean method for supposing rather than demonstrating its principles, and also for inducing subtle notions that were remote from the senses. Instead, Willis was most impressed with the empirical techniques of the chymists, who analysed bodies by subjecting them to fire, and he assented to the doctrine that all bodies consisted of the five principles of spirit, sulphur, salt, water and earth.[702]

Willis outlined the nature of the five chemical principles at the start of his treatise on fermentation.[703] Spirits, sulphur and salt were regarded as active principles whereas water and earth were viewed as passive. Spirits in particular were the most active principle: Willis

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[697] *Ibid*., 2.
[698] *Ibid*.
[699] As a lecturer in natural philosophy at Oxford, Willis would have been expected to lecture on Aristotle's works in accordance with the university statutes. However, like many of his colleagues Willis taught modern ideas alongside ancient ones. See Robert G. Frank Jr., 'Thomas Willis and His Circle: Brain and Mind in Seventeenth-Century Medicine', in *The Languages of Psyche: Mind and Body in Enlightenment Thought*, ed. by G. S. Rousseau (Berkely: University of California Press, 1990), 107-146: 120-121.
[700] Willis, *A Medical-Philosophical Discourse of Fermentation,* 2.
[701] *Ibid*.
[702] *Ibid*.
[703] *Ibid*., 3-5.

described them as highly subtle 'Aetherial Particles of a more divine breathing, which our Parent Nature hath hid in this Sublunary World.'[704] Spirits determined 'the Form and Figure of every thing' and were present in low quantities in minerals, in moderate quantities in vegetables and in high quantities in animals. Sulphur was the next most active principle. Particles of sulphur were of a thicker consistency than the spirits and were also more fierce and unruly. Salt was of a 'more fixed nature, than either Spirit or Sulphur' and bestowed weight and solidity on things. It also gave the soil its fertility and had the capacity to stir idle particles of spirit and sulphur into motion. Water and earth were passive principles, and they gave consistency and substance to bodies and filled empty spaces.

Willis discussed the nature of these five principles to better explain his ideas about fermentation. Near the beginning of his treatise on the topic he conceded that fermentation was an unusual notion and one that was 'almost only heard of, in the Shops of the Chymists.'[705] He also acknowledged that the term fermentation was used with regards to the production of bread and alcohol and generally associated with things swelling and growing hot.[706] For Willis however, fermentation did not just take place in alchemical laboratories, bakeries and breweries; instead it was one of the fundamental processes of nature responsible for change across the mineral, vegetable and animal domains.[707] Moreover, the process of fermentation was involved in the generation of the souls of animals.

As previously mentioned, Willis believed that humans possessed an immaterial rational soul and a material animal soul. Willis further divided the animal soul into two parts: the vital and the sensitive. Willis associated the vital portion of the soul with certain particles within the

[704] *Ibid*., 3.
[705] *Ibid*., The Preface.
[706] *Ibid*., 1.
[707] On early modern ideas concerning fermentation and Willis's views on the topic see Victor D. Boanza, 'Fermentation', in E*ncyclopedia of Early Modern Philosophy and the Sciences*, ed by. D. Jalobeanu and C. T. Wolfe (Cham: Springer, 2020), 8-10. https://doi.org/10.1007/978-3-319-20791-9_478-1

blood and the sensitive soul with the animal spirits residing in the brain and nervous system.[708] The vital portion of the soul gave life to animals and humans with Willis repeatedly comparing it to a flame. The sensitive soul, meanwhile, bestowed organisms with sensory and motor powers and Willis likened this portion of the soul to light.[709]

Willis saw the vital portion of the soul, which was akin to a flame, as 'living in the blood' and a 'certain inkindling of it.'[710] In his treatise on fermentation, Willis stated that 'the first beginnings of Life proceed from a Spirit Fermenting in the Heart.'[711] He described how the fermentation process in the heart stirred up the spirit which in turn caused it to leap into the blood. The spirit then circulated around the body, through the arteries and veins, and returned to the heart where the fermentation process recommenced in a cyclical fashion. The life of living creatures, Willis noted, wholly depended 'on such a Vicissitude of motion.'[712]

Willis associated the generation of the vital portion of the soul with his alchemical understanding of the process of fermentation. Furthermore, the vital soul was sustained within the body by the presence of chemical principles. Just as a lamp needed oil and air to keep burning, the vital soul, 'after the manner of fire', required a two-fold source of food. Its internal source of nutrition was supplied by a 'sulphureous food' present within the blood, whereas its external nutrition came from a 'nitrous' source which it obtained from the air.[713]

Just as Willis's ideas about the nature of the vital part of the animal soul were shaped by alchemical theories, so too was his understanding of the sensitive part of the animal soul. Willis understood the sensitive part of the soul to be composed of animal spirits that were diffused throughout a person's brain and nervous system. It was these spirits that gave animals and humans their sensory and motor powers. As Antonio Clericuzio has pointed out, spirits

[708] Willis, *Two Discourses Concerning the Soul of Brutes*, The Preface to the Reader.
[709] *Ibid*., 22.
[710] *Ibid*., The Preface to the Reader.
[711] Willis, *A Medical-Philosophical Discourse of Fermentation,* 13.
[712] *Ibid*.
[713] *Ibid*., 5-7.

were commonly reinterpreted along chemical lines by a number of philosophers and physicians in England in the middle decades of the seventeenth century.[714] As outlined previously, Willis saw spirits as the most active principle in the physical world and he regarded animal spirits within humans as similar to other kinds of spirits present throughout nature. Comparing animal spirits to other substances, Willis first likened them to the 'Spirits of Wine, Turpentine and Harts-horn' but decided that 'those Chymical Liquors' were not as subtle, volatile or elastic.[715] He then concluded that animal spirits were best compared to rays of light interwoven in the air.[716]

If Willis likened the vital part of the soul to a flame that lived in the blood, he saw the sensitive part as a 'Light, or rayes of Light, flowing from that Flame.'[717] In *De anima brutorum* Willis stated that 'Animal Spirits are distilled, from the Blood.'[718] Willis had already advanced this idea that animal spirits were distilled out of the blood in his previous treatise on fermentation. There, he had pondered the means by which the 'Animal Spirit is wrought in the brain', and – like Cavendish before him[719] – proceeded to compare different parts of the human body to various pieces of equipment commonly used to distil substances in an alchemical laboratory.[720] He compared the brain and the skull to a 'Glassie Alembic, with a Spunge laid upon it' and likened the nerves coming from the brain to 'many snouts hanging' from it. He further noted how 'Blood when Rarefied by Heat, is carried from the Chimney of the Heart, to the Head, even as the Spirit of Wine boyling in the Cucurbit.'[721] Ultimately for Willis, the way

[714] See Antonio Clericuzio, 'The Internal Laboratory. The Chemical Reinterpretation of Medical Spirits in England (1650-1680)', in *Alchemy and Chemistry in the 16th and 17th Centuries*, ed by. P. Rattansi and A. Clericuzio (Dordrecht: Kluwer Academic Publishers, 1994), 51-83.
[715] Willis, *Two Discourses Concerning the Soul of Brutes*, 23-24.
[716] *Ibid*., 24.
[717] *Ibid*., 22
[718] *Ibid*., 23.
[719] See p. 174.
[720] Willis, *A Medical-Philosophical Discourse of Fermentation*, 14-15.
[721] *Ibid*., 14.

in which animal spirits were distilled out of the blood, and into the brain, replicated the distillation process he would have been familiar with from his own alchemical experiments.

Willis believed that both the vital and sensitive parts of the animal soul were composed of particles of matter and put forward the opinion 'That the Brutal Soul doth consist of Particles of the same matter, out of which the organical Body is formed.'[722] Moreover, Willis subscribed to the view that the entire physical realm was made from corpuscles of matter. The subtitle to his treatise on fermentation, 'on the intestine motion of particles in every body', signalled his commitment to a corpuscular view of matter.[723] Willis's corpuscular theory of matter was chemical rather than mechanical and his particles were endowed with chemical qualities and varying degrees of activity.[724]

Willis's chemical and corpuscular theory of matter shaped the way he thought about the animal soul. Willis regarded the animal soul to be the inferior part of the bipartite human soul, and both portions of the animal soul – the vital and the sensitive – were involved in the production of the passions. Before I investigate Willis's theory of emotion in greater detail however, I would like to show how his medical background and his experiments in anatomy informed his thinking about the passions.

Thomas Willis and anatomy

When Willis first arrived in Oxford in the 1630s, he found a job as an assistant to Dr Thomas Iles, a canon of Christ Church cathedral. According to John Aubrey, Iles' wife was a 'knowing

[722] Willis, *Two Discourses Concerning the Soul of Brutes*, 6.
[723] Thomas Willis, *Diatribae duae medico-philosophicae: Quarum prior agit de Fermentatione, sive De motu intestino particularum in quovis corpore*.
[724] On the connections between alchemy and corpuscular theories matter in England in the period leading up to Willis see Antonio Clericuzio, *Elements, Principles and Corpuscles: A Study of Atomism and Chemistry in the Seventeenth Century* (Dordrecht: Kluwer Academic Publishers, 2000), 75-102; On the connection between alchemy and corpuscular matter theory more generally see William R. Newman, *Atoms and Alchemy* (Chicago: The University of Chicago Press, 2006).

woman in physique and surgery and did many cures' and she often got Willis to assist her when she prepared her medications.[725] Willis would go on to gain his formal medical training during the period of the Civil Wars and obtained his medical degree in 1646. Soon after, he set up a small medical practice in his rooms at Christ Church, Oxford and found additional work on market days in the surrounding villages. In Oxford, Willis became part of a group of physiologists who gathered around William Harvey and pursued various medical and scientific research projects.[726] Around 1650, Willis began to dissect animal and human bodies and his assistants included figures such as William Petty, Christopher Wren and on occasion John Locke. From the 1660s, Willis's research became more focussed on neuroanatomy. His increasing interest in the brain and the nervous system coincided with his growing curiosity regarding the nature of the soul and in the preface to *Cerebri anatome*, Willis stated how his anatomical work 'resolved to unlock the secret places of Mans Mind.'[727]

The *Cerebri anatome* of 1664 was a ground-breaking work in which Willis described the structure and function of the brain and nervous system in unprecedented detail.[728] One of Willis's achievements in this work was his reclassification of the cranial nerves – a group of nerves which emerge directly from the brain (rather than the spinal cord) and which innervate various parts of the human body.[729] Since antiquity, physicians had generally thought that there were seven pairs of cranial nerves that arose from the brain. In the *Cerebri anatome* Willis instead proposed that the pairs of cranial nerves were nine, not seven, and he attempted to outline the structure and function of each of them.

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[725] John Aubrey, *Brief Lives and Other Selected Writings,* edited with an introduction and notes by Anthony Powell (London: Cresset Press, 1949), 236.
[726] On the Harvey and his circle at Oxford see Robert G. Frank Jr., *Harvey and the Oxford Physiologists*.
[727] Thomas Willis, *The Anatomy of the Brain* in *The Remaining Medical Works,* see The Authors Epistle Dedicatory to his Grace Gilbert Archbishop of Canterbury. On Willis's combined interests in neuroanatomy and the nature of the soul see James P B O'Connor, 'Thomas Willis and the background to *Cerebri anatome*.' *Journal of the Royal Society of Medicine* 96, No. 3 (2003): 139-143.
[728] Willis's reputation as the founder of clinical neurology largely rests on this work, see Zoltán Molnár, 'Thomas Willis (1621-1675), the founder of clinical neuroscience.' *Nature Reviews Neuroscience* 5, No. 4 (2004): 329-335.
[729] See previous discussion on p. 132.

In chapter three I discussed how René Descartes and Kenelm Digby saw the sixth pair of cranial nerves as playing an important part in their respective theories of emotion.[730] Thomas Willis, likewise, identified the same physiological structure as a crucial component in his account of the passions. However, through his new observations he offered a reclassification of the cranial nerves and renamed what had traditionally been known as 'the nerves of the sixth pair' as 'the nerves of the eighth pair'. As part of his anatomical experiments, Willis traced the precise course of each of the cranial nerves as they emerged from the brain and travelled to various parts of the body. Willis had seen how the eighth pair of cranial nerves descended and meandered through the thorax and abdomen and stated that 'The Conjugation of the Nerves of the eighth pair, accounted by the Ancients as the sixth' was rightly called 'the Wandring Pair.'[731] He also noted how 'many shoots and numerous fibres' of the nerves of the eighth pair were sent towards the heart, as well as to other bodily viscera including the stomach and the lungs.[732] After describing the structure of the 'wandring pair' (or nerves of the eighth pair) Willis outlined its various actions and uses.[733]

Willis explained how it mostly served the 'the involuntary Function' of the body and performed particular actions that were stirred up either by the 'instinct of Nature' or by 'the force of the Passions.'[734] Furthermore, he observed how 'every irregular motion, stirred up in the Praecordia by the force of the Passions' involved the nerves of the wandering pair reaching the heart.[735] However, Willis also thought that there was another nerve structure that played an even more important role in the transmission of passions between the heart and the brain; this was the intercostal nerve. When Willis considered the means by which emotions could affect

[730] See p. 131, 146.
[731] Willis, *Of the Description and Uses of the Nerves*, 146.
[732] *Ibid*., 147.
[733] *Ibid*., 149-157.
[734] *Ibid*., 149.
[735] *Ibid*., 153.

the heart, he concluded that the 'irregular and extraordinary motions of the Praecordia depend on the intercostal Nerve as much as and perhaps more than on the wandring pair.'[736]

Willis began his detailed analysis of the intercostal nerve by remarking how most anatomists had mistakenly thought it to be a branch of the nerves of the eighth pair.[737] Instead, Willis saw the roots of the intercostal nerve as deriving from the fifth and sixth pairs of cranial nerves. Willis depicted the different origins and routes of the intercostal nerve and 'the wandring pair' in one of the tables of the *Cerebri anatome* (see Figure 12). In an accompanying explanation of the table, he attempted to identify the various substructures of each of these nerves (see Figure 13). Willis acknowledged that some of the branches of the intercostal nerve did join with the branches of the wandering pair (and vice versa), however he clearly thought of them as two distinct nerves.

[736] Willis, *Of the Description and Uses of the Nerves,* 153.
[737] *Ibid*., 157.

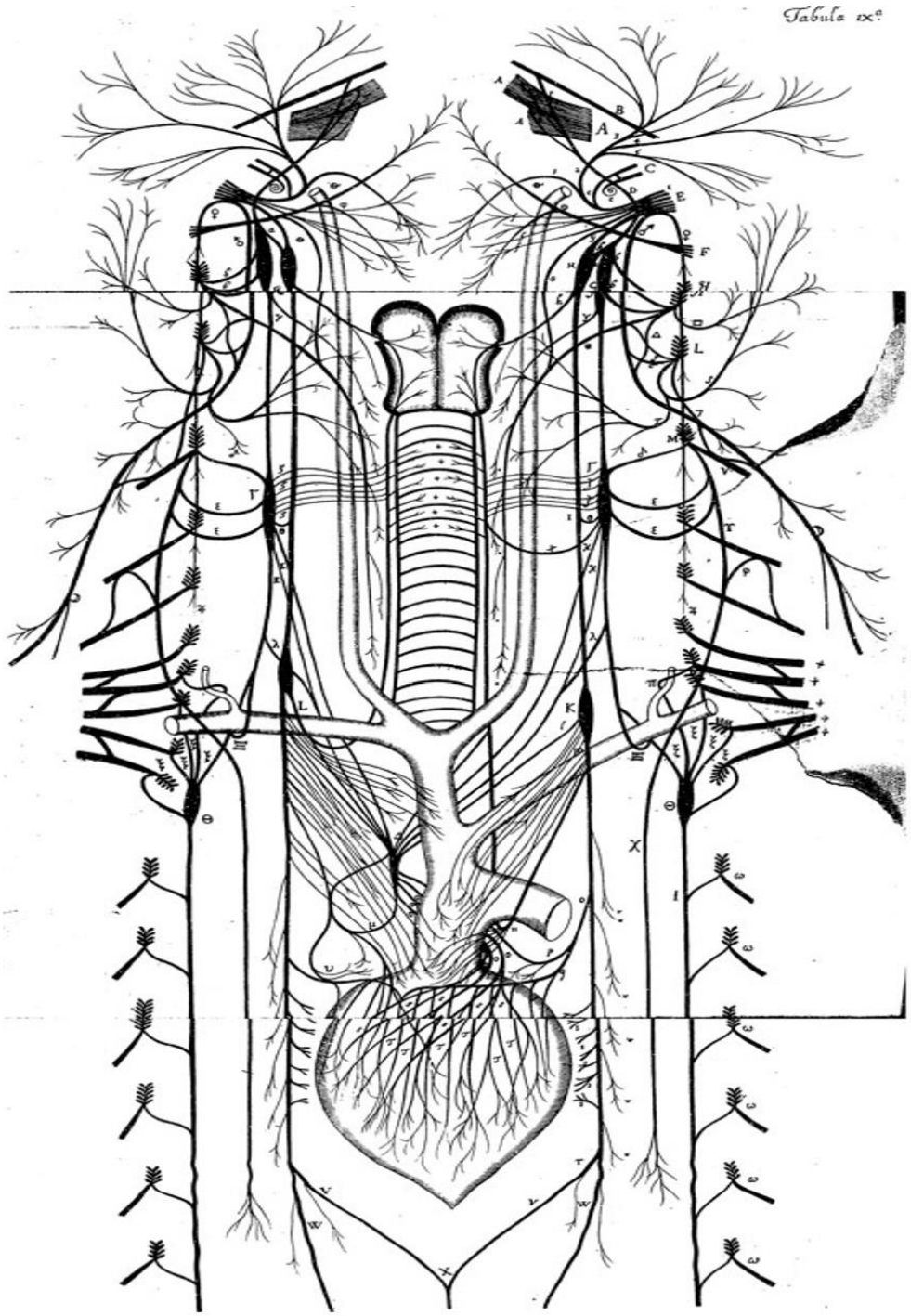

Figure 12. The ninth table from '*The Description and the Uses of Nerves'*. The structures marked 'a.a.' depict the roots of the intercostal nerves. The structure marked 'E' depicts the origins of the eighth pair of nerves ('the wandring pair') – see Figure 13.

The Ninth Table

Shews the beginnings of the fifth and ſixth pair of Nerves, and the Roots of the Intercoſtal Nerve proceeding from them; moreover, the Origines and Branchings out of the ſame Intercoſtal Nerve and the wandring Pair, and of the acceſſory Nerve produced out of the Spine to the wandring Pair carried to the Region of the Ventricle. Beſides, here are repreſented the beginnings and diſtributions of the ſeventh, ninth, tenth Pair of Nerves, and of the Nerve of the Diaphragma; alſo the beginnings of the Vertebral Nerves in their whole Tract from the Region of the Nerves inſerted in the *Præcordia* and *Viſcera* are deſcribed, and their Communications with the former. All this whole following Table ſhews how it is found in Man different from other living Creatures.

A. *The Nerve of the fifth Pair with its two Branches* A. A. *the upper of which tending ſtraight forwards, diſtributes ſhoots into the muſcles of the Eyes and Face, into the Noſe, Palate, and the upper part of the whole Mouth; moreover, it reflects two ſhoots* a. a. *which are the two roots of the intercoſtal Nerve: the other lower Branch of the fifth Pair tending downwards, is diſperſed into the lower Jaw and all its parts.*

a. a. *Two ſhoots ſent down from the upper Branch of the fifth Pair, which meeting together with the other ſhoot* b. *reflected from the Nerve of the ſixth pair, conſtitute the trunk of the Intercoſtal trunk* D.

B. *The Nerve of the ſixth pair tending ſtraight forwards into the muſcles of the Eyes, out of whoſe trunk a ſhoot* b. *which is the third root of the intercoſtal Nerve, is reflected.*

b. *The third root of the intercoſtal Nerve.*

C. *The Original of the hearing Nerves or of the ſeventh pair with its double Proceſs,* viz. *ſoft and hard.*

c. *The ſofter Branch of it which is wholly diſtributed into the inward part of the Ear,* viz. *into the muſcle lifting up the hammer, and into the ſhell.*

c. *The harder Branch of it, which ariſing whole without the Skull, and being inoculated with the ſhoot of the eighth pair* e. *conſtitutes with it a ſingle Nerve, which preſently is divided into many ſhoots: of which*

1. *is beſtowed on the muſcles of the tongue and of the bone* Hyoides.
2. *Again into more ſhoots, the upper of which*
3. *Into the muſcles of the Face and Mouth.*
4. *Into the muſcles of the Eye-lids and Forehead.*
5. *Into the muſcles of the Ear.*

D. *The trunk of the intercoſtal Nerve conſiſting of the three aforeſaid Roots about to paſs into the Ganglioform infolding: which infolding of the intercoſtal Nerve, brought without the Skull, ſeems to be the higheſt knot.*

E. *The Original of the Nerve of the wandring or eighth pair conſiſting of many Fibres, with which the Nerve* 9. *ariſing out of the Spine, joyns, and being inoculated with them, paſſes together through the Skull, which being paſſed, it departs again, and having made a communication with ſome neighbouring Nerves, is beſtowed on the muſcles of the Shoulders and Back.*

e. *A ſhoot of the eighth Pair meeting with the auditory Nerve.*

f.f.f. *Other ſhoots of the wandring Pair going into the muſcles of the Neck.*

G. *The principal Branch of the ſame Pair being loſt or drowned in the Ganglioform infolding being near.*

H. *The upper Ganglioform infolding of the wandring Pair which admits a ſhoot* k. *out of another near infolding of the intercoſtal Nerve.*

h. *A Branch out of the aforeſaid infolding of the wandring Pair going into the muſcles of the* Larynx, *a noted ſhoot of which entring into the Shield-like Cartilage, meets with the returning Nerve, and is united to the ſame.*

i. *A ſhoot ſent from the cervical Infolding of the intercoſtal Nerve into the trunk of the wandring Pair.*

K. *The lower infolding of the wandring Pair from which many Nerves proceed for the Heart and its Appendix.*

Figure 13. The explanation of the ninth table. This is the first of three pages identifying the different nerve structures depicted in the table.

In both his descriptions and illustrations, Willis outlined how the intercostal nerves and the nerves of the eighth pair made their way to the heart. Crucially, Willis believed that it was specifically the intercostal nerves which had a special role to play in the successful management of the passions. Willis believed that the inordinate physiological changes brought about by the various appetites needed to be governed by the intercostal nerves 'as it were by Reins'.[738] Willis believed that the intercostal nerve served as a 'special internuncius also before the Cloister of the Breast' which allowed direct communication between the brain and the heart. Highlighting the important function of the intercostal nerves he also pointed out that this structure imparted 'more shoots and fibres' to the heart than the nerves of the eighth pair.[739]

Willis came to his conclusions about the special role of the intercostal nerves as a result of his anatomical studies; and he used the evidence he had obtained from the dissecting table to strengthen his view that the intercostal nerves played an important role in managing the passions. In support of his position, Willis recalled a dissection he had carried out on a 'man who was a Fool from his birth'. After noticing that the brain of the fool did not seem to possess any major fault or defects, Willis concluded that the main anatomical difference between the fool and a typical 'man of judgement' was that the intercostal nerve in the fool was very small. This bolstered Willis's view that the intercostal nerve, or 'the *Internuncius* of the Brain and Heart', was needed for the cultivation of wisdom in humans.

As a consequence of his anatomical studies across a range of animal species, Willis further claimed that the nerve supply to the hearts of non-human animals was largely derived

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[738] Willis, *Of the Description and Uses of the Nerves,* 157. In the *Tentamina Physico-Theologica de deo* (London: Jo. Sherley and Sam. Thomson, 1665) published just a year after Willis's *Cerebri anatome*, the Oxford theologian Samuel Parker (1640-1688) adopted Willis's position and argued that the intercostal nerves were the reins of the soul. He argued that these nerves enabled an individual to control their bodily passions allowing them to become more virtuous. See Rina Knoeff, 'The 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; Dmitri Levitin, 'Rethinking English Physico-Theology: Samuel Parker's "Tentamina de Deo" (1665).' *Early Science and Medicine* 19, No. 1 (2014): 28-75.

[739] *Ibid*., 150

from the nerves of the eighth pair and 'scarce at all by any nerves of the intercostal pair'.[740] This absence of a strong connection between the heart and intercostal nerves in animals strengthened his view regarding the special role these nerves had for humans. Furthermore, Willis made the observation that it was monkeys, among all the animal species, who alone possessed an intercostal nerve that sent nerve branches down into the heart; and this explained why only monkeys possessed the ability to imitate and express the passions and gestures of humans.[741]

For Willis, the intercostal nerve in humans was one of the key routes by which information could be transmitted back and forth between the brain and heart. Willis was also keenly aware that the relationship between the brain and the heart worked in both directions. He observed that certain conceptions in the brain could bring about changes in the heart. However, he also recognised that physiological changes in the heart had the capacity to propagate a 'multiplicity of thoughts in the brain'.[742] Reflecting on some of the ethical matters associated with the topic, Willis declared that works of prudence and virtue depended on the 'mutual commerce' between the heart and brain and concluded that this was the reason 'both the ancient Divines and Philosophers placed wisdom in the Heart.'[743] Recognising that his neuroanatomical treatise was straying into the domain of morality, Willis curtailed his discussion and stated that such speculation belonged more properly to the 'Doctrine of the Passions of the Soul'.[744]

As a result of his anatomical experiments, Willis had identified both the intercostal nerves and the nerves of the eighth pair as key neurological structures that were central to the

[740] Ibid. 162.
[741] Willis, *Of the Description and Uses of Nerves*, 162.
[742] *Ibid*.
[743] *Ibid*.
[744] *Ibid*.

physiology of emotion.[745] In the *Cerebri anatome* of 1664, Willis's remarks about the passions were scattered and brief. It was only in *De anima brutorum*, published eight years later, that Willis put forward his theory of the passions in a more structured and systematic manner.

Willis's theory of the passions

Willis dedicated two chapters of *De anima brutorum* to presenting his theory of the passions. The first was entitled 'Of the Passions or Affections of the Corporeal Soul in General' while the second bore the heading 'Of the Passions Particularly.'[746] In stating that his examination of the passions and affections regarded the 'Corporeal soul', Willis signalled that his analysis of the passions would be in the context of his wider theory of the soul.

Willis outlined his account of the soul in the opening pages of *De anima brutorum*. As previously mentioned, Willis held the view that humans had two distinct souls: an immaterial rational soul given to them by God and an inferior corporeal soul which they held in common with animals. The corporeal soul could be further divided into two parts. The vital part of the corporeal soul was made up of flame-like particles present in the blood. The sensitive part, meanwhile, consisted of animal spirits flowing through the brain and nerves.

Willis began his discussion of the passions by stating that the corporeal soul existed in one of two states; it was either tranquil or disturbed. When the corporeal soul was tranquil it was well fitted to the different parts of the body, as if it were in a chest or cabinet. In this state, the soul watered all the parts of the body with 'little Rivulets of Blood' and with a 'gentle

[745] This structure Willis identified as the intercostal nerve is now considered to be part of the sympathetic nervous system, see Luis-Alfonso Arráez-Aybar et al., 'Thomas Willis, a Pioneer in Translational Research in Anatomy on the 350th Anniversary of the *Cerebri anatome.*' *Journal of Anatomy* 226, No. 3 (2015): 289-300. The sympathetic nervous system and the vagus nerve (which Willis referred to as 'wandring pair of nerves' or 'the nerves of the eighth pair') are still recognised as important structures in the transmission of emotional states between the brain and the heart in contemporary neurophysiology.

[746] Willis, *De anima brutorum*, 45, 49. Dividing a discussion of the passions into these two parts, the general and the particular, was a commonly used technique found in many treatises on the passions, see p. 31.

falling down of the Animal Spirits.'[747] When the passions caused the soul to enter into a disturbed state, however, blood was 'compelled into irregular Excursions' and animal spirits shook the heart so vigorously that the course of the blood could be 'perverted.'[748] Willis also noted that disturbances of the corporeal soul did not just affect its constituent parts (the blood and animal spirits); they could also instigate disorder in different parts of the body, as well as in the rational soul.

The passions of the corporeal soul which caused these disturbances came in many kinds, however Willis preferred to think of them as falling under two main categories. Firstly, there were those which dilated the corporeal soul, and he described how on these occasions the soul desired to stretch itself beyond the bounds of the body. When this happened, the animal spirits in the brain enlarged 'the Sphear of their Irradiation' and flowed into the heart. This caused the heart to pump blood more freely to different parts of the body. In contrast to this, the second kind of passion resulted in a contraction of the corporeal soul. When this happened, Willis explained how the soul was drawn inwards, sank down, and became 'less than the Body'.[749] On these occasions, the heart was deprived of its usual influx of animal spirits from the brain. This made the heart less active, and as a result, blood stayed within the heart for longer period of time which, on occasion, could cause it to stagnate.[750]

After considering the two main kinds of passions – those that dilate the soul and those that contract it – Willis turned his attention to 'the Causes of the Passions in General.'[751] For Willis, passions arose in the soul when an object was deemed by an individual to be either good or bad for them.[752] Most commonly, such objects appeared in the external world and presented

[747] *Ibid*., 45.
[748] *Ibid*.
[749] *Ibid*.
[750] *Ibid*.
[751] *Ibid*.
[752] This idea was present in almost all theories of emotion in the seventeenth century. It is a feature of all the theories studied in this thesis so far. The only exception is Descartes' whose first passion, wonder, came about when an object was deemed to be new. His five other main passions, however, did arise when an object was judged either to be good or evil.

themselves to an individual's senses. However, objects could also be brought to mind from the inner world of the imagination or from a person's memory. Either way, Willis noted that when an object appeared 'under the Species of Good or Evil', the sensitive soul would prepare 'for the embracing or the avoiding' of it. Willis also identified the imagination as the psychological faculty that discerned whether an object was good or bad, and he stated, 'as soon as the Imagination conceives anything that is to be embraced or shunned, presently the Appetite is formed by the Spirits inhabiting the Brain.'[753]

In maintaining the view that a passion arose after a value judgement made in the imagination, Willis reasserted one of the basic tenets contained in the traditional Scholastic account of emotion.[754] Like the Scholastics, Willis also primarily thought of passions as responses to the goodness or badness of an object presented to the mind.[755] The idea that passions arose as a response to the goodness or badness of an object was also a feature of the theories of emotion seen in earlier chapters including Bacon, Cavendish and Digby.[756]

In keeping with the dominant medical view of the period, Willis also associated the passions with the heart. Willis observed that after an appetite was formed by the spirits in the brain it was 'sent to the Praecordia.'[757] At this point, Willis could have given a detailed account of the importance of the nerves of the eighth pair, as well as the intercostal nerves, in the transmission of emotion between the heart and the brain. However, Willis did not mention either of these structures in his account of the passions in *De anima brutorum*. Instead, he informed his readers that 'we have elsewhere shewed … by what Trajection or Irradiation of the Spirits, within the Nervous Processes, such quick Commerces are made, between the Brain

[753] Willis, *De anima brutorum*, 45.
[754] See discussion on p. 47.
[755] On the view of emotions as 'about something' in medieval thought see Martin Pickavé, 'On the Intentionality of the Emotions (and of Other Appetitive Acts).' *Quaestio* 10 (2010): 45-63.
[756] For Bacon, the appetitive tendencies of all natural bodies meant that they had the ability to discern what was beneficial or harmful to them, see p. 94. Similarly, for Cavendish the sympathies and antipathies of matter arose from the agreeable and disagreeable motions between bodies, see, p. 187. For Digby, passions arose when the sensory apparatus encountered pleasing or displeasing objects, see p. 147.
[757] Willis, *De anima brutorum*, 45.

and the Praecordia.'[758] Consequently, if someone wanted to understand Willis's innovative views about the anatomical underpinnings of emotion, they would have to read the relevant sections of his previously published *Cerebri anatome*.

Rather than providing a precise anatomical account of the physiology of emotion, Willis went on to explain how passions could be classified in three different ways according to the 'threefold relation' of the corporeal soul. 'Physical passions' concerned the corporeal soul by itself and independent from its relation to the rational soul and the rest of the body. 'Corporeal passions' (also called moral passions) involved the corporeal soul as it was united to the body. 'Metaphysical passions', meanwhile, were to do with the corporeal soul in its relation to the superior rational soul.[759]

Willis discussed the nature of the metaphysical passions at length. He explained how the rational soul possessed a 'Superior Appetite', namely 'the Will', that was implicated with certain affections.[760] And although these affections aspired after 'Metaphysical Notions', they also relied on 'the heap and familiarity of the Spirits dwelling in the Brain'.[761] Willis then proceeded to state that the 'Superior Rational Passions' were able to act upon the corporeal soul and make the animal spirits in the brain to expand or contract. The resulting motion of the spirits in the brain was further transmitted 'into the Breast', and this meant that metaphysical passions had the ability to produce a variety of motions in the heart and blood.

For Willis, the heart was the rightful seat of the holy affections, and he declared how 'Repentance, the Love of God, the Hate of Sin, Hope of Salvation, Fear of Divine Vengeance, and many other acts of Religion' should properly be ascribed 'to the work and endeavour of the Heart.'[762] Furthermore, Willis observed how acts of worship could arouse devout affections

[758] *Ibid*., 46.
[759] *Ibid*.
[760] On the passions of the will in the Scholastic tradition see p. 67.
[761] *Ibid*.
[762] *Ibid*.

which in turn drew blood towards the centre of the chest, and into the heart, often causing it stay there for long periods. Willis further noted how the passions brought about by prayer could be especially effective in making blood heap up in the 'Bosomes of the swelling Heart.'[763] Willis compared this blood 'laid upon the altar of the heart' to a sacrifice or 'holocaust' offered up to God. In his explanation of how rational passions could cause blood to gather in the heart, Willis referenced the 'operations of the nerves on the Praecordia' and described how they were able to constrain the movements of the heart when they were 'straitly drawn together.'[764] However, Willis again failed to provide any precise detail as to which nerve structures were involved.

If the metaphysical passions involved the corporeal soul's relation to the rational soul then the corporeal (or moral) passions involved the corporeal soul's relation to the human body. Willis explained how corporeal passions arose when 'sensible objects' in the external world affected an individual's sensory organs with a 'certain sweetness or asperity.'[765] Willis outlined the usual sequence of events, detailing how information from the senses was delivered to the imagination and from there to the heart. After stating that 'there is nothing in the Brain or Heart, that was not first in the Sense'[766] Willis acknowledged that once an individual had gained some exposure to the external world, corporeal passions could arise from their imagination or memory without any provocation from the senses.

As part of his discussion of the corporeal passions, Willis identified two primary affections: pleasure and grief. He associated pleasure with the physical dilatation of the corporeal soul, while grief was linked to its contraction. Willis also noted how pleasure arose

[763] *Ibid*., 47.
[764] *Ibid*., 46-47.
[765] *Ibid*., 48.
[766] *Ibid*. Willis appears to be alluding to the classic medieval principle: 'Nihil est in intellectu quod non sit prius in sensu.' See Gregory W. Dawes, 'Ancient and Medieval empiricism', in *The Stanford Encyclopedia of Philosophy* ed by. E. N. Zalta and U. Nodelman (Summer 2023 Edition), <https://plato.stanford.edu/archives/sum2023/entries/empiricism-ancient-medieval/>

when the soul found an object to be desirable and followed it. Conversely, grief appeared when the soul endeavoured to move away from an object it deemed threatening. Both primary passions were therefore associated with a basic physiological motion and well as an act of cognition. Therefore, according to Willis, all the various emotions ultimately had their origin in the two primary passions of pleasure and grief.[767]

Willis stated that pleasure and grief chiefly affected 'the two roots of the soul', which he identified as the brain and the praecordia. His description of how pleasure affected these two areas neatly summarised how he thought emotions affected the body:

> When the Soul is stretched forth in Pleasure, and is drawn to its utmost Sphear of Irradiation, the Animal Spirits being carried within the Brain, stir up most pleasant and pleasing Imaginations; and further, they actuating lively the Nervous *System,* Cause the Eyes, Face, Hands, and all the Members to shine, and as it were leap forth; Further, then more fully shaking also the *Praecordia,* by the Influence of the Brain, delivered by means of the Nerves, they thrust forth the Blood more rapidly, and as a Flame more brightly inkindled, they pour it forth with strength thorow the whole Body.[768]

For Willis, the first stirrings of pleasure occurred within the animal spirits in the brain. These spirits then rushed through the nerves to reach the external parts of the body such as the face, hands and eyes. In addition to this, the spirits also travelled down nerves to the heart where they helped kindle the blood and thrust it round the body with increased strength. If pleasure increased the activity of the spirits and invigorated the heart, then grief (the other primary passion) had the opposite effect:

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[767] Willis, *Two Discourses Concerning the Soul of Brutes*, 48. Willis referred to the fact that Aristotle had made this basic division. Aristotle made this distinction in the *Rhetoric*, see Jamie Dow, 'Aristotle's Theory of the Emotions: Emotions as Pleasures and Pains', in *Moral Psychology and Human Action in Aristotle*, ed by. M. Pakaluk and G. Pearson (Oxford: Oxford University Press, 2011), 47-74.
[768] *Ibid*.

> On the contrary in Grief, whil'st the Soul sinks down, contracted into a more narrow space, the Spirits inhabiting the Brain, as it were struck down by flight, and troubled, put on only sad and fearful Imaginations, from whence the Countenance is cast down, the Limbs grow feeble, and the *Praecordia* being contracted or bound together, by reason of the Nerves carrying the same affection from the Brain, restrain the Blood from its due Excursion, which being therefore heaped up in the same place, with a weight, brings in a troublesome oppression of the Heart, and in the mean time, the Exterior Parts being deprived of its wonted afflux, languish and Contract a paleness.[769]

For Willis it was clear that grief led to the contraction of the animal spirits in the brain. This caused the skin to become pale, the limbs to grow weak, and the heart to become less active. The effects of grief upon the body were, essentially, the mirror image of the effects brought about by pleasure.

In his discussion of the corporeal passions, Willis investigated the passions of the corporeal soul in the context of their relationship to the body. When he analysed the metaphysical passions, he considered the corporeal soul's passions in relation to the higher rational soul. When Willis spoke about the physical passions, however, he examined emotions as they related to the corporeal soul alone, independent from its relationship to the body or the rational soul; and for Willis, these physical passions involved the corporeal soul's 'proper and occult Loves and Aversations.'[770]

After discussing the physical, metaphysical and corporeal passions, Willis concluded his discussion of the passions 'in general' and began his examination of the 'Of the Passions Particularly.' He opened this section of the work by pointing out that although the exact number of passions was often debated, the division into eleven emotions was the one that had been regularly used in the 'famous Schools.'[771] After listing the six concupiscible and five irascible

[769] *Ibid*.
[770] *Ibid*., 47. I will examine this class of emotion in greater detail in the final section of the chapter where I explore the connection between theories of active matter and theories of the passions.
[771] *Ibid*., 49.

passions first outlined by Thomas Aquinas, Willis stated that such classification was both incongruous and insufficient. It was incongruous, because some passions traditionally classified as concupiscible (such as hatred and aversion) properly belonged to the irascible class, with the opposite being true in the case of hope. It was insufficient, because it failed to include such notable emotions as shame, pity and envy in its eleven-fold list of the passions.

Willis' alternative schema saw pleasure and grief as the two primary passions and all the other emotions as ultimately deriving from these. Willis understood pleasure and grief to represent the two opposite poles of emotion, in that pleasure dilated the soul in response to something good whereas grief contracted the soul in response to something evil. He then attempted to work how the various emotions were subordinate to these two primary passions. Willis gave reasons as to why he thought love, hope, desperation, shamefacedness, and envy (among others) were ultimately subordinate to pleasure. Envy, for instance, arose when something good, which normally induced pleasure, was possessed by someone else.[772] Alternatively, Willis saw hatred, aversion, fear, anger, and pity as all deriving from grief.[773] For example, anger came about when an evil object, which normally induced grief, was 'unworthily brought' upon an individual, whereas pity arose when an evil object was 'inflicted on our Friends.'[774]

Having recognised that any attempt to discuss every single passion would be an immense and tedious labour, Willis attempted to analyse some of the more prominent passions. He first examined the eleven passions commonly known by 'Vulgar Opinion' before detailing the physiological and cognitive features associated with pity, envy, boasting and shame. Willis then went on to make a distinction between passions brought about by external objects and 'innate affections' that arose 'from the mere instinct of nature'.[775] Willis explained how the

[772] *Ibid*.
[773] *Ibid.*, 50.
[774] *Ibid*.
[775] *Ibid.*, 54.

corporeal soul possessed 'certain innate dispositions' that gave rise to 'Spontaneous forces'. Foremost among these forces was the corporeal soul's need to enlarge and propagate itself. Consequently, lust was an innate affection that arose out of the innate dispositions of the corporeal soul; one that snatched animal spirits away from the brain and bestowed them 'on the Genitals.'[776] For Willis, lust was a passion that clearly demonstrated the contrary endeavours of the two souls possessed by human beings. He described how in lust, the corporeal soul 'inclines her self wholly towards the Genital Members'. This inclination of the corporeal soul deprived the brain and heart of its animal spirits and blood. Willis continued however, that if the superior rational soul rose up and enacted 'the Commands of Reason and Religion', then the animal spirits would return to the brain and any raging blood would cease its disorderly excursions and make its way back to the heart. The rational soul therefore had the power to extinguish the 'flame of Lust' that naturally arose out of the innate dispositions of the corporeal soul.

Thomas Willis's theory of the passions contained both traditional and innovative elements. In line with the scholastic tradition, Willis believed that a person experienced a passion after their imagination judged an object to be good or evil for them. He also associated passions with the heart in line with the dominant medical teaching of the period. Like the Scholastics he viewed the passions as embodied psychological phenomena. Unlike the Scholastics however, Willis did not regard the soul as a substantial form containing various faculties. Rather, he understood the animal soul to be composed of particles whose vital part was produced by a process of fermentation in the heart and whose sensitive part was distilled out of the blood. Furthermore, as a result of his anatomical studies, he pioneered a new understanding of the physiological basis of emotion and argued that the intercostal nerves and the newly renamed nerves of the eighth pair were key structures in the transmission of the

[776] *Ibid*., 55.

passions between the brain and the rest of the body. Willis also offered a new classification of the passions into physical, metaphysical and corporeal types, and this subdivision of the passions was later taken up by another physician and natural philosopher who also attempted to provide a detailed account of the passions in the second half of the seventeenth century: Walter Charleton (1619-1707).

Walter Charleton's intellectual development

Walter Charleton is now best remembered for reviving the study of Epicurean atomism in England.[777] Yet his views about the natural world, and the workings of the human body and soul, were shaped by a variety of intellectual currents circulating in mid seventeenth-century England. Foremost among these was the alchemical tradition, which played a central role in Charleton's early intellectual formation.[778] However, from around 1650 Charleton began to turn away from alchemy and became increasingly interested in developments in the mechanical philosophy – especially those taking place in France. Charleton was also a practising physician who maintained a keen interest in the medical developments of his day. A closer look at the key events of his life, as well as his written works, will allow us to see how a wide variety of intellectual traditions were at play when he eventually came to write his treatise on the passions.

Walter Charleton was born in the town of Shepton Mallet in Somerset in 1619. His father was a church rector who took a keen interest in his son's education, and at the age of fifteen Charleton went to study at Magdalen Hall at the University of Oxford.[779] Charleton obtained his medical degree in 1641 and was appointed as a physician to Charles I soon

[777] See Robert Kargon, 'Walter Charleton, Robert Boyle, and the Acceptance of Epicurean Atomism in England.' *Isis* 55, Issue 2 (1964): 184-192.
[778] See Nina Rattner Gelbart, 'The Intellectual Development of Walter Charleton.' *Ambix* 18, No. 3 (1971): 149-168.
[779] John Henry, 'Walter Charleton (1620-1707)', in *Oxford Dictionary of National Biography* (Oxford: Oxford University Press, 2004), Volume 11, 172-175. Charleton's year of birth of 1619 or 1620 is disputed.

afterwards. During the 1640's Charleton served as an assistant to the famous physician Sir Theodore de Mayerne. Mayerne, who had previously been a doctor at the courts of Henri IV in Paris and James I in London, was a keen advocate of chemical medicine having himself studied under the Paracelsian physician Joseph Du Chesne.[780] Charleton's early interest in alchemical theories and practices was therefore bound up with his life as a practising physician.

During the 1640s, Charleton became especially interested in the writings of the Flemish alchemical physician and natural philosopher Jan Baptist van Helmont, whose ideas were becoming increasingly popular during the Civil War years.[781] Charleton's first three published works, all printed in 1650, were informed by Van Helmont in one way or another. One of these publications, the Latin *Spiritus Gorgonicus*, was an original treatise much influenced by Van Helmont's writings. The other two, *A Ternary of Paradoxes* and *Deliramenta Catarrhi*, were outright translations of Van Helmont's works and the first of his writings to appear in the English language. The Latin *Spiritus Gorgonicus* was the first of the three to be published. This text was about a universal stone-forming spirit which Charleton believed to be responsible for the production of kidney stones in human beings as well as rock deposits in the world at large.[782] Charleton drew upon the macrocosm-microcosm relationship throughout the text and made numerous references to various alchemical authors including Paracelsus, Severinus and Van Helmont.[783] The second and third works published, *A Ternary of Paradoxes* and *Deliramenta Catarrhi,* contained introductions authored by Charleton in which his developing views can be seen. In her article on Walter Charleton's intellectual development, Nina Gelbart has studied these introductions and has shown that the first stirrings of Charleton's conversion

[780] On the life of Mayerne see Hugh Trevor-Roper, *Europe's Physician: The Various Life of Sir Theodore de Mayerne* (New Haven: Yale University Press, 2006).
[781] See Clericuzio, 'From Van Helmont to Boyle.'
[782] Walter Charleton, *Spiritus Gorgonicus, vi sua saxipara exutus; sive de causis, signis & sanatione lithiaseœos, diatriba*, (Leiden, ex officina Elseviriorum, 1650).
[783] Gelbart, 'The Intellectual Development of Walter Charleton', 151.

from what she termed the 'Renaissance-Hermetic' worldview to a more mechanical outlook can be detected in these works.[784]

Charleton's *Ternary of Paradoxes* contained translations of three short texts by Van Helmont: 'the Magnetick Cure of Wounds', 'the Nativity of Tartar in Wine' and 'the Image of God in Man' which also carried the subtitle 'Or, Helmont's Vision of the Soul.'[785] In the introductory sections to this work, Charleton's move away from certain aspects of the alchemical tradition can be seen in his criticisms of various alchemical authorities including Paracelsus and Oswald Croll.[786] Charleton also began to reveal a familiarity with the newly developing mechanical systems of nature and directly referred to the writings of Kenelm Digby. In a discussion of the workings of the weapon salve, Charleton turned to Digby's brief discussion of the topic in the *Two Treatises*.[787] Here, Charleton supported Digby's stance that the salve was able to act at a distance through the transmission of a 'semi-immaterial thread of atoms.'[788] Charleton clearly held Digby in the high regard and at one point referred to him as 'the choisest flower in our Garden.'[789] Charleton had come to know Digby towards the end of the 1640s, and it is likely that Charleton's first exposure to the mechanical philosophy came about through his relationship with him.[790] Later, in his introduction to the *Deliramenta Catarrhi*, Charleton showed his familiarity with other authors who espoused a mechanical philosophy of nature, quoting a passage from Thomas Hobbes – whom he called 'that Noble

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[784] *Ibid*., 149-159.
[785] J. B. van Helmont, A *Ternary of Paradoxes, Written originally by Joh. Bapt. Van Helmont, and translated illustrated and amplified by Walter Charleton*, *doctor in physick and physician to the late king* (London: printed by James Flesher, 1650).
[786] *Ibid*., 'The translators supplement', 99, 103.
[787] Digby, *Two Treatises*,164-165. Digby would go on to provide a more detailed explanation of his views of how the weapon salve worked in *A Late Discourse*, see p. 152.
[788] Van Helmont, A *Ternary of Paradoxes,* Prolegomena.
[789] *Ibid*.,
[790] On Charleton's interactions with Digby see Lindsay Sharp, 'Walter Charleton's Early Life 1620-1659, and Relationship to Natural Philosophy in Mid-Seventeenth Century England.' *Annals of Science* 30, No. 3 (1973): 311-340: 322-328.

Enquirer into *Truth*' – concerning the prejudices men erect in their mind when they are faced with new ideas.[791]

In 1650, Charleton moved from Oxford to London and set up a medical practice in Covent Garden. In the same year Margaret Cavendish briefly returned to London having spent a number of years in Paris where she had been part of an intellectual network that contained members who championed a mechanical view of nature.[792] Cavendish moved into lodgings near Charleton in Covent Garden and the two became good friends.[793] Charleton was able to gain an increasing familiarity with some of the philosophical developments taking place in France through his links with the Cavendish circle and the influence of French thinkers on his thought can be clearly seen in his later publications.[794]

In *The Darknes of Atheism Dispelled by the Light of Nature* (1652), Charlton remarked that not every age could boast that it produced such figures as Marin Mersenne and René Descartes.[795] However, it was the thought of Pierre Gassendi (1592-1655) that impressed Charleton the most. Charleton's next publication built upon Gassendi's writings and was entitled *Physiologia Epicuro-Gassendo-Charltoniana: or A Fabrick of Science Natural Upon the Hypothesis of Atoms* (1654).[796] Charleton was a supporter of Gassendi's attempts to rehabilitate Epicurean thought and like his French counterpart he believed that ancient atomism could be modified to form the basis of a new Christian natural philosophy.[797] As well as

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[791] J. B. Van Helmont, *Deliramenta Catarrhi: or, the incongruities, impossibilities, and absurdities couched under the vulgar opinion of defluxions. The author, that great philosopher, by fire, Joh. Bapt. Van Helmont, &c. The translator and paraphrast Dr. Charleton, physician to the late king* (London: printed by E. G. for William Lee, 1650), 'The translator to the judicious and (therefore) unprejudicate reader'. Charleton was quoting from Thomas Hobbes, *Humane Nature*.

[792] On the Cavendish network, see p. 168.

[793] It was Charleton who lobbied for Cavendish to be invited to the Royal Society in 1667. In 1668, Charleton also translated Cavendish's biography of her husband into Latin making it available to a wider European audience.

[794] On Charleton and Cavendish see Sharp, 'Walter Charleton's early life', 329-330.

[795] Walter Charleton, *The Darknes of Atheism Dispelled by the Light of Nature, A Physio-Theologicall Treatise* (London: printed by J. F. for William Lee, 1652), see 'A Preparatory Advertisement to the Reader'.

[796] Walter Charleton, *Physiologia Epicuro-Gassendo-Charltoniana: or A Fabrick of Science Natural Upon the Hypothesis of Atoms, founded by Epicurus, repaired by Petrus Gassendus, and augmented by Walter Charleton* (London: printed by Tho. Newcomb for Thomas Heath, 1654).

[797] On Charleton's promotion of Gassendi's thought see Hutton, *British Philosophy in the Seventeenth Century*, 170-172; Levitin, *Ancient Wisdom*, 335-337.

promoting the views of Gassendi in the *Physiologia*, Charleton used it to pour scorn on a number of alchemical authors he had once admired. He referred to Paracelsus as 'Fanatick Drunkard' and attacked the theories of the 'Hair-brain'd and Contentious Helmont.'[798] Such a change of heart may have been brought about by the religious and political milieu of interregnum England where association with radical thinkers was often associated with political subversion. Charleton was a Royalist and Anglican and his harsh condemnation of the alchemical authors he once admired may have been as much to do with advancing his position in society as it did with the philosophical issues themselves.[799]

In 1655 Charleton failed in his initial attempt to become a fellow of the College of Physicians in London, possibly because of his previous promotion of iatrochemical authors.[800] Despite this setback he continued to practice as a physician, and he turned his attentions to studying the workings of the human body. In 1659 he published *Oeconomia Animalis*, with an English version of the text appearing in the same year under the title *Natural History of Nutrition, Life and Voluntary Motion*.[801] In 1663 he was elected a Fellow of the Royal Society and the following year he gave a series of presentations to the society on the brain.[802] Charleton eventually became a Fellow of the College of Physicians in 1676 and delivered the opening lecture series at the newly built Cutlerian anatomy theatre, which had been constructed after the original premises of the College were damaged in the great fire of 1666.[803] He subsequently went on to become the president of the College of Physicians in 1689 and 1691.

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[798] Gelbart, 'The Intellectual Development of Walter Charleton', 164.
[799] See Elli Papanikolaou, 'Walter Charleton's Matter Theory: How Politics and Scientific Societies Influenced his Works.' *Athens Journal of History* 6 No. 3 (2020): 287-298.
[800] *Ibid*., 293.
[801] Walter Charleton, *Natural History of Nutrition, Life and Voluntary Motion. Containing all the new discoveries of anatomist's, and most probable opinions of physicians, concerning the oeconomie of human nature* (London: printed for Henry Herrington, 1659).
[802] See Matthew Walker, 'Architecture, Anatomy and the New Science in Early Modern London: Robert Hooke's College of Physicians.' *Journal of the Society of Architectural Historians* 72, No. 4 (2013): 475-502: 478.
[803] Charleton's lectures were published as *Enquiries into Human Nature, in vi. anatomic praelections in the new theatre of the royal colledge of physicians in London* (London: printed for M. White for Robert Boulter, 1680).

Soon after this, Charleton retired from medical practice and left London. He lived the last fifteen years of his life in general obscurity, having fallen out of favour in London for reasons which remain unclear. Nevertheless, his written works were read by prominent figures like Robert Boyle and Isaac Newton whose philosophical writings would also blend alchemical and mechanical systems of thought. A second edition of *Natural History of the Passions* was published in 1701, six years before Charleton died.

Charleton's theory of the passions

Charleton's early works briefly touched upon the topic of the passions. In *Epicurus's Morals* (1656), which presented translations of a selection of the ancient philosopher's teachings, Charleton recorded how Epicurus regarded swarms of men to be led by their passions causing them to wander up and down in a wilderness of errors.[804] In a later dialogue entitled *The Immortality of the Human Soul* (1657), the character Lucretius tells another character, Athanasius, how the serenity of his aspect, the lustre of his eyes and the sanguine tincture of his cheeks are the exterior expression of the passions residing within him.[805] Later in the dialogue, Athanasius further stated how 'all Passions belong to the Appetite either Concupiscible or Irascible, which is a Corporeal Faculty.'[806] But it was not until 1674 that Charleton offered a detailed analysis of the passions, in his treatise entitled *Natural History of the Passions*.

In the prefatory letter to the work, Charleton informed the reader that he composed the book during a solitary ten-week stay in the countryside. Charleton spent this time pursuing 'the

[804] Walter Charleton, *Epicurus's Morals, collected partly out of his own Greek text in Diogenes Laertius, and partly out of the rhapsodies of Marcus Antoninus, Plutarch, Cicero, & Seneca* (London: printed by W. Wilson for Henry Herringman, 1656), 5.
[805] Walter Charleton, *The Immortality of the Human Soul, Demonstrated by the Light of Nature* (London: printed by William Wilson for Henry Herringman, 1657), 2.
[806] *Ibid*., 161.

divine art of acquiring constant *Tranquility* of the Mind', having suffered a series of misfortunes which had reduced him to consult 'that part of philosophy, about the most effectual *Remedies* against *Discontent*.'[807] Claiming 'the best part of Human Science to be that which teacheth us how to moderate our *Affections*', Charleton also noted how inordinate passions were the bitter fountain from which almost all practical errors arose.[808] Recognising that discontent and practical errors could be avoided if their causes were understood, Charleton decided that he would take it upon himself to inquire into the 'nature, causes, motions &c. of the Passions.'

Before he could discuss the passions, however, Charleton felt he had to first outline his thoughts concerning the nature of the human soul. Charleton held the view that human beings possessed two distinct souls: a rational soul that made humans reasonable creatures, and a sensitive soul that gave them life and sense.[809] Charleton believed that this position could be supported by solid reasoning, divine authority, as well as the judgements of ancient and modern philosophers. Charleton specifically called upon 'three eminent Philosophers of our own age' who shared his view that human beings had two souls.[810] The first was Francis Bacon whom he called 'that Prince of Modern Philosophers, the Lord St. Albans'. Charleton quoted the passage from book four of *De Augmentis Scientiarum* in which Bacon described how the 'Sensible Soul' was made from a corporeal substance possessing the softness of air to receive impressions and the vigour of fire to embrace action.[811] Charleton, quoting Bacon, noted that this idea had been previously suggested by Bernadino Telesio and Agostino Doni.[812] Charleton also quoted a lengthy passage from Bacon's *Historia Vitae et Mortis* to show how Bacon had, like him, further divided the sensitive soul into a fiery part and a lucid part. The second modern

[807] Charleton, *Natural History of the Passions*, Epistle prefatory.
[808] *Ibid*.
[809] *Ibid*.
[810] Charleton, *Natural History of the Passions*, Epistle prefatory.
[811] *Ibid.*
[812] See discussion at p. 98.

philosopher noted by Charleton to subscribe to the two-soul theory was 'the immortal Gassendus', while the third and final figure mentioned was 'the now flourishing Dr. Willis'. Charleton gave a special acknowledgement to Willis's writings and stated how the greatest part of what he had to say concerning 'the nature, substance, faculties, Knowledge, &c. of a Sensitive Soul' had been borrowed from 'that elaborate work of our Learned *Dr. Willis de Anima Brutorum*, lately published.'[813]

For Charleton, it was 'unintelligible' that an incorporeal substance such as the rational soul could physically act upon a 'gross and ponderous' body without the mediation of a third thing. Rather, Charleton felt it was more fitting that a thin and subtle substance that approached 'neerer to the nature of a pure Spirit' – such as a sensitive soul – must act as an intermediary. Moreover, Charleton believed that the internal war within the soul, which he recognised was common to all people, could be best explained by the competing desires of its rational and sensitive parts. For Charleton, it was impossible for conflicting desires to arise within a simple substance such as a rational soul. He also dismissed the idea that such conflict came about through the struggle between an incorporeal soul and a physical body. Charleton was aware that this latter view had recently been put forward by René Descartes in *The Passions of the Soul*, and he quoted Descartes' discussion of the subject at length before going on to reject it. Taking further issue with the idea that an immaterial soul could interact with a material body at the pineal gland, Charleton quipped 'had this excellent man, *Monsieur des Cartes* been but half as conversant in Anatomy, as he seems to have been in Geometry, doubtles he would never have lodged so noble a guest as the Rational Soul in so incommodious a closet of the brain, as the *Glandula Pinealis*.'[814]

[813] Charleton, *Natural History of the Passions*, Epistle prefatory.
[814] *Ibid*.

In addition to pointing the writings of modern philosophers such as Bacon, Gassendi and Willis, Charleton felt that the two-soul theory could be justified by Scripture as well as by reason.[815] Charleton quoted St Paul's first letter to the Thessalonians and suggested that Paul's mention of the spirit, soul and body of man was a reference to the rational soul, sensitive soul and body respectively.[816] Charleton also claimed that many ancient philosophers agreed with his views about the nature of the animal soul. While figures such as Thales, Heraclitus, Empedocles and Democritus all argued about the exact material constituting the soul, Charleton believed that they all unanimously concurred (as did he) on the following points:

> that this Corporeal Soul is divisible; composed of particles extremely small, subtil and active; diffused through or coextens to the whole body wherein it is contained; produced at first by generation out of the seed of the parents; perpetualy recruited or regenerated out of the purest and most spirituous part of the nourishment; subject to Contraction and Expansion in passions; and finally dissolved or extinguished by death.[817]

Charleton dedicated two long sections of his treatise to outlining his views about the sensitive and rational soul. Only then did he move on to discussing 'the Passions of the Mind in General' and 'the Passions in Particular'. In the section on the passions in general, Charleton laid out the orderly sequence of events that took place when a passion appeared in the soul. He first noted how a passion initially arose when the imagination conceived an object to be 'embraced as good or avoided as evil.'[818] This event stirred the animal spirits residing in the brain to form an appetite therein. This appetite was transmitted to the heart, which either

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[815] Charleton's efforts to use natural knowledge to defend religious truths was most clearly evident in his *The Darknes of Atheism Dispelled by the Light of Nature, A Physio-Theologicall Treatise.* On the development of 'physico-theology' in the second half of the seventeenth century see *Physico-Theology: Religion and Science in Europe, 1650-1750*, ed by. A. Blair and K. Von Greyerz (Baltimore: Johns Hopkins University Press, 2020).
[816] See *1 Thessalonians* 5:23 (KJV) 'And the very God of peace sanctify you wholly; and I pray God your whole spirit and soul and body be preserved blameless unto the coming of our Lord Jesus Christ.'
[817] Charleton, *Natural History of the Passions*, Epistle prefatory.
[818] *Ibid*., 71.

contracted or dilated, moving the blood in an irregular motion. Drawing upon his medical knowledge, Charleton explained how information was transmitted between the brain and heart through the nerves 'extended betwixt those sources of life and sense', adding that it was these nerves which enabled 'such a quick transmission of spirits first from the brain into the precordia, and thence back again.'[819]

By the time he came to write his treatise on the passions, Charleton's understanding of the nerve structures running between the brain and heart had been informed by the writings of Thomas Willis. In a section of the treatise analysing the anatomical basis of laughter, Charleton referred the reader to Willis's 'chapter of the functions and uses of the *Intercostal* pair of nerves' and pointed them towards 'the 9th Table of his most elaborate Book *de Anatomia Cerebri.*'[820] Charleton's interest in the anatomical basis of emotion was even more evident in his 1680 publication *Enquiries into Human Nature* in which he stated:

> I say, that neither is the knowledge of the Passions to be acquir'd without frequenting the Scholes of the Anatomists. For the Passions seem to be in the general, only certain Commotions of the Spirits and bloud, begun in the seat of the Imagination, propagated through the Pathetic Neves to the heart, and thence transmitted up again to the brain: and therefore whosoever would duly enquire into their nature, their first sources and resorts, their most remarkable differences, tides, forces, symptoms, &c. will soon find himself under a necessity to begin at Anatomy.'[821]

Charleton even went so far as to say that a skilful anatomist was much more likely to be able to 'temper and compose the tumults of his inordinate Passions' compared to someone who did not understand the processes that brought them about.[822] Charleton also recognized that one of the possible benefits of successfully managing one's passions was improved health. Noting the

[819] *Ibid*.
[820] *Ibid*., 148-149. See Figure 12 on p. 209.
[821] Charleton, *Enquiries into Human Nature*, preface.
[822] *Ibid*.

hazards of uncontrolled anger, he wrote: 'it is not then without reason physicians advise men to decline this passion, as a powerful enemy to health … it inflames first the spirits, then the blood, and when violent it puts us into fevers and other acute distempers.'[823] He further observed how anger could fire people into madness, apoplexies, epilepsies, convulsions, palsies, and gout and noted that the books of physicians are full of such cases.[824]

When Charleton proceeded to compose his classification of the passions, he claimed like Willis that all passions can be referred to two general heads, namely pleasure and pain, and 'that all Corporeal Passions have their roots grounded in *sense*, whereof pleasure and pain are two opposite affects'.[825] Charleton also noted that this way of classifying the passions had a precedent in antiquity and was the scheme used by both Aristotle and Epicurus.[826] Charleton further associated pleasure with an effusion of the sensitive soul, and the spirits and blood that compromised it, whereas pain was connected with their contraction.[827]

In the section of the treatise concerning 'the passions in particular', Charleton stated that it would be too difficult to provide an exhaustive account of all the passions. Instead, he deemed it sufficient to describe the most remarkable passions that flowed from 'the two general fountains before mentioned, *Pleasure* and *Displeasure* of sense'.[828] The majority of the section however was clearly modelled on the second and third parts of Descartes' account of the passions in *The Passions of the Soul.*[829] The first passion to be analysed by Charleton was admiration, which Descartes had recognized as the first of all the passions.[830] Charleton's description of this passion closely followed the one previously outlined by Descartes, and he explained how admiration arose when 'any new and strange object' was presented to the

[823] Charleton, *Natural History of the Passions,* 113.
[824] *Ibid.,* 114.
[825] *Ibid.*, 83.
[826] *Ibid.*, 82.
[827] *Ibid.*, 83.
[828] *Ibid.*, 86.
[829] See Descartes, *The Passions of the Soule*, 45-173.
[830] See previous discussion on p. 131.

soul.[831] Like Descartes, Charleton further claimed that admiration arose in the soul before a person understood whether an object was good or bad for them. As a result, both authors agreed that this passion had little effect on the heart and blood. Charleton also acknowledged admiration as 'the *first* of all passions', deviating somewhat from his French counterpart however, he added that this was 'after Pleasure and Pain.'[832] After analysing admiration, Charleton detailed the cognitive and physiological processes that accompanied numerous passions including contempt, remorse, gratitude, indignation, glory and shame. Nevertheless, when he concluded his investigation into the various emotions, he stated that there were just six which were 'simple and principal' and which consisted of 'one single act or commotion of the Sensitive Soul.'[833] These passions were the six principal emotions listed by Descartes: admiration, love, hatred, desire, joy, and grief.

As well as being influenced by Descartes, Charleton's classification of the passions was also shaped by Thomas Willis. Like Willis, Charleton stated that passions could be either be physical, metaphysical, or moral according to the three-fold relationship of the sensitive soul. Charleton's account of these three types of passion closely followed the one featured in Willis's *De anima brutorum*. Charleton's liberal borrowing from Willis's work was most clearly evident in his description of the metaphysical passions. Like Willis, Charleton described how metaphysical passions arose in the rational soul and were then transmitted to the brain, the imagination and then the heart. Modifying a quotation from Willis he commented 'it is doubtless that *divine love, detestation of sin, repentance, hope of salvation, fear of incensing divine justice*, and most, if not all other acts (or passions) of devotion are commonly ascribed to the heart'.[834] After making this statement however, Charleton remarked that he did not view

[831] Charleton, *Natural History of the Passions*, 87.
[832] *Ibid*., 88.
[833] *Ibid*., 164.
[834] *Ibid*., 78. Note the close resemblance of this statement with Willis's comments about the 'holy affections' on p. 216.

the heart to be the seat of the passions. He then proceeded to paraphrase the entirety of article thirty-three of *The Passions of the Soul*, and followed Descartes in claiming that passions were only 'felt by us in the heart' because of the 'nerves descending thither from the brain.'[835]

Charleton's account of the physiological basis of emotion was shaped by Descartes' writings; however, his ideas about the nature of matter significantly differed from those of the French thinker. For Descartes, matter was essentially inert. However, for Charleton matter was inherently active and his belief in the activity of matter can be detected in his account of the physical passions.

Willis, Charleton, active matter and the passions

Charleton followed Thomas Willis in classifying the passions as moral, metaphysical, or physical. In his account of the passions in *De anima brutorum*, Willis described how the physical passions appeared in the sensitive soul when it neglected the care of the body and laid aside the dictates of reason. Instead, they concerned the hidden 'sympathies and antipathies' of the sensitive soul independent of its relations to the rational soul and the body.[836] Willis explained how sympathies arose in the sensitive soul when it entered into friendship 'with certain things in secret' and inseparably and firmly loved them. Antipathies, meanwhile, were understood to 'proceed from the occult enmities of the sensitive soul'. Willis explained that objects hidden to the senses could instigate sympathies and antipathies in the sensitive soul 'by their secret influence', and further noted how animal spirits were often driven into confusion when brought into contact with an object's 'effluvias.'[837]

[835] *Ibid*.
[836] Willis, *Two Discourses Concerning the Soul of Brutes*, 46.
[837] *Ibid*.

Willis' first mention of 'effluvias' in *De anima brutorum* occurred near the very beginning of the treatise when he compared the views of Descartes and Digby. Willis noted that while 'the most illustrious Cartesius' explained all things by matter and motion, Digby held the additional view that sensible bodies emitted 'certain most thin Effluvia's' which could enter into the inner recesses of the brain, mix themselves with the spirits, and instigate 'divers sorts of local motions'.[838] Willis adopted Digby's theory of effluvias and it was ultimately this notion that underlay his account of the physical passions.[839]

Like Willis, Charleton adopted the notion of effluvia and used it in his own account of the physical passions. Following Willis, Charleton explained that the physical passions belonged to the sensitive soul – independent of the rational soul and the body – and consisted of 'those natural and occult *inclinations* and *aversations* commonly call'd *sympathies* and *Antipathies.*'[840] Furthermore, he explained how antipathies were formed after an object in the external world brought about great disorder in the animal spirits. Charleton then explained that after an association had been made between the object and the spirits, the sensitive soul abhorred any further approach of the same object or its '*effluvia.*'[841] To illustrate his point, Charleton described how a man who had previously formed an aversion to cats could begin to feel faint if one was in the same room as him – even if he did not know it – by virtue of the 'invisible darts or emanations' coming from the cats body.[842] Sympathies between the sensitive soul and an object, on the other hand, were formed when there was a congruity between the spirits making up the sensitive soul and the 'particles proceeding from an object'.[843] Charleton's adoption of the notion that matter contained radiative powers can be clearly seen

[838] *Ibid*., 3.
[839] On Digby's ideas about the emanation of effluvia from natural bodies and the intellectual tradition from which this notion derived, see p. 153.
[840] Charleton, *Natural History of the Passions*, 75.
[841] *Ibid*., 77.
[842] *Ibid*., 76.
[843] *Ibid*., 77.

in his earliest writings.[844] In his early works, Charleton used this theory to explain the workings of the weapon salve and in *Natural History of the Passions* he resorted to the same idea to explain how physical passions arose.

Even though Charleton adopted aspects of the mechanical philosophy over the course of his writing career and distanced himself from alchemical authors, as Jill Kraye has observed 'for all his confidence in the explanatory power of mechanistic atomism, some of his attempts to explain occult qualities and complex biological processes still bear the imprint of his early interest in the non-mechanical vitalism of the alchemical tradition'.[845] In addition to holding the view that matter emanated effluvia, Charleton also believed that matter possessed an inherent motive virtue. He outlined his view ideas about the 'essential mobility of atoms' in the eleventh chapter of the *Physiologia* where he described how the motive virtue of concretions of atoms principally resided in their 'spiritual' or 'aethereal' parts.[846] Moreover, he believed these spiritual parts were able to move 'the more sluggish; or less moveable parts' of bodies, which Charleton thought was most clearly demonstrable in the case of the voluntary motion of animals.[847]

Charleton and Willis both believed that matter had active properties. Charleton held the view that atoms possessed an inner motive virtue, whereas Willis believed in the inherent activity of the three principles of spirit, sulphur and salt. Moreover, both thinkers believed in

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[844] See earlier discussion on p. 224. Also see Henry, *Matter in Motion,* 220-227; Henry, 'Occult Qualities and the Experimental Philosophy: Active Principles in Pre-Newtonian Matter Theory', 340-341; Clucas, 'Astrology, Natural Magic and the Scientific Revolution', 176-181.
[845] Kraye, 'British Philosophy Before Locke', 288.
[846] Charleton, *Physiologia*, 270. Charleton's views about the motive virtues of atoms were derived from the writings of Pierre Gassendi. The alchemical tradition played a significant role in shaping Gassendi's thought, see Charles Webster, *From Paracelsus to Newton: Magic and the Making of Modern Science* (Cambridge: Cambridge University Press, 1982), 6; Hiro Hirai, 'Mysteries of Living Corpuscles: Atomism and the Origin of Life in Sennert, Gassendi and Kircher', in *Early Modern Medicine and Natural Philosophy*, ed by. P. Distelzweig, B. Goldberg and E. R. Ragland (Dordrecht: Springer, 2015), 255-269: 262. It has been suggested that Gassendi's alchemically inflected views about the active nature of matter were better suited to trends in natural philosophy in mid-century England compared to Descartes' view of inert matter, see Daniel Garber, John Henry, Lynn Joy, and Alan Gabbey, 'New Doctrines of Body and its Powers, Place and Space', in *The Cambridge History of Seventeenth-Century Philosophy*, ed by. D. Garber and M. Ayers (Cambridge: Cambridge University Press, 1998), 553-623: 587.
[847] *Ibid*.

the radiative virtues of matter and the emanation of effluvia from natural bodies. However, neither thinker put forward the idea that matter could perceive or contained inner appetites as Bacon, Cavendish and Glisson had suggested.

Willis and Charleton were both heavily influenced by Francis Glisson's early writings and their views about the medical spirits were shaped by Glisson's 1654 treatise *Anatomia Hepatis*.[848] However, when Charleton came to write the *Enquiries into Human Nature* in 1680, he was reluctant to accept what he saw as some of the more extreme notions put forward by Glisson regarding the perception and appetites of matter. His reservations are most clearly expressed in a section of the work discussing the topic of 'natural sense' within a broader discussion on the processes of nutrition.[849] Like Glisson, Charleton held the view that humans possessed a 'certain sense of Touching' that was not attributable to the common sense or to the brain. He further believed that humans shared this unconscious '*Natural sense* of *Touching*' with 'Plant-animals' such as sponges and differentiated it from the conscious '*Animal* sense of *Touching*'. Charleton recognized that this topic had been previously discussed by Tommaso Campanella and William Harvey, but it was 'their Equal Dr. Glisson' who considered the topic from a metaphysical perspective and attempted to found 'the very life or substantial Energie of Nature' on this notion, which he termed '*Perceptio Naturalis.*'[850] Unlike Glisson, however, Charleton did not believe that this sense of touch could be applied to all parts of matter. Instead Charleton felt that 'Natural Feeling or Touch' was limited to the bodies of living creatures, with this 'discerning faculty' being particularly active in animal stomachs. Charleton did not hold Glisson's view that 'every single particle of Matter in the Universe, is from the Creation, endowed with this faculty of *Natural Sense*, or *Perception* … with its inseparable Adjuncts,

[848] See Clericuzio, *Elements, Principles and Corpuscles,* 99.
[849] Charleton, *Enquiries into Human Nature*, 108-110.
[850] *Ibid*., 109.

natural *Appetite* and *Motion.*'[851] For Charleton it was inconceivable that every part of matter could perceive and feel:

> For, who can believe, that any part of this dead body hath a perception of the knife of the Dissector, and … Who can be persuaded, that a marble pillar, when knock'd with a mallet, feels as much pain, as the limbs of an Animal, that is beaten with a cudgel?[852]

Even though Charleton believed in the inherent activity of matter, unlike Glisson and other members of the vitalist active matter tradition, he did not go so far as to attribute passions and appetites to matter itself.

Conclusion

By the second half of the seventeenth century the traditional Scholastic account of the passions was being replaced. Emotions were no longer primarily seen through the lens of Aristotelian natural philosophy and Galenic medicine. Instead, alchemical, mechanical and various active matter traditions were shaping the formation of new theories of emotion. Moreover, anatomical observation and experimentation meant that a novel medical understanding of the passions was being forged. Emotions were now often associated with the brain and the nervous system in addition to their traditional location in the heart.

When Thomas Willis and Walter Charleton wrote about the emotions in the second half of the seventeenth century their accounts of the passions were shaped by a variety of factors. Willis's medical background informed his views on the topic, and his anatomical dissections allowed him to make important discoveries regarding the physiological basis of emotion. His

[851] *Ibid*., 110.
[852] *Ibid*.

engagement with the alchemical tradition also shaped his views about spirits, which were fundamental to his conception of the human soul. And despite his general rejection of Aristotelian natural philosophy, Willis still turned to the Scholastic authors in his attempt to classify the passions. Walter Charleton's theory of emotion drew upon the new mechanical philosophies of René Descartes and Kenelm Digby. Though he cannot be seen as part of the English vitalist active matter tradition, Charleton's belief that matter emitted 'semi-immaterial threads of atoms' informed his account of the physical passions. In weaving together threads form a variety of intellectual traditions, Willis and Charleton were able to construct original theories of emotion towards the latter stages of the seventeenth century.

CONCLUSION

This dissertation has argued that topics often at the margins of the history of philosophy – including vitalist theories of active matter, alchemy, medicine and natural magic – played a significant role in shaping the development of theories of emotion during the seventeenth century in England. In so doing, it has attempted to revise recent scholarship that has primarily viewed seventeenth-century theories of emotion as moving away from a traditional Aristotelian account towards a new set of theories based on a mechanical philosophy of nature.

This thesis has demonstrated that the challenge to the Aristotelian (and Galenic) orthodoxy did not just come from a group of mechanical philosophers. Rather, the attempt to formulate new theories of emotion came from a disparate group of individuals who drew upon a wide variety of intellectual traditions when they came to develop their ideas about nature, the human being and the passions of the soul. For instance, chapter two documented how Francis Bacon looked to Bernardino Telesio's vitalistic conception of the cosmos, in addition to alchemical principles, when he constructed his theory of matter – which in turn laid the basis for his original theory of the passions. Similarly, chapter four showed how Margaret Cavendish rejected a mechanical conception of the universe and grounded her account of human appetites and passions in the context of a vitalist theory of appetitive matter. In drawing attention to these alternative theories, this study argues that the transformation of seventeenth-century theories of emotion mirrors the nature of intellectual change during the period of the scientific revolution more generally.

Moreover, building on recent scholarship which has drawn attention to the difficulties in using 'the mechanical philosophy' as a historiographical category, this study has demonstrated how differing versions of a mechanical conception of nature shaped the

formation of theories of the passions during the seventeenth century.[853] When Kenelm Digby developed his account of the passions as part of his mechanical system of natural philosophy, unlike René Descartes and Thomas Hobbes, he did not subscribe to the view that matter was passive and inert. Under the influence of ideas stemming from the tradition of natural magic, he held the view that natural bodies radiated effluvia, and this shaped his views about how an individual's emotions could directly affect another person in their environment. Digby's mechanical philosophy, like many versions developed in seventeenth-century England, viewed matter to be active in some way.[854] The investigation into Digby's theory of emotion therefore casts light on the wide variety of mechanical philosophies that developed over the course of the early modern period and undermines the idea that *the* mechanical philosophy or *the* new science replaced the Aristotelian conception of nature during the seventeenth century.

This thesis has also highlighted many important changes with regards to the medical account of the passions. In chapter one I situated the passions within the context of the Galenic medical tradition in which emotions were recognised as one of the six non-naturals factors thought to influence bodily health. I also argued against the misconception that the humours of the body were thought to determine the passions of the soul and pointed out that the standard definition of the passions required a judgement in the soul prior to an emotion being produced. In later chapters I documented the important role of anatomy in advancing the knowledge of the physiological basis of the passions. Chapter three showed how Descartes and Digby brought attention to 'the nerves of the sixth pair' as an important structure in the transmission of emotion between the brain and the rest of the body. Chapter five examined Thomas Willis' neuroanatomical writings to reveal how his identification of intercostal nerves, and his

[853] See Garber, 'Remarks on the Pre-History of the Mechanical Philosophers'; Roux, 'What to do with the Mechanical Philosophy?'.
[854] See Henry, 'Occult Qualities and the Experimental Philosophy: Active Principles in Pre-Newtonian Matter Theory'; Clucas, 'Corpuscular Matter Theory in the Northumberland Circle'; Clericuzio, *Elements, Principles, and Corpuscles*; Wang, *Handling "Occult Qualities" in the Scientific Revolution.*

reclassification of ‘the nerves of the sixth pair’ to ‘the nerves of the eighth pair’, laid the foundation for all future medical accounts the passions.

One of the main aims of this study was to investigate how new conceptions of the human body and soul shaped the development of theories of the passions over the course of the seventeenth century. In the first chapter, I argued that at the beginning of the century there existed a traditional and dominant way of conceptualising the soul and its relationship to the body – one that was founded on an Aristotelian-based faculty psychology and the principles of matter and form. Furthermore, I suggested that within this context emotions could be regarded as hylomorphic phenomena. In the final decades of the seventeenth century there arose instead a wide variety of ways of conceptualising the human soul and its relationship to the body. Although the old orthodoxy had largely been rejected, there was no new orthodoxy to take its place. Charleton, along with Willis, believed human beings to be in possession of two souls: one consisted of fine particles in the blood and nervous system and perished with the body, while the other was immaterial and given to man by God. In contrast to them, Descartes and Digby held the soul to be a singular immortal and immaterial substance. Meanwhile Hobbes proposed a completely materialist account of mankind’s psychological faculties. Cavendish similarly tended to speak of the soul in materialist terms, however she did occasionally suggest that there was part of human soul that remained immortal. At the end of the seventeenth century, although passions were commonly known to affect the body and soul, there was no new dominant way of explaining how this was the case. This situation persisted into the eighteenth century as can be seen in the first edition of Ephraim Chamber’s *Cyclopaedia* (1728) – one of the first encyclopaedias to be published in England. In the article on the passions, the author acknowledged that the passions were known to affect the body and soul, but confessed: ‘How,

or by what Means, this mutual Action and Communication between Soul and Body is effected, we are, in a great Measure, ignorant.'[855]

This thesis has also investigated changing ideas around the notion of 'spirit' during this period. Throughout the seventeenth century, theories of the passions were inextricably bound up with theories about material spirits. The traditional account of the passions within the Galenic tradition associated passions with movements of the medical spirits to and from the heart. Similarly, the theories of emotion proposed by Descartes, Digby and Hobbes viewed the passions as closely tied to the movement of spirits within the body. However, during the Renaissance material spirits became an important aspect of natural philosophy and were thought to be present not only in living organisms, but throughout the natural world. This was still the case with thinkers writing in the later stages of the seventeenth century such as Thomas Willis, who proposed spirits to be the most active of the five principles in nature in his treatise on fermentation.

The persistence of the notion of spirit and spirits – both the material and immaterial kind – into the second half of the seventeenth century in both psychology and natural philosophy has been one of the unexpected findings of this study. The idea of a spirit (or spirits) in nature was not exclusive to alchemical philosophers – it was a central feature of Stoics physics – nevertheless, it was a notion that was commonly adopted and used by thinkers associated with the alchemical tradition during the early modern period. In the opening decades of the eighteenth century, the article on 'spirit' in Chamber's *Cyclopaedia* contained sections on the topic with regards to theology, medicine, chymistry and physics.[856] The section on the concept of spirit in relation to physics quoted Isaac Newton's *Principia Mathematica* in which Newton wrote about the possibility of a 'most subtile *Spirit* which pervades all, even the

[855] Ephraim Chambers, *Cyclopaedia: or, an Universal Dictionary of Arts and Sciences…in Two Volumes* (London: printed for James and John Knapton et al., 1728), 795.
[856] *Ibid*., 111-112.

densest Bodies, and lies hid therein; by the Force and Action whereof, the Particles attract each other.'[857] Furthermore, the article continued to quote Newton to propose that it might be via the 'Vibrations of this *Spirit*' that the various members of an animal body were moved at the 'Instance of the Will'.[858] This encyclopaedia entry would seem to indicate that spirits remained a valid topic in natural philosophy and medicine into the eighteenth century. Further research on changing ideas about spirits, their role as ontological go-betweens, and their eventual obsolescence in natural philosophy and medicine will help cast light on this key concept in early modern thought.[859]

This study has offered a preliminary investigation into the role of anatomical dissection in elucidating the structural basis of the passions. The seventeenth century also saw the development of alternative empirical approaches towards understanding the nature of emotion. Robert Boyle, for instance, proposed an experiment in which an animal's vagus nerve was cut in order to examine the effects this would have on the intensity of certain passions.[860] Further studies on the variety of experimental approaches to the passions may be able to provide a more detailed insight into early modern theories of emotion.

Over the course of the eighteenth century, the passions remained a topic of considerable importance in philosophy. They played a crucial role in the moral philosophy and aesthetic theories of Lord Shaftesbury, David Hume and Adam Smith among others. However, the need to explain the bodily aspects of the passions become a less pressing concern for philosophers during this period. As Amy Schmitter has observed, 'many philosophers of the eighteenth century followed Shaftesbury in refusing to consider the physiology of the emotions, they

[857] *Ibid*., 112.
[858] *Ibid*.
[859] I note a recent conference addressing some of these matters was recently held at KU Leuven, see https://hiw.kuleuven.be/dwmc/conferences-lectures/spirit-mapping-the-boundaries-of-the-material-and-the-immaterial-from-late-antiquity-to-the-early-modern-period
[860] See Robert Boyle, *Robert Boyle's 'heads' and 'inquiries'* [electronic resource], ed. by M. Hunter (London: Robert Boyle Project, School of History, Classics and Archaeology, Birkbeck, University of London, 2005), 9.

relegated the bodily causes, components and effects to the attention of 'anatomists,' rather than of philosophers'.[861] A treatise authored by the physician William Falconer (1744-1824) and published in London in 1788 entitled *A Dissertation on the Influence of the Passions upon Disorders of the Body* would indicate that the effect of the passions upon bodily health continued to be recognised towards the end of the eighteenth century.[862]

In the twenty-first century, healthcare professionals no longer speak of the passions of the soul. Instead, discussions within a clinical environment tend to focus on the emotions in the context of the mind or brain.[863] However, the discovery of conditions such as Broken Heart Syndrome and the increasing incidence of 'medically unexplained symptoms' are a reminder that our emotions, in addition to being mental, are also an embodied phenomenon – and sometimes devastatingly so. In the coming decades, the problem of mind-body interaction is one that doctors will increasingly have to confront. If conversations around this topic are to be successful, I believe that there must be an awareness and sensitivity to the historical and philosophical issues involved. It is my hope that dialogue across academic disciplines and professional boundaries on this matter will grow in the years to come. This dissertation is one attempt to get the conversation going.

[861] Schmitter, '17th and 18th Century Theories of Emotions.'
[862] William Falconer, *A Dissertation on the Influence of the Passions upon Disorders of the Body* (London: printed for C. Dilly and J. Phillips, 1788).
[863] For instance, see Lisa Feldman Barret, *How Emotions are Made: The Secret Life of the Brain* (London: Macmillan, 2017).

BIBLIOGRAPHY

PRIMARY SOURCES

A Collection of Letters and Poems: Written by several Persons of Honour and Learning, Upon divers Important Subjects, to the Late Duke and Dutchess of Newcastle. London: printed for Langley Curtis, 1678

Aquinas, Thomas. *Summa Theologiae*, edited by Pietro Caramello. Turin: Marietti, 1950

Aristotle, *The Complete Works of Aristotle*, edited by Jonathan Barnes. Princeton: Princeton University Press, 1984

Aubrey, John. *Aubrey's Brief lives*, edited from the original manuscripts and with an introduction by Oliver Lawson Dick. London: Secker and Warburg, 1958

Aubrey, John. *Brief Lives and Other Selected Writings,* edited with an introduction and notes by Anthony Powell. London: Cresset Press, 1949

Ayloffe, William. *The Government of the Passions According to the Rules of Reason and Religion*. London: printed for J. Knapton, 1700

Bacon, Francis. *Of the Advancement and Proficience of Learning; or, The Partition of Sciences. Nine Books*, *translated by Gilbert Watts*. London: Leon Lichfield, 1640

Bacon, Francis. *Sylva Sylvarvm, or a Naturall History in Ten Centuries.* London: printed by J.H for William Lee, 1626

Bacon, Francis. *The Essayes or Counsels, Civill and Morall, of Francis Lo. Verulam, Viscount St. Alban*. London: printed by John Haviland, 1625

Bacon, Francis. *The essays, or councils, civil and moral, of Sir Francis Bacon, Lord Verulam, Viscount St. Alban with a table of the colours of good and evil, and a discourse of The wisdom of the ancients*. London: Printed for H. Herringman, R. Scot, R. Chiswell, A. Swalle, and R. Bentley, 1696

Bacon, Francis. *The Historie of Life and Death. With Observations Naturall and Experimental for the Prolongation of Life*. London: printed by I. Okes for Humphrey Mosley, 1638

Bacon, Francis. *The Two Bookes of Francis Bacon. Of the proficience and aduancement of Learning, divine and human.* London: printed for Henri Tomes, 1605

Bacon, Francis. *The wisdome of the ancients, written in Latin by the Right Honourable Sir Francis Bacon Knight, Baron of Verulam, and Lord Chancelor or England*. *Done into English by Sir George Knight*. London: printed by John Bill, 1619

Bacon, Francis. *The Works of Francis Bacon*, *14 volumes,* edited by James Spedding, Robert Leslie Ellis, and Douglas Denon Heath. London: Longman, 1857-1874

Bostocke, Richard. *The difference between the auncient Phisicke, first taught by the godly forefathers consisting in vnitie peace and concord: and the latter Phisicke proceeding from Idolaters, Ethnickes, and Heathens: as Gallen, and such other consisting in dualitie, discord, and contrarietie. And wherein the naturall Philosophie of Aristotle doth differ from the truth of Gods worde and is iniurious to Christianitie and sounde doctrine.* London: [By G. Robinson] for Robert Walley, 1585

Boyle, Robert. *Robert Boyle's 'heads' and 'inquiries'* [electronic resource], edited by M. Hunter. London: Robert Boyle Project, School of History, Classics and Archaeology, Birkbeck, University of London, 2005

Bright, Timothy. *A Treatise of Melancholy*. London: printed by William Stansby, 1613

Browne, Thomas. *Religio Medici*. London: printed for Andrew Crooke, 1642

Burton, Robert. *The Anatomy of Melancholy*, Volume 1, edited by Thomas C. Faulkner, Nicolas K. Kiessling, and Rhonda L. Blair. Oxford: Clarendon Press, 1989

Cavendish, Margaret. *CCXI Sociable Letters.* London: Printed by William Wilson 1664

Cavendish, Margaret. *De Vita et Rebus Gestis nobilissimi illustrissimique principis, Guilielmi Ducis Novo-Castrensis.* London: printed by T. Milbourne, 1668

Cavendish, Margaret. *Ground of natural philosophy divided into thirteen parts: with an appendix containing five parts*. London: Printed by A. Maxwell, 1668

Cavendish, Margaret. *Natures Pictures*. London: Printed for J. Martin and J. Allestrye 1656

Cavendish, Margaret. O*bservations upon Experimental Philosophy*, edited by Eileen O'Neill. Cambridge: Cambridge University Press, 2001

Cavendish, Margaret. *Philosophical Letters*. London: s.n., 1664

Cavendish, Margaret. *Playes*. London: Printed by A. Warren, for John Martyn, James Allestry, and Tho. Dicas, 1662

Cavendish, Margaret. *Poems and Fancies*. London: Printed by T. R. for J. Martin, and J. Allestrye, 1653

Cavendish, Margaret. *Political Writings*, edited by Susan James. Cambridge: Cambridge University Press, 2003

Cavendish, Margaret. *The Philosophical and Physical Opinions*. London: printed for J. Martin and J. Allestrye, 1655

Cavendish, Margaret. *Philosophical and Physical Opinions*. London: printed by William Wilson, 1663

Cavendish, Margaret. *The Worlds Olio*. London: Printed for J. Martin and J. Allestrye, 1655

Chambers, Ephraim. *Cyclopaedia: or, an Universal Dictionary of Arts and Sciences*. London: printed for James and John Knapton et. al., 1728.

Charleton, Walter. *Enquiries into Human Nature, in vi. anatomic praelections in the new theatre of the royal colledge of physicians in London*. London: printed for M. White for Robert Boulter, 1680

Charleton, Walter. *Epicurus's Morals, collected partly out of his own Greek text in Diogenes Laertius, and partly out of the rhapsodies of Marcus Antoninus, Plutarch, Cicero, & Seneca*. London: printed by W. Wilson for Henry Herringman, 1656

Charleton, Walter. *Natural History of Nutrition, Life and Voluntary Motion. Containing all the new discoveries of anatomist's, and most probable opinions of physicians, concerning the oeconomie of human nature*. London: printed for Henry Herrington, 1659

Charleton, Walter. *Natural History of the Passions*. London: printed by T.N for James Magens, 1674

Charleton, Walter. *Physiologia Epicuro-Gassendo-Charltoniana: or A Fabrick of Science Natural Upon the Hypothesis of Atoms, founded by Epicurus, repaired by Petrus Gassendus, and augmented by Walter Charleton*. London: printed by Tho. Newcomb for Thomas Heath, 1654

Charleton, Walter. *Spiritus Gorgonicus, vi sua saxipara exutus; sive de causis, signis & sanatione lithiaseωs, diatriba*. Leiden: ex officina Elseviriorum, 1650

Charleton, Walter. *The Darknes of Atheism Dispelled by the Light of Nature, A Physio-Theologicall Treatise*. London: printed by J.F. for William Lee, 1652

Charleton, Walter. *The Immortality of the Human Soul, Demonstrated by the Light of Nature.* London: printed by William Wilson for Henry Herringman, 1657

Charron, Pierre. *De la Sagesse livres trois*, Bordeaux: Simon Millanges, 1601.

Charron, Pierre. *Of Wisdome Three Bookes written in French by Peter Charron*. Translated by Samson Lennard. London: printed by George Miller, 1630

Coeffeteau, Nicolas. *A Table of Humane Passions*. Translated by Edward Grimeston, London: printed by Nicholas Okes, 1621

Coeffeteau, Nicolas. *Tableau des passions humaines, de leurs causes et de leurs effets.* Paris: chez Sébastien Cramoisy, 1620

Della Porta, Giovanni Battista. *Magiae Naturalis Libri XX*. Naples: apud Horatium Saluianum, 1589

Descartes, René. *Les Passions de l'âme.* Paris: chez Henry Le Gras, 1649

Descartes, René. *The Correspondence between Princess Elisabeth of Bohemia and René Descartes*, edited and translated by Lisa Shapiro. Chicago: The University of Chicago Press, 2007

Descartes, René. *The Passions of the Soul*, translated by Michael Moriarty. Oxford: Oxford University Press, 2015

Descartes, René. *The Passions of the Soule*. London: printed for A. C., sold by J. Martin and J. Ridley, 1650

Descartes, René. *Treatise of Man*, edited by Thomas Steele Hall. Cambridge MA: Harvard University Press, 1972

Digby, Kenelm. *A Conference with a Lady About Choice of Religion*. Paris: [Widow of J. Blagaert], 1638

Digby, Kenelm. *A Discourse Concerning the Vegetation of Plants…At a Meeting of the Society for promoting Philosophical Knowledge by Experiments*. London: printed by J. C for John Dakins, 1661

Digby, Kenelm. *A Late Discourse Made in Solemne Assembly of Nobles and Learned Men at Montpellier in France…Touching the Cure of Wounds by the Powder of Sympathy; With Instructions how to make the said Powder; whereby many other Secrets of Nature are unfolded*. London: printed for R. Lownes and T. Davies, 1658

Digby, Kenelm. *A Treatise Concerning the Vegetation of Plants.* London: Printed by J. C. for John Dakins, 1661

Digby, Kenelm. *Observations on the 22. Stanza in the 9th Canto of the 2d Book of Spencers Faery Queen. Full of excellent Notions concerning the Frame of Man, and his rationall Soul*. London: printed for Daniel Frere, 1643

Digby, Kenelm. *Observations Upon Religio Medici*. London: printed by R. C. for Lawrence Chapman and Daniel Frere, 1644

Digby, Kenelm. *Two Treatises In the One Of Which, The Nature Of Bodies; In The Other, The Nature Of Mans Soule; Is Looked Into: In A Way Of Discovery, Of The Immortality Of Reasonable Soules*. Paris: printed by Gilles Blaizot, 1644

Downame, John. *Spiritual Physick to Cure the Diseases of the Soul, arising from Superfluitie of Choller, prescribed out of God's Word*. London: By Gabriel Simson for William Iones, 1600

Duchesne, Joseph. *The Practise of Chymicall, and Hermeticall Physicke, for the preservation of health. Written in Latin by Josephus Quersitanus, Doctor of Physicke. And Translated into English, by Thomas Timme, minister*. London: printed by Thomas Creede, 1605

Elyot, Thomas. *The Castel of Helth*. London: Thomas Berthelet, 1539

Elyot, Thomas. *Castle of Health*. London: printed for the Company of Stationers, 1610

Falconer, William. *A Dissertation on the Influence of the Passions upon Disorders of the Body*. London: printed for C. Dilly and J. Phillips,1788

Fenner, William. *A Treatise of the Affections; or the Soules Pulse. Whereby a Christian may know whether he be living or dying*. London: printed by E.G for I. Rothwell, 1641

Ficino, Marsilio. *Three Books on Life*, edited by Carol V. Kaske and John R. Clark. Binghamton: Center for Medieval and Early Renaissance Studies, State University of New York at Binghamton, 1989

Glisson, Francis. *Tractatus de natura substantiae energetica, seu de vita naturae*. London: E. Flesher, H. Brome, N. Hooke 1672

Hart, James. *Klinkē, or The Diet of the Diseased*. London: printed by John Beale, 1633

Huarte, Juan. *The examination of mens wits*. London: printed by Adam Islip, 1594

Hobbes, Thomas. *Leviathan, or the Matter, Forme & Power of a Commonwealth, Ecclesiasticall and Civill*. London: printed for Andrew Crooke, 1651

Hobbes, Thomas. *Humane Nature: Or, The fundamental Elements of Policie. Being a Discoverie Of the Faculties, Acts, and Passions of The Soul of Man, from their original causes, According to such Philosophical Principles as are not commonly known or affected*. London: printed by T. Newcomb, 1649

Hobbes, Thomas. *The English Works of Thomas Hobbes of Malmesbury*, Vol 1, edited by William Molesworth. London: John Bohn, 1839

Hobbes, Thomas. *The English Works of Thomas Hobbes of Malmesbury*, Vol 6, edited by William Molesworth. London: John Bohn, 1840

Keckermann, Bartholomäus. *Systema Physicum*. Hanau: Guilielmus Antonius, 1610

Langton, Christopher. *A Very Brefe Treatise Orderly Declaring the Principal Partes of Physick*. London: Edward Whitchurch, 1547

Lemnius, Levinus. *The Touchstone of Complexions*. London: Thomas Marsh, 1576

Magirus, Johannes. *Physiologiae Peripateticae Libri Sex*. Frankfurt: Johannes Berner, 1619

Montaigne, Michel de. *The Essayes Or Morall. Politike, and Millitarie Discourses of Lo. Michaell de Montaigne*. Translated by John Florio. London: printed by Val. Sims for Edward Blount, 1603

More, Henry. *An Account of Virtue, or, Dr. Henry More's abridgment of morals put into English.* London: printed for Benj. Tooke, 1690

More, Henry. *Enchiridion Ethicum, praecipua Moralis Philosophiae Rudimenta complectens, illustrate ut plurimum Veterum Monuments, et ad Probitatem Vitae perpetuo accommodate*. London: J. Flesher, 1668

Mosley, Nicholas. *Psychosophia: or Natural and Divine Contemplations of the Passions and Faculties of the Soul of Man*. London: printed for Humphrey Mosley, 1653

Mulcaster, Richard. *Positions wherein those primitive circumstances be examined, which are necessarie for the training up of children, either for skill in their booke, or health in their bodie*. London: printed by Thomas Vautrollier, 1581

Parker, Samuel. *Tentamina Physico-Theologica de Deo.* London: Jo. Sherley and Sam. Thomson, 1665

Peacham, Henry. *Minerva Britanna*. London: printed in Shoe-lane by Wa. Dight, 1612

Proclus, *The Elements of Theology*, edited by E.R Dodds. Oxford: Clarendon Press, 1933

Ripa, Cesare. *Iconologia overo Descrittione Di Diverse Imagini cauate dall'antichità*. Rome: printed by Lepido Facij, 1603

Rogers, Thomas. *A Paterne of a passionate mind. Conteining a briefe description of the sundry strange affects of the minde of man*. London: printed by Thomas East, 1580

Rogers, Thomas. *The Anatomie of the Mind*. London: printed by J. C for Andrew Maunsell, 1576

Senault, Jean-Francois. *The Use of Passions*. Translated by Henry, Earl of Monmouth. London: printed for J. L. and Humphrey Mosley, 1649

Shakespeare, William. *King Lear, The Arden Shakespeare*, edited by R.A. Foakes. London: Bloomsbury, 1997

Van Helmont, Jan Baptist. *A Ternary of Paradoxes, Written originally by Joh. Bapt. Van Helmont, and translated illustrated and amplified by Walter Charleton, doctor in physick and physician to the late king*. London: printed by James Flesher, 1650

Van Helmont, Jan Baptist. *Deliramenta Catarrhi: or, the incongruities, impossibilities, and absurdities couched under the vulgar opinion of defluxions. The author, that great philosopher, by fire, Joh. Bapt. Van Helmont, &c. The translator and paraphrast Dr. Charleton, physician to the late king.* London: printed by E.G. for William Lee, 1650

Walker, Obadiah. *Of Education, especially of young gentleman*. Oxford: s.n.,1673

Walkington, Thomas. *The Optick Glasse of Humors*. London: imprinted by John Windet for Martin Clerke, 1607

Wallis, Johannes. *Commercium Epistolicum de Quaestionibus quibusdam Mathematicis nuper habitum*. Oxford: printed by A. Lichfield, 1658

Weemse, John. *The Portraiture of the Image of God in Man*. London: Printed by T. C. for John Bellamie, 1636

White, Thomas. *Religion and reason mutually corresponding and assisting each other, first essay: a reply to the vindicative answer lately publisht against a letter, in which the sence of a bull and council concerning the duration of purgatory was discust*. Paris: s.n., 1660

White, Thomas. *The Middle State of Souls from the Hour of Death to the Day of Judgment*. London: s.n., 1659

White, Thomas. *Villicationis suae de medio animarum statu ratio episcopo chalcedonensi reddita à Thoma Anglo, ex Albiis East-Saxonum*. Paris: s.n., 1653

Willis, Thomas. *Cerebri anatome: Cui accessit nervorum description et usus*. London: Jo. Martin and Ja. Allestrye, 1664

Willis, Thomas. *De anima brutorum quae hominis vitalis ac sensitiva est, exercitationes duae*. London: Gulielm. Wells and Rob. Scot, 1672

Willis, Thomas. *Diatribae duae medico-philosophicae*. London: Jo. Martin, Ja. Allestrye, Tho. Dicas, 1659

Willis, Thomas. *The Remaining Medical Works of that Famous and Renowned Physician Dr Thomas Willis*, translated by S. Pordage. London: T. Dring, C. Harper, J. Leigh, and S. Martyn, 1681

Willis, Thomas. *Two Discourses Concerning the Soul of Brutes, which is that of the Vital and Sensitive of Man,* translated by S. Pordage. London: printed for Thomas Dring and John Leigh, 1683

Wood, Anthony. *Athenae Oxoniensis: An Exact History of All the Writers and Bishops Who Have Had Their Education in the Most Ancient and Famous University of Oxford*, Volume 3, edited by Philip Bliss. London: 1817

Wright, Thomas. *The Passions of the Minde in Generall. Corrected, enlarged, and with sundry new discourses augmented*. London: printed by Miles Flesher for Robert Dawlman, 1630

Wright, Thomas. *The Passions of the Minde*. London: printed by V[alentine] S[immes] for W[alter] B[urre], 1601

SECONDARY SOURCES

Allen, Phyllis. 'Medical Education in the Seventeenth Century.' *Journal of the History of Medicine and Allied Sciences* 1, No. 1 (1946): 115-143

Arikha, Noga. *Passions and Tempers: A History of the Humours*. New York: Harper Collins, 2007

Arráez-Aybar, Luis-Alfonso, Pedro Navia-Álvarez, Talia Fuentes-Redondo and José-L Bueno-López. 'Thomas Willis, a Pioneer in Translational Research in Anatomy on the 350th Anniversary of the *Cerebri anatome.*' *Journal of Anatomy* 226, No. 3 (2015): 289-300

Arrizabalaga, Jon. *The Articella in the Early Press ca. 1476-1534*. Cambridge: Cambridge Wellcome Institute for the History of Medicine, 1998

Bailey, Merridee L. 'Educational Treatieses.' In *Early Modern Emotions: An Introduction*, edited by Susan Broomhall, 99-102. Abingdon: Routledge, 2017

Bakker, Paul J. J. M. 'Natural Philosophy, Metaphysics, or Something in Between? Agostino Nifo, Pietro Pomponazzi, and Marcantonio Genua on the Nature and Place of the Science of the Soul.' In *Mind, Cognition and Representation: The Tradition of Commentaries on Aristotle's De Anima*, edited by Johannes M. M. H. Thijssen, Paul J. J. M. Bakker, 151-178. Aldershot: Ashgate, 2007

Ball, Bryan W. *The Soul Sleepers, Christian Mortalism from Wycliffe to Priestley*. Cambridge: James Clarke & Co, 2008

Banchetti-Robino, Marina Paola. 'Ontological Tensions in Sixteenth and Seventeenth Century Chemistry: Between Mechanism and Vitalism.' *Foundations of Chemistry* 13, Issue 3 (2011): 173-186.

Barclay, Katie. *The History of Emotions: A Student Guide to Method and Sources*. London: Red Globe Press, 2020

Barker, Peter. 'Stoic contributions to early modern science.' In *Atoms, Pneuma, and Tranquillity: Epicurean and Stoic Themes in European Thought*, edited by Margaret J. Osler, 135-155. Cambridge: Cambridge University Press, 1991

Battigelli, Anna. *Margaret Cavendish and the Exiles of the Mind*. Lexington: The University Press of Kentucky, 1998

Begley, Justin and Benjamin Goldberg. *The Medical World of Margaret Cavendish*. Cham: Palgrave Macmillan, 2023

Begley, Justin. *Margaret Cavendish, The Last Natural Philosopher* (PhD Dissertation). The University of Oxford, 2016

Beretta, Marco. 'The revival of Lucretian atomism and contagious diseases during the renaissance.' *Medicina Nei Secoli* 15, No. 2 (2003): 129-54

Bigotti, Fabrizio. *Physiology of the Soul: Mind, Body and Matter in the Galenic Tradition of the Late Renaissance (1550-1630).* Turnhout: Brepols, 2019

Bitbol-Hésperiès, Annie. 'De toute la nature de l'homme: de L'homme à La Description Du Corps Humain, la physiologie des passions de l'âme et ses antécédents médiceaux.' In *Les Passions de L'âme et leur Réception Philosophique*, edited by Giulia Belgioioso and Vincent Carraud, 67-100. Turnhout: Brepols, 2020

Blair, Ann and Kaspar Von Greyerz (eds.). *Physico-Theology: Religion and Science in Europe, 1650-1750*. Baltimore: Johns Hopkins University Press, 2020

Blair, Ann. 'Mosaic Physics and the Search for a Pious Natural Philosophy in the Late Renaissance.' *Isis* 91, No. 1 (2000): 32-58

Blair, Ann. 'Natural Philosophy.' In *The Cambridge History of Science*, *Volume 3: Early Modern Science,* edited by Katharine Park and Lorraine Daston, 365-406. Cambridge: Cambridge University Press, 2006

Boanza, Victor D. 'Fermentation.' In E*ncyclopedia of Early Modern Philosophy and the Sciences*, edited by D. Jalobeanu and C. T. Wolfe, 8-10. Cham: Springer, 2020 https://doi.org/10.1007/978-3-319-20791-9_478-1

Boas Hall, Marie. 'The Establishment of the Mechanical Philosophy.' *Osiris* 10 (1952): 412-541

Boenke, Michaela. 'Bernardino Telesio.' In *The Stanford Enyclopedia of Philosophy*, edited by Edward N. Zalta, Winter 2018 edition, https://plato.stanford.edu/archives/win2018/entries/telesio/

Bono, James J. 'Medical spirits and the medieval language of life.' *Traditio* 40 (1984): 91-130

Borcherding, Julia. "I Wish My Speech Were Like A Lodestone' Cavendish on Love and Self-Love.' *Proceedings of the Aristotelian Society* 121, Issue 3 (2021): 381-409

Boros, Gábor. 'The Passions.' In *The Oxford Handbook of Philosophy in Early Modern Europe*, edited by Desmond M. Clarke and Catherine Wilson, 182-200. Oxford: Oxford University Press, 2011

Bos, Jacques. 'Complexion (cf. Temperament).' In *Encyclopedia of Early Modern Philosophy and the Sciences*, edited by D. Jalobeanu and C. T. Wolfe, Cham: Springer, 2021 https://doi.org/10.1007/978-3-319-20791-9_402-1

Boyle, Deborah. 'Margaret Cavendish on Perception, Self-Perception, and Probable Opinion.' *Philosophy Compass* 10 (2015): 438-450

Boyle, Deborah. 'Margaret Cavendish's Nonfeminist Natural Philosophy.' *Configurations* 12, No. 2 (2004): 195-227

Boyle, Deborah. *The Well-Ordered Universe: The Philosophy of Margeret Cavendish*. Oxford: Oxford University Press, 2018

Bracken, Patrick and Philip Thomas. 'Time to Move beyond the Mind-Body Split.' *British Medical Journal* 325, No. 7378 (2002): 1433-1434

Broad, Jacqueline and Maks Sipowicz. 'Cavendish's Philosophy of the Passions: Theory and Practice.' In *Margaret Cavendish: An Interdisciplinary Perspective*, edited by Lisa Walters and Brandie R. Siegfried, 83-97. Cambridge: Cambridge University Press, 2022

Broad, Jacqueline. 'Cavendish, Van Helmont and the Mad Raging Womb.' In *The New Science and Women's Literary Discourse*, *Prefiguring Frankenstein*, edited by Judy A. Hayden, 47-63. Cham: Springer, 2011,

Brouwer, René. 'Stoic Sympathy.' In *Sympathy: A History*, edited by Eric Schliesser, 15-35. Oxford: Oxford University Press, 2015

Brown, Deborah J. *Descartes and the Passionate Mind*. Cambridge: Cambridge University Press, 2006

Brown, Deborah. 'Power and Passion in Hobbes, Descartes and Spinoza.' In *The Routledge Companion to Seventeenth Century Philosophy*, edited by Dan Kaufman, 334-353. Abingdon: Routledge, 2018

Brown, Theodore M. 'Descartes, Dualism, and Psychosomatic Medicine.' In *The Anatomy of Madness: Essays in the History of Psychiatry*, Volume 1, edited by W. F. Bynum, Roy Porter, and Michael Shepherd, 40-62. London Routledge, 1985

Burkert, Walter. *Greek Religion: Archaic and Classical*. Oxford: Blackwell, 1985

Burnett, Charles and Danielle Jacquart. *Constantine the African and 'Alī ibn al-'Abbās al-Mağūsī: The Pantegni and related texts*. Leiden: Brill, 1994

Burns, Norman T. *Christian Mortalism from Tyndale to Milton*. Cambridge MA: Harvard University Press, 1972

Byers, Sarah C. 'Augustine and the Cognitive Cause of Stoic 'Preliminary Passions' (Propatheiai).' *Journal of the History of Philosophy* 41, No. 4 (2003): 433-448

Camden, Carroll. 'The Suffocation of the Mother.' *Modern Language Notes* 63, No. 6 (1948): 390-393

Caron, Louis. 'Thomas Willis, the Restoration and the First Works of Neurology.' *Medical History* 59, No. 4 (2015): 525-553

Carrera, Elena. 'Anger and the Mind-Body connection.' In *Emotions and Health, 1200-1700*, edited by Elena Carrera, 95-146. Leiden: Brill, 2013

Casini, Lorenzo. 'The Immortality of the Soul.' In *Philosophy of Mind in the Late Middle Ages and Renaissance*, edited By Stephan Schmid, 229-249. London: Routledge, 2018

Certeau, Michel de. *La possession de Loudun*. Paris: Gallimard/Julliard, 1980

Chang, Kevin, 'Alchemy as Studies of Life and Matter: Reconsidering the Place of Vitalism in Early Modern Chymistry.' *Isis* 102, No. 2 (2011): 322-329

Chao, Tien-yi. "Between Nature and Art' – The Alchemical Underpinnings of Margaret Cavendish's Observations Upon Experimental Philosophy and The Blazing World.' *EurAmerica* 42, No. 1 (2012): 45-82

Clericuzio, Antonio. 'A Redefinition of Boyle's Chemistry and Corpuscular Philosophy.' *Annals of Science* 47 (1990): 561-589

Clericuzio, Antonio. 'From Van Helmont to Boyle: A study of the transmission of Helmontian Chemical and Medical Theories in Seventeenth-Century England.' *British Journal for the History of Science* 26, Issue 3 (1993): 303-334

Clericuzio, Antonio. 'Mechanism and Chemical Medicine in Seventeenth-Century England: Boyle's Investigation of Ferments and Fermentation.' In *Early Modern Medicine and Natural Philosophy*, edited by Peter Distelzweig, Benjamim Goldberg and Evan R. Ragland, 271-293. Dordrecht: Springer, 2015

Clericuzio, Antonio. 'The Internal Laboratory. The Chemical Reinterpretation of Medical Spirits in England (1650-1680).' In *Alchemy and Chemistry in the 16th and 17th Centuries*, edited by Piyo Rattansi and Antonio Clericuzio, 51-83. Dordrecht: Kluwer Academic Publishers, 1994

Clericuzio, Antonio. *Elements, Principles and Corpuscles: A Study of Atomism and Chemistry in the Seventeenth Century*. Dordrecht: Kluwer Academic Publishers, 2000

Clucas, Stephen (ed.). *John Dee: Interdisciplinary Studies in English Renaissance Thought*. Dordrecht, Springer, 2006

Clucas, Stephen. '"A double Perception in all Creatures": Margaret Cavendish's Philosophical Letters and Seventeenth-Century Natural Philosophy.' In *God and Nature in the Thought of Margaret Cavendish*, edited by Brandie R. Siegfried and Lisa T. Sarasohn, 121-140. Farnham: Ashgate, 2014

Clucas, Stephen. 'Astrology, Natural Magic and the Scientific Revolution.' In *The Cambridge History of Philosophy of the Scientific Revolution*, edited by David Marshall Miller and Dana Jalobeanu, 167-183. Cambridge: Cambridge University Press, 2022

Clucas, Stephen. 'Corpuscular Matter Theory in the Northumberland Circle.' In *Late Medieval and Early Modern Corpuscular Matter Theories*, edited by Cristoph Lüthy, John Murdoch and William Newman, 181-207. Leiden: Brill, 2001

Clucas, Stephen. 'Margaret Cavendish's Materialist Critique of Van Helmontian Chymistry.' *Ambix* 58, No. 1 (2011): 1-12

Clucas, Stephen. 'The Atomism of the Cavendish Circle: A Reappraisal.' *The Seventeenth Century* 9, Issue 2 (1994): 247-273

Clucas, Stephen. 'The Duchess and The Viscountess: Negotiations Between Mechanism and Vitalism in the Natural Philosophies of Margaret Cavendish and Anne Conway.' *In-Between: Essays and Studies in Literary Criticism* 9, No. 1&2 (2000): 125-136

Clucas, Stephen. 'Variation, Irregularity and Probabilism: Margaret Cavendish and Natural Philosophy as Rhetoric.' In *A Princely Brave Woman: Essays on Margaret Cavendish, Duchess of Newcastle*, edited by Stephen Clucas, 199-209. Aldershot: Ashgate, 2003

Clulee, Nicholas. *John Dee's Natural Philosophy: Between Science and Religion*. London and New York: Routledge, 1988

Cohen-Hanegbi, Naama. '*Accidentia anime* in Late Medieval Medicine.' In *Before Emotion: The Language of Feeling, 400-1800*, edited by Juanita Feros Ruys, Michael W. Champion and Kirk Essary, 131-141. New York: Routledge, 2019

Copeland, Rita. 'Pathos and Pastoralism: Aristotle's Rhetoric in Medieval England.' *Speculum* 89, No.1 (2014): 96-127

Copenhaver, Brian P. *Hermetica: The Greek Corpus Hermeticum and the Latin Asclepius in a new English Translation, with Notes and Introduction*. Cambridge: Cambridge University Press, 1992

Copenhaver, Brian. 'The Occultist Tradition and its Critics.' In *The Cambridge History of Seventeenth-Century Philosophy*, edited by Daniel Garber and Michael Ayers, 454-512. Cambridge: Cambridge University Press, 1998

Corneanu, Sorana. 'Francis Bacon on the Motions of the Mind', in *Francis Bacon on Motion and Power*, edited by Dana Jalobeanu, Guido Giglioni, James A.T. Lancaster, Sorana Corneanu, 210-230. Switzerland: Springer, 2016

Corneanu, Sorana. *Regimens of the Mind: Boyle, Locke and the Early Modern Cultura Animi Tradition*. Chicago: University of Chicago Press, 2011

Costello, William T. *The Scholastic Curriculum at Early Seventeenth-Century Cambridge*. Cambridge, MA: Harvard University Press, 1958

Cunning, David. *Cavendish*. London: Routledge, 2016

Daniel, Dane T. 'Invisible Wombs: Rethinking Paracelsus's Concept of Body and Matter.' Ambix 53, No. 2 (2006): 129-142

Dawes, Gregory W. 'Ancient and Medieval empiricism.' In *The Stanford Encyclopedia of Philosophy*, edited by Edward N. Zalta and Uri Nodelman. Summer 2023 Edition https://plato.stanford.edu/archives/sum2023/entries/empiricism-ancient-medieval/

De Boer, Sander. 'The (Human) Soul.' In *The Routledge Companion to Sixteenth Century Philosophy*, edited by Henrik Lagerlind and Benjamin Hill, 411-435. Abingdon: Routledge, 2017

Dear, Peter. 'A Philosophical Duchess: Understanding Margaret Cavendish and the Royal Society.' In *Science, Literature and Rhetoric in Early Modern England*, edited by David Burchell and Juliet Cummins, 125-144. London, Routledge, 2007

Debus, Allen G. *Science and Education in the Seventeenth-Century: the Webster-Ward Debate*. New York: History of Science Library, 1970

Debus, Allen G. and Michael T. Walton. *Reading the Book of Nature: The Other Side of the Scientific Revolution*. Kirksville: Sixteenth Century Publishers, 1998 Allen G.

Debus, Allen G. *Chemistry and Medical Debate: van Helmont to Boerhaave*. Canton MA: Science History Publications, 2001

Debus, Allen G. *The Chemical Philosophy: Paracelsian Science and Medicine in the Sixteenth and Seventeenth Centuries* (New York: Science History Publications, 1977)

Debus, Allen G. *The English Paracelsians.* London: Oldbourne Press, 1965

Del Soldato, Eva. 'Natural Philosophy in the Renaissance.' In *The Stanford Encyclopedia of Philosophy* (Fall 2020 edition), edited by Edward N. Zalta., https://plato.stanford.edu/archives/fall2020/entries/natphil-ren/

Detlefsen, Karen. 'Atomism, Monism, and Causation in the Natural Philosophy of Margaret Cavendish.' In *Oxford Studies in Early Modern Philosophy*, Volume 3, edited by Daniel Garber and Steven Nadler, 199-240. Oxford: Clarendon Press, 2006

Detlefsen, Karen. 'Margaret Cavendish on the Relation between God and the World.' *Philosophy Compass* 4, No. 3 (2009): 421-438

Detlefsen, Karen. 'Reason and Freedom: Margaret Cavendish on the Order and Disorder of Nature.' *Archiv für Geschichte der Philosophie* 89, No. 2 (2007): 157-191

Dijksterhuis, E.J. *The Mechanization of the World Picture*. Oxford: Oxford University Press, 1961

Dilucia, Niall. 'Salvation and Sir Kenelm Digby's Philosophy of the Soul.' *History of European Ideas* 49, Issue 3 (2022): 506-522

Dixon, Thomas. *From Passions to Emotions: The Creation of a Secular Psychological Category.* Cambridge: Cambridge University Press, 2003

Dow, Jamie. 'Aristotle's Theory of the Emotions: Emotions as Pleasures and Pains.' In *Moral Psychology and Human Action in Aristotle*, edited Michael Pakulak and Giles Pearson, 47-74. Oxford: Oxford University Press, 2011

Drummond, Ian. 'John Duns Scotus on the Passions of the Will.' In *Emotion and Cognitive Life in Medieval and Early Modern Philosophy*, edited by Martin Pickavé and Lisa Shapiro, 53-74. Oxford: Oxford University Press, 2012

Duden, Barbara. *The Woman Beneath the Skin*. Cambridge, MA: Harvard University Press, 1991

Ebbersmeyer, Sabrina. 'Renaissance Theories of the Passions.' In *Philosophy of Mind in the Late Middle Ages and Renaissance*, edited by Stephan Schmid, 185-206. London: Routledge, 2018

Ebbersmeyer, Sabrina. 'Telesio's Vitalisitic Conception of the Passions.' In *Sense, Affect and Self-Preservation in Bernardino Telesio (1509-1588),* edited by Guido Giglioni and Jill Kraye. Dordrecht: Springer, forthcoming

Emerton, Norma. *The Scientific Reinterpretation of Form*. Ithaca: Cornell University Press, 1984

Emilsson, Eyjólfur K. 'Plotinus on *Sympatheia*', In *Sympathy: A History*, edited by Eric Schliesser, 36-60. Oxford: Oxford University Press, 2015

Falcon, Andrea. 'Aristotle on Causality.' In *The Stanford Encyclopedia of Philosophy*, edited by Edward N. Zalta and Uri Nodelman, Spring 2023 Edition https://plato.stanford.edu/archives/spr2023/entries/aristotle-causality/

Fallon, Stephen M. 'John Milton, Isaac Newton, and the Life of Matter.' In *Milton and the New Scientific Age: Poetry, Science, Fiction*, edited by Catherine Gimelli Martin, 211-237. New York: Routledge, 2021

Fallon, Stephen M. *Milton among the Philosophers: Poetry and Materialism in Seventeenth-Century England*. Ithaca: Cornell University Press, 1991

Farrington, Benjamin. *The Philosophy of Francis Bacon: An Essay on its Development from 1603 to 1609 with New Translations of Fundamental Texts*. Liverpool: Liverpool University Press, 1964

Feingold, Mordechai. 'Aristotle and the English Universities in the Seventeenth Century: A Re-evaluation.' In *European Universities in the Age of Reformation and Counter Reformation*, edited by Helga Robinson-Hammerstein, 135-148. Dublin: Four Courts Press, 1998

Feingold, Mordechai. *The Mathematician's Apprenticeship, Science, Universities and Society in England, 1560-1640*. Cambridge: Cambridge University Press, 1984

Feldman Barret, Lisa. *How Emotions are Made: The Secret Life of the Brain*. London: Macmillan, 2017

Finamore, John F. *Iamblichus and the Theory of the Vehicle of the Soul*. Chico, California: Scholars Press, 1985

Fletcher, Harris. *The Intellectual Development of John Milton, Volume II*. Urbana: University of Illinois Press, 1961

Foster, Michael. 'Kenelm Digby (1603-1665).' In *Oxford Dictionary of National Biography*, Volume 16, 152-158. Oxford: Oxford University Press, 2004.

Frank, Robert G. Jr. 'Thomas Willis and His Circle: Brain and Mind in Seventeenth-Century Medicine.' In *The Languages of Psyche: Mind and Body in Enlightenment Thought*, edited by G. S. Rousseau, 107-146. Berkely: University of California Press, 1990

Frank, Robert G. Jr. *Harvey and the Oxford Physiologists: Scientific Ideas and Social Interaction*. Berkely: University of California Press, 1980

Fransen, Sietske. 'Weapon Salve in the Renaissance.' In *Encyclopedia of Renaissance Philosophy*, edited by Marco Sgarbi. Cham: Springer, 2018, https://doi.org/10.1007/978-3-319-02848-4_1109-1

Freudenthal, Gad. 'The Medieval Astrologization of Aristotle's Biology: Averroes on the Role of the Celestial Bodies in the Generation of Animate Bodies.' *Arabic Sciences and Philosophy* 12, Issue 1 (2002): 111-137

Garber, Daniel. 'Understanding Interaction: What Descartes should have told Elisabeth.' *Southern Journal of Philosophy* 21, Issue S1 (1983): 15-32

Garber, Daniel, John Henry, Lynn Joy, and Alan Gabbey. 'New Doctrines of Body and its Powers, Place and Space.' In T*he Cambridge History of Seventeenth-Century*

Philosophy, edited by Daniel Garber and Michael Ayers, 553-623. Cambridge: Cambridge University Press, 1998

Garber, Daniel. 'Physics and Foundations.' In *The Cambridge History of Science Volume 3: Early Modern Science*, edited by Katharine Park and Lorraine Daston, 21-69. Cambridge, Cambridge University Press, 2006

Garber, Daniel. 'Remarks on the Pre-History of the Mechanical Philosophy.' In *The Mechanization of Natural Philosophy*, edited by Daniel Garber and Sophie Roux, 3-26. New York: Springer, 2013

Garber, Daniel. 'Telesio's Among the Novatores: Telesio's Reception in the Seventeenth Century.' In *Early Modern Philosophers and the Renaissance Legacy*, edited by Cecilia Muratori and Gianna Paganini, 119-133. Cham: Springer, 2016

Garber, Daniel. 'Margaret Cavendish among the Baconians.' *Journal of Early Modern Studies*, 9, Issue 2 (2020): 53-84

García-Ballester, Luis. 'On the Origin of the 'Six Non-Natural Things' in Galen.' In *Galen and Galenism*. *Theory and Medical Practice from Antiquity to the European Renaissance*, edited by Luis García-Ballester, Jon Arrizabalaga, Montserrat Cabré, Lluís Cifuentes, 105-115. Aldershot: Ashgate, 2002

Gelbart, Nina (Rattner). 'The Intellectual Development of Walter Charleton.' *Ambix* 18, No. 3 (1971): 149-168

Gemelli, Benedino. 'The History of Life and Death. A 'Spiritual' History from Invisible Matter to Prolongation of Life.' *Early Science and Medicine* 17, No. 1 (2012): 134-157

Georgescu, Laura. 'Bodies and Their Potential Parts: The Not-So-Friendly Reception of Digbean Quantity', in *The Philosophy of Kenelm Digby (1603–1665)*, edited by Laura Georgescu and Han Thomas Adriaenssen, 223-246. Cham: Springer, 2022

Giglioni, Guido, James A. T. Lancaster, Sorana Corneanu, Dana Jalobeanu (eds.). *Francis Bacon on Motion and Power* (Dordrecht: Springer, 2016)

Giglioni, Guido. 'Anatomist Atheist?: the 'Hylozoistic' Foundations of Francis Glisson's Anatomical Research.' In *Religio Medici: Medicine and Religion in Seventeenth-century England*, edited by Ole Peter Grell and Andrew Cunnigham, 115-135. Aldershot: Scolar Press, 1996

Giglioni, Guido. 'Francis Bacon.' In *The Oxford Handbook of British Philosophy in the Seventeenth Century*, edited by Peter R. Anstey, 41-72. Oxford: Oxford University Press, 2013,

Giglioni, Guido. 'Francis Glisson's notion of confœderatio naturæ in the context of hylozoistic corpsucularianism.' *Revue d'histoire des sciences* 55, No. 2 (2002): 239-262

Giglioni, Guido. 'How Bacon became Baconian.' In *The Mechanization of Natural Philosophy*, edited by Daniel Garber and Sophie Roux, 27-54. New York: Springer, 2013

Giglioni, Guido. 'List of Motions: Francis Bacon on Material Disquietude.' In *Francis Bacon on Motion and Power*, edited by Dana Jalobeanu, Guido Giglioni, James A.T. Lancaster, Sorana Corneanu, 61-82. Switzerland: Springer, 2016

Giglioni, Guido. 'Mastering the Appetites of Matter. Francis Bacon's Sylva Sylvarum.' In *The Body as Object and Instrument of Knowledge,* edited by Charles T. Wolfe and Ofer Gal, 149-168. Dordrecht: Springer, 2010

Giglioni, Guido. ‘The “Hylozoistic” Foundations of Francis Glisson’s Anatomical Research.’ In *Religio Medici: Medicine and Religion in Seventeenth-Century England*, edited by Ole Grell and Andrew Cunningham, 115-135. Aldershot: Scolar Press, 1996

Giglioni, Guido. ‘The First of the Moderns or the Last of the Ancients? Bernardino Telesio on Nature and Sentience.’ *Bruniana & Campanelliana* 16, No. 1 (2010): 69-87

Giglioni, Guido. ‘The Hidden Life of Matter: Techniques of Prolonging Life in the Writings of Francis Bacon.’ In *Francis Bacon and the Refiguring of Early Modern Thought*, edited by Julie Robin Solomon and Catherine Gimelli Martin, 129-144. Aldershot: Ashgate, 2005

Giglioni, Guido. ‘The Uncomfortable Biformitas of Being: Bacon on the Animal Soul.’ In *The Animal Soul and the Human Mind: Renaissance Debates,* edited by Cecilia Muratori, 190-207. Pisa-Rome: Serra, 2013

Gimelli Martin, Catherine (ed.). *Milton and the New Scientific Age: Poetry, Science, Fiction*. New York: Routledge, 2021

Gouk, Penelope and Helen Hills (eds.). *Representing Emotions: New Connections in the Histories of Art, Music and Medicine*. Aldershot: Ashgate, 2005

Gowland, Angus. ‘Melancholy, Passions and Identity in the Renaissance.’ In *Passions and Subjectivity in Early Modern Culture*, edited by Brian Cummings and Freya Sierhuis, 75-94. London: Routledge, 2013

Gowland, Angus. *The Worlds of Renaissance Melancholy*. Cambridge: Cambridge University Press, 2006

Grant, Edward (ed.). *A Source Book in Medieval Science*. Cambridge MA: Harvard University Press, 1974

Gratton, Malcolm. ‘Mosley, Nicholas (bap. 1611, d. 1672), Author and Royalist Landowner.’ In *Oxford Dictionary of National Biography*, Volume 39, 468-469. Oxford: Oxford University Press, 2004

Green, Lawrence D. ‘Aristotle’s Rhetoric and Renaissance Views of the Emotions.’ In *Renaissance Rhetoric*, edited by Peter Mack. Basingstoke, Hampshire: MacMillan Press, 1994

Gregory, Joshua C. ‘Chemistry and Alchemy in the Natural Philosophy of Francis Bacon, 1561-1626.’ *Ambix* 2, No. 2 (1938): 93-111

Harvey, Ruth. *The Inward Wits: Psychological Theory in the Middle Ages and the Renaissance*. London: Warburg Institute, 1975

Helmig, Christoph (ed.). *World Soul – Anima Mundi: On the Origins and Fortunes of a Fundamental Idea.* Berlin: De Gruyter, 2020

Henry, John. ‘Action at a Distance in Early Modern Natural Philosophy.’ In *Encyclopedia of Early Modern Philosophy and the Sciences*, edited by D. Jalobeanu and C. T. Wolfe. Cham: Spinger, 2020 https://doi.org/10.1007/978-3-319-20791-9_39-1

Henry, John. ‘Atomism and Eschatology: Catholicism and Natural Philosophy in the Interregnum.’ *The British Journal for the History of Science* 15, No. 3 (Nov. 1982): 211-239

Henry, John. ‘Occult Qualities and the Experimental Philosophy: Active Principles in Pre-Newtonian Matter Theory.’ *History of Science* 24, Issue, 4 (1986): 335-381

Henry, John. 'Sir Kenelm Digby, Recusant Philosopher.' In *Insiders and Outsiders in Seventeenth-Century Philosophy*, edited by G.A.J Rogers, Tom Sorrell and Jill Kraye, 43-75. New York: Routledge, 2010

Henry, John. 'Walter Charleton (1620-1707).' In *Oxford Dictionary of National Biography,* Volume 11, 172-175. Oxford: Oxford University Press, 2004

Henry, John. *Knowledge is Power: How Magic, the Government and an Apocalyptic Vision Helped Francis Bacon to Create Modern Science.* London: Icon Books, 2017

Henry, John. *Matter in Motion: The Problem of Activity in Seventeenth-Century English Matter Theory* (PhD dissertation). The Open University, 1983

Hensley, Ian. 'The Physics of Pneuma in Early Stoicism.' In *The Concept of Pneuma after Aristotle*, edited by Sean Coughlin, David Leith, and Orly Lewis, 171-202. Berlin: Edition Topoi, 2020

Hirai, Hiro. 'Bodies and Their Internal Powers: Natural Philosophy, Medicine, and Alchemy.' In *The Routledge Companion to Sixteenth Century Philosophy,* edited by Henrik Lagerlind and Benjamin Hill, 394-410. Abingdon: Routledge, 2017

Hirai, Hiro. 'Imagination, Maternal Desire, and Embryology in Thomas Fienus.' In *Professors, Physicians and Practices in the History of Medicine: Essays in Honor of Nancy Siraisi*, edited by Gideon Manning and Cynthia Klestinec, 239-254. Cham: Springer, 2017

Hirai, Hiro. 'Concepts of seeds and nature in the work of Marsilio Ficino.' In *Marsilio Ficino: His Theology, His Philosophy, His Legacy*, edited by Michael J.B. Allen, Valrey Rees and Martin Davies, 257-284. Leiden: Brill, 2002

Hirai, Hiro. 'Logoi Spermatikoi and the Concept of Seeds in the Mineralogy and Cosmogony of Paracelsus.' *Revue d'histoire des sciences* 61, Issue 2 (2008): 245-264

Hirai, Hiro. 'The World-Spirit and Quintessence in the chymical philosophy of Joseph Du Chesne.' In *Chymia: Science and Nature in Medieval and Early Modern Europe*, edited by Miguel López-Pérez, Didier Kahn, and Mar Rey-Beuno, 247-261. Newcastle: Cambridge Scholars Publishing, 2010

Hirai, Hiro. 'Mysteries of Living Corpuscles: Atomism and the Origin of Life in Sennert, Gassendi and Kircher.' In *Early Modern Medicine and Natural Philosophy*, edited by Peter Distelzweig, Benjamim Goldberg and Evan R. Ragland, 255-269. Dordrecht: Springer, 2015

Hirai, Hiro. 'Telesio, Aristotle, and Hippocrates on Cosmic Heat.' In *Bernadino Telesio and the Natural Sciences in the Renaissance,* edited by Pietro Daniel Omodeo, 51-65. Leiden: Brill, 2019

Hirai, Hiro. 'Spirit in Renaissance Medicine', in *Encyclopedia of Renaissance Philosophy*, edited by Marco Sgarbi. Cham: Springer, 2018, https://doi.org/10.1007/978-3-319-02848-4_1107-1

Hirai, Hiro. *Medical Humanism and Natural Philosophy*. Boston-Leiden: Brill, 2011

Hutchison, Keith. 'What happened to Occult Qualities in the Scientific Revolution?' *Isis* 73, No. 2 (1982): 233-253

Hutton, Sarah. 'Alchemy and Cultures of Knowledge Among Early Modern Women.' *Early Modern Women* 15, No. 2 (2021): 93-102

Hutton, Sarah. 'In Dialogue with Thomas Hobbes: Margaret Cavendish's Natural Philosophy.' *Women's Writing* 4, Issue 3 (1997): 421-432

Hutton, Sarah. *British Philosophy in the Seventeenth Century*. Oxford: Oxford University Press, 2015

Jalobeanu, Dana and Oana Matei. 'Treating Plants as Laboratories: A Chemical Natural History of Vegetation in 17th-Century England.' *Centaurus* 62, Issue 2 (2020): 542-561

Jalobeanu, Dana. 'On Bodies and Their Orbs: Kenelm Digby's Use of a Metaphysics of Light to Ground an Experimental Physics.' In *The Philosophy of Kenelm Digby (1603-1655)*, edited by Laura Georgescu and Hans Thomas Adriaenssen, 183-202. Cham: Springer, 2022

James, Susan. ''Hermaphroditical Mixtures': Margeret Cavendish on Nature and Art.' In *Early Modern Women on Metaphysics*, edited by Emily Thomas, 31-48. Cambridge: Cambridge University Press, 2018

James, Susan. 'Reason, Passions and the Good Life.' In *The Cambridge History of Seventeenth-Century Philosophy*, edited by Daniel Garber and Michael Ayers,1358-1396. Cambridge: Cambridge University Press, 1998

James, Susan. 'The Passions in Metaphysics and the Theory of Action.' In *The Cambridge History of Seventeenth-Century Philosophy*, edited by Daniel Garber and Michael Ayers, 913-949. Cambridge: Cambridge University Press, 1998

James, Susan. 'The Philosophical Innovations of Margaret Cavendish.' *British Journal for the History of Philosophy* 7, No. 2 (1999): 219-244

James, Susan. *Passion and Action: The Emotions in Seventeenth Century Philosophy*. Oxford: Oxford University Press, 1997

Janacek, Bruce. 'Catholic Natural Philosophy: Alchemy and the Revivification of Sir Kenelm Digby.' In *Rethinking the Scientific Revolution*, edited by Margaret J. Osler, 89-118. Cambridge: Cambridge University Press, 2000

Janacek, Bruce. *Alchemical Belief: Occultism in the Religious Culture of Early Modern England*. University Park, PA: The Pennsylvania State University Press, 2011

Jesseph, Douglas. 'Hobbes on 'Conatus': A Study in the Foundations of Hobbesian Philosophy.' *Hobbes Studies* 29, No. 1 (2016): 66-85

Kahn, Victoria, Neil Saccamano and Daniela Coli (eds.). *Politics and the Passions, 1500-1850*. Princeton: Princeton University Press, 2006

Kargon, Robert. 'Walter Charleton, Robert Boyle, and the Acceptance of Epicurean Atomism in England.' *Isis* 55, Issue 2 (1964): 184-192

Kargon, Robert. *Atomism in England from Hariot to Newton.* Oxford: Clarendon Press, 1966

Kärkkäinen, Pekka. 'Internal Senses.' In *Encyclopedia of Medieval Philosophy*, edited by H. Lagerlund. Dordrecht: Springer https://doi.org/10.1007/978-1-4020-9729-4_246

Keller, Vera. 'Drebbel's Living Instruments, Hartmann's Microcosm, and Libavius's *Thelesmos*: Epistemic Machines before Descartes.' *History of Science* 48, Issue 1 (2010): 39-74

Kennaway, James and Rina Knoeff (eds.). *Lifestyle and Medicine in the Enlightenment: The Six Non-Naturals in the Long Eighteenth Century*. Abingdon: Routledge, 2020

Kiernan, Michael (ed.). *The Oxford Francis Bacon IV: The Advancement of Learning*, Oxford: Oxford University Press, 2000

King, Peter. 'Dispassionate Passions.' In *Emotion and Cognitive Life in Medieval and Early Modern Philosophy*, edited by Martin Pickavé and Lisa Shapiro, 9-31. Oxford: Oxford University Press, 2012

King, Peter. 'Late Scholastic Theories of the Passions: Controversies in the Thomist Tradition.' In *Emotions and Choice from Boethius to Descartes*, edited by Henrik Lagerlund, Mikko Yrjönsuuri, 229-258. Dordrecht: Kluwer Academic Publishers, 2002

Klibansky, Raymond, Erwin Panofsky and Fritz Saxl. *Saturn and Melancholy: Studies in the History of Natural Philosophy, Religion and Art*. Montreal: McGill-Queen's University Press, 2019

Knoeff, Rina. 'The 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

Knuuttila, Simo. 'Sixteenth-Century Discussions of the Passions of the Will.' In *Emotion and Cognitive Life in Medieval and Early Modern Philosophy,* edited by Martin Pickavé and Lisa Shapiro, 116-133. Oxford: Oxford University Press, 2012

Knuuttila, Simo. *Emotions in Ancient and Medieval Philosophy*. Oxford: Oxford University Press, 2004

Kodera, Sergius. 'The Art of Distillation of 'Spirits' as a Technological Model for Human Physiology. The Case of Marsilio Ficino, Joseph Duchesne, and Francis Bacon.' In *Blood, Sweat and Tears: The Changing Concepts of Physiology from Antiquity into Early Modern Europe*, edited by Manfred Horstmanshoff, Helen King, and Claus Zittel, 139-170. Leiden: Brill, 2012

Kodera, Sergius. 'Translating Renaissance Neoplatonic Panpsychism into Seventeenth-Century Corpuscularism: the Case of Sir Kenelm Digby (1603-1665).' *Intellectual History Review* 34, No. 1 (2023): 1-19

Kraye, Jill. 'Απάθεια and Προπάθεαι in Early Modern Discussions of the Passions: Stoicism, Christianity, and Natural History.' *Early Medicine and Science*17, No. 1-2 (2012): 230-153

Kraye, Jill. 'British Philosophy Before Locke.' In *A Companion to Early Modern Philosophy*, edited by Steven Nadler, 283-297. Oxford: Blackwell, 2002

Kraye, Jill. 'Moral Philosophy.' In *The Cambridge History of Renaissance Philosophy*, edited by Charles B. Schmitt, Quentin Skinner, Eckhard Kessler and Jill Kraye, 303-386. Cambridge: Cambridge University Press, 1988

Krook, Dorothea. *John Sergeant and his Circle: A Study of Three Seventeenth Century English Aristotelians.* Leiden: Brill, 1993

Kusukawa, Sachiko. 'Bacon's classification of knowledge.' *The Cambridge Companion to Bacon*, edited by Markku Peltonen, 47-74. Cambridge: Cambridge University Press, 1996

Lagerlund, Henrik and Mikko Yrjönsuuri (eds.). *Emotions and Choice from Boethius to Descartes*. Dordrecht: Kluwer Academic Publishers, 2002

Levitin, Dmitiri. *Ancient Wisdom in the Age of the New Science*. *Histories of Philosophy in England, c. 1640–1700*. Cambridge: Cambridge University Press, 2015

Levitin, Dmitri. ‘Rethinking English Physico-Theology: Samuel Parker’s “Tentamina de Deo” (1665).’ *Early Science and Medicine* 19, No. 1 (2014): 28-75

Lindberg, David C. ‘The Genesis of Kepler’s Theory of Light: Light Metaphysics from Plotinus to Kepler.’ *Osiris* 2, No. 1 (1986): 4-42

Linden, Stanton J. ‘Francis Bacon and Alchemy: The Reformation of Vulcan.’ *Journal of the History of Ideas* 35, No. 4 (1974): 547-560

Lobis, Seth. ‘Sir Kenelm Digby and the Power of Sympathy.’ *Huntington Library Quarterly* 74, No. 2 (2011): 243-260

Luthy, Christopher and William R. Newman. “Matter’ and ‘Form’: By Way of a Preface.’ *Early Science and Medicine* 2, Issue 3 (1997): 215-226

MacDonald, Paul S. *Kenelm Digby’s Two Treatises*. Woking, Surrey: The Gresham Press, 2013

Malcolm, Noel and Jacqueline Stedall. *John Pell (1611-1685) and His Correspondence with Sir Charles Cavendish: The Mental World of an Early Modern Mathematician*. Oxford: Oxford University Press, 2005

Malcolm, Noel. *Aspects of Hobbes*. Oxford: Oxford University Press, 2002

Manning, Gideon (ed.). *Matter and Form in Early Modern Science and Philosophy*. Leiden: Brill, 2012

Marcus, Leah S. ‘Paracelsian Medicine, Vitalism and Samson Agonistes.’ In *Milton and the New Scientific Age: Poetry, Science, Fiction*, edited by Catherine Gimelli Martin, 192-210. New York: Routledge, 2021

Martensen, Robert L. ‘Willis, Thomas (1621-1675).’ In *Oxford Dictionary of National Biography*, Volume 59, 391-394. Oxford: Oxford University Press, 2004

Matei, Oana. ‘Appetitive Matter and Perception in Ralph Austen’s Projects of Natural History of Plants.’ *Early Science and Medicine* 23, Issue 5-6 (2018) 530-549

Meek, Richard and Erin Sullivan. ‘Introduction.’ In *The Renaissance of Emotion: Understanding Affect in Shakespeare and his Contemporaries*. edited by Richard Meek and Erin Sullivan, 1-24. Manchester: University of Manchester Press, 2015

Mehta, Neeta. ‘Mind-Body Dualism: A Critique from a Health Perspective.’ *Mens Sana Monographs* 9, Issue 1 (2011): 202-209

Merchant, Carolyn. *The Death of Nature: Women, Ecology, and the Scientific Revolution*. New York: HaperOne, 2020

Michael, Emily. ‘Renaissance Theories of Body, Soul and Mind.’ In *Psyche and Soma: Physicians and Metaphysicians on the Mind-Body Problem from Antiquity to Enlightenment*, edited by John P. Wright and Paul Potter, 147-172. Oxford: Clarendon Press, 2002

Millen, Ron. ‘The Manifestation of Occult Qualities in the Scientific Revolution.’ In *Religion, Science and Worldview: Essays in Honor of Richard S. Westfall*, edited by Margaret J. Osler and Paul Lawrence Farber, 185-216. Cambridge: Cambridge University Press, 1985

Miller, David Marshall and Dana Jalobeanu. *The Cambridge History of Philosophy of the Scientific Revolution.* Cambridge: Cambridge University Press, 2022

Milward, Peter. 'Wright, Thomas (c. 1561-1623), Roman Catholic Priest and religious controversialist.' In *Oxford Dictionary of National Biography,* Volume 60, 492-493. Oxford: Oxford University Press, 2004

Miner, Robert. *Thomas Aquinas on the Passions: A Study of Summa Theologiae Ia2ae 22-48*. Cambridge: Cambridge University Press, 2009

Molnár, Zoltán. 'Thomas Willis (1621-1675), the founder of clinical neuroscience.' *Nature Reviews Neuroscience* 5, No. 4 (2004): 329-335

Montagu, Jennifer. *The Expression of the Passions: The Origin and Influence of Charles Le Brun's 'Conférence sur l'expression Générale et Particulière.*' New Haven, CT: Yale University Press, 1994

Moreau, Elisabeth. 'Innate Heat.' In *Encyclopedia of Renaissance Philosophy,* edited by M. Sgarbi. Cham: Springer, 2015 https://doi.org/10.1007/978-3-319-02848-4_399-1

Moshenska, Joe. *A Stain in the Blood: The Remarkable Voyage of Sir Kenelm Digby*. London: Windmill Books, 2016

Moyer, Ann E. 'Sympathy in the Renaissance', In *Sympathy: A History*, edited by Eric Schliesser, 70-101. Oxford: Oxford University Press, 2015

Multhauf, Robert. 'The Significance of Distillation in Renaissance Medical Chemistry.' *Bulletin in the History of Medicine* 30, No. 4 (1956): 329-346.

Murdoch, John. 'The Medieval and Renaissance Tradition of Minima Naturalia.' In *Late Medieval and Early Modern Corpuscular Matter Theories*, edited by Christoph Lüthy, John E. Murdoch and William R. Newman, 91-131. Leiden: Brill, 2001

Nelson, Holly Faith. '"A Good Christian and a Good Natural Philosopher": Margaret Cavendish's Theory of the Soul(s) in the Early Enlightenment.' *Studies in Philology* 113, No. 4 (2016): 947-968

Newman, William R. and Lawrence M. Principe. *Alchemy Tried in the Fire: Starkey, Boyle, and the Fate of Helmontian Chymistry*. Chicago: University of Chicago Press, 2002

Newman, William R. *Atoms and Alchemy*. Chicago: The University of Chicago Press, 2006

Nussbaum, Martha C. *The Therapy of Desire: Theory and Practice in Hellenistic Ethics*. Princeton: Princeton University Press, 1994

O'Connor, James P B. 'Thomas Willis and the background to Cerebri anatome.' *Journal of the Royal Society of Medicine* 96, No. 3 (2003): 139-143

O'Neill, Eileen. 'Introduction', in Margaret Cavendish: Observations Upon Experimental Philosophy, edited by Eileen O'Neill, x-xxxvi. Cambridge: Cambridge University Press, 2001

O'Neill, Eileen. 'Margaret Cavendish, Stoic Antecedent Causes, and Early Modern Occasional Causes.' *Revue Philosophique de la France et de l'Étranger* 203, No. 3 (2013) : 311-326

O'Sullivan, Suzanne. *It's All in Your Head: Stories from the Frontline of Psychosomatic Illness*. London: Vintage, 2016

Pagel, Walter. 'Paracelsus and the Neoplatonic and Gnostic Tradition.' *Ambix* 8, No. 3 (1960): 125-166.

Pagel, Walter. *Paracelsus: An Introduction to Philosophical Medicine in the Era of the Renaissance*. Basel: S. Karger, 1958

Papanikolaou, Elli. 'Walter Charleton's Matter Theory: How Politics and Scientific Societies Influenced his Works.' *Athens Journal of History* 6, No. 3 (2020): 287-298

Park, Katharine. 'The Organic Soul.' In *The Cambridge History of Renaissance Philosophy*, Edited by C. B. Schmitt, Quentin Skinner, Eckhard Kessler and Jill Kraye, 464-484. Cambridge: Cambridge University Press, 1988

Paster, Gail Kern, Katherine Rowe, and Mary Floyd-Wilson (eds.). *Reading the Early Modern Passions: Essays in the Cultural History of Emotion*. Philadelphia: University of Pennsylvania Press, 2004

Paster, Gail Kern. *Humoring the Body: Emotions and the Shakespearean Stage*. Chicago: University of Chicago Press, 2004

Pearce, JMS. 'Naming the Cranial Nerves: A Historical Note.' *Advances in Clinical Neurosciences and Rehabilitation* 16, No. 5 (2017): 12-13

Peterson, Kristin Elizabeth. *Translatio libri Avicennae De Viribus Cordis et medicinis cordialibus Arnaldi de Villanova* (PhD dissertation). Harvard University, 1993

Pfeffer, Michelle 'Christian Materialism and the Prospect of Immortality.' In *Science without God? Rethinking the History of Scientific Naturalism*, edited by Peter Harrison and Jon H. Roberts, 148-161. Oxford: Oxford University Press, 2019

Pickavé, Martin and Lisa Shapiro (eds.). *Emotion and Cognitive Life in Medieval and Early Modern Philosophy*. Oxford: Oxford University Press, 2012

Pickavé, Martin. 'On the Intentionality of the Emotions (and of Other Appetitive Acts).' *Quaestio* 10 (2010): 45-63

Pormann, Peter E. 'Medical Conceptions of Health from Antiquity to the Renaissance.' In *Health: A History*, edited by Peter Adamson, 67-71. Oxford: Oxford University Press, 2019

Principe, Lawrence M. 'Sir Kenelm Digby and his Alchemical Circle in 1650s Paris: Newly Discovered Manuscripts.' *Ambix* 60, No. 1 (2013): 3-24

Pumfrey, Stephen. 'Neo-Aristotelianism and the magnetic philosophy.' In *New Perspective on Renaissance Thought: Essays in the History of Science, Education and Philosophy in memory of Charles B Schmitt,* edited by John Henry and Sarah Hutton, 177-189. London: Duckworth and Istituto Italiano per gli Studi Filosofici, 1990

Pumfrey, Stephen. 'William Gilbert.' In *Cambridge Scientific Minds*, edited by Peter Harman and Simon Mitton, 6-20. Cambridge: Cambridge University Press, 2002

Pyle, Andrew. 'The Theory of Matter.' In *The Routledge Companion to Seventeenth Century Philosophy*, edited by Dan Kaufman, 410-446. London and New York: Routledge, 2018

Radcliffe, Elizabeth S. 'Ruly and Unruly Passions: Early Modern Perspectives.' In *Royal Institute of Philosophy Supplement, Volume 85: Passions and Emotions*, edited by Anthony O'Hear, 21-38. Cambridge University Press, 2019

Rattansi, Piyo and Antonio Clericuzio (eds.). *Alchemy and Chemistry in the 16th and 17th Centuries*. Dordrecht: Kluwer Academic Publishers, 1994

Rattansi, Piyo M. 'Paracelsus and the Puritan Revolution'. *Ambix* 11, No. 1 (1963): 24-32

Rees, Graham (assisted by Christopher Upton). *Francis Bacon's Natural Philosophy: A New Source. A transcription of manuscript Hardwick 72A with translation and commentary.* Chalfont St Giles: British Society for the History of Science, 1984

Rees, Graham (ed.). *The Oxford Francis Bacon, Volume VI*: *Philosophical Studies c.1611–c.1619*. Oxford: Oxford University Press, 1996

Rees, Graham (ed.). *The Oxford Francis Bacon, Volume XII*, *The Instauratio magna, Part III: Historia Naturalis and Historia Vitae*. Oxford: Oxford University Press, 2007

Rees, Graham (ed.). *The Oxford Francis Bacon, Volume XIII*: *Instauratio magna: Last Writings*. Oxford: Oxford University Press, 2000

Rees, Graham and Maria Wakely (eds.). *The Oxford Francis Bacon, Vol. XI: The Instauratio magna Part II: Novum organum and Associated Texts*. Oxford: Oxford University Press, 2004

Rees, Graham. 'Atomism and "Subtlety" in Francis Bacon's Philosophy.' *Annals of Science* 37, Issue 5 (1980): 549-571

Rees, Graham. 'Bacon's Speculative Philosophy.' In *The Cambridge Companion to Bacon*, edited by Markku Peltonen, 121-145. Cambridge: Cambridge University Press, 1996

Rees, Graham. 'Francis Bacon and spiritus vitalis.' In *Spiritus, IV° Colloquio Internazionale del Lessico Intellettuale Euopeo*, edited by Marta Fattori and Massimo Bianchi, 265-282. Rome: Edizioni dell' Ateneo, 1984

Rees, Graham. 'Francis Bacon on Verticity and the Bowels of the Earth.' *Ambix* 26, No. 3 (1979): 202-211

Rees, Graham. 'Francis Bacon's Semi-Paracelsian Cosmology and the Great Instauration.' *Ambix* 22, No. 3 (1975): 161-173

Rees, Graham. 'Francis Bacon's Semi-Paracelsian Cosmology.' *Ambix* 22, No. 2 (1975): 81-101

Rees, Graham. 'Matter Theory: a Unifying Factor in Bacon's Natural Philosophy?' *Ambix* 24, No. 2 (1977): 110-125

Rees, Graham. 'The Fate of Bacon's Cosmology in the Seventeenth Century.' *Ambix* 24, No. 1 (1977): 27-38

Reeve, Michael D. 'Conceptions.' *Proceedings of the Cambridge Philological Society* 215 (1989): 81-112

Reif, Patricia. 'The Textbook Tradition in Natural Philosophy.' *Journal of the History of Ideas* 30, No.1 (1969): 17-32

Ricciardelli, Fabrizio and Andrea Zorzi. *Emotions, Passions, and Power in Renaissance Italy*. Amsterdam: Amsterdam University Press, 2015

Rogers, John. *The Matter of Revolution: Science, Poetry and Politics in the Age of Milton.* Ithaca: Cornell University Press, 1996

Rossi, Paolo. *Francis Bacon: From Magic to Science*, translated from the Italian by Sacha Rabinovitch. London: Routledge, 1968

Rotenstreich, Nathan. 'Conatus and Amor Dei: The total and partial norm.' In *Revue Internationale de Philosophie* 31, No. 119/120 (1977): 117-134

Roux, Sophie. ‘What to do with the Mechanical Philosophy?’, *The Cambridge History of the Philosophy of the Scientific Revolution*, edited by David Marshall Miller and Dana Jalobeanu, 75-95. Cambridge: Cambridge University Press, 2022

Rublack, Ulinka. ‘Fluxes: The Early Modern Body and the Emotions.’ *History Workshop Journal* 53 (2002): 1-16

Rusu, Doina-Cristina and Christoph Luthy. ‘Extracts from a Paper Laboratory: the Nature of Francis Bacon’s *Sylva Sylvarum*.’ *Intellectual History Review* 27, Issue 2 (2017): 171-202

Rusu, Doina-Cristina. ‘Fascination and Action at a Distance in Francis Bacon.’ *Early Medicine and Science* 27, Issue 5 (2022): 403-425

Rusu, Doina-Cristina. ‘Same Spirit, Different Structure: Francis Bacon on Inanimate and Animate Matter.’ *Early Science and Medicine* 23, No. 5 (2018): 444-458

Rusu, Doina-Cristina. *From Natural History to Natural Magic: Francis Bacon’s Sylva Sylvarum* (PhD dissertation). Radboud University Nijmegen, 2013

Rusu, Doina-Cristina ‘Magic in the Seventeenth Century.’ In *Encyclopedia of Early Modern Philosophy and the Sciences*, edited by D. Jalobeanu and C. T. Wolfe. Cham: Springer, 2020 https://doi.org/10.1007/978-3-319-20791-9_604-1

Saarinen, Risto. *Weakness of Will in Medieval Thought: From Augustine to Buridan*. Leiden: Brill, 1994

Saarinen, Risto. *Weakness of Will in Renaissance and Reformation Thought*. Oxford: Oxford University Press, 2011

Sarahson, Lisa T. ‘A Science Turned Upside Down: Feminism and the Natural Philosophy of Margaret Cavendish.’ *Huntington Library Quarterly* 47, No. 4 (1984): 289-307

Sarahson, Lisa T. T*he Natural Philosophy of Margaret Cavendish: Reason and Fancy during the Scientific Revolution*. Baltimore: Johns Hopkins University Press, 2010

Schaffer, Simon. ‘Godly Men and Mechanical Philosophers: Souls and Spirits in Restoration Natural Philosophy.’ *Science in Context* 1, Issue 1 (1987): 53-85

Schmitt, Charles. ‘The Rise of the Philosophical Textbook.’ In *The Cambridge History of Renaissance Philosophy*, edited by Charles B. Schmitt and Quentin Skinner, Eckhard Kessler and Jill Kraye, 792-804. Cambridge: Cambridge University Press, 1988

Schmitt, Charles. *Aristotle and the Renaissance*. Cambridge, MA: Harvard University Press, 1983

Schmitt, Charles. *John Case and Aristotelianism in Renaissance England*. Kingston and Montreal: McGill-Queen’s University Press, 1983

Schmitter, Amy M. ‘Passions and Affections.’ In *The Oxford Handbook of British Philosophy in the Seventeenth Century,* edited by Peter R. Anstey, 442-471. Oxford: Oxford University Press, 2013

Schmitter, Amy M. ‘17th and 18th Century Theories of Emotions.’ In *The Stanford Encyclopedia of Philosophy,* edited by Edward N. Zalta (Summer 2021 Edition), https://plato.stanford.edu/archives/sum2021/entries/emotions-17th18th/

Shackelford, Jole. ‘Seeds with a Mechanical Purpose.’ In *Reading the Book of Nature: The Other Side of the Scientific Revolution*, edited by Allen G. Debus and Michael T. Walton, 15-44. Kirksville: Sixteenth Century Publishers, 1998

Shackelford, Jole. *A Philosophical Path for Paracelsian Medicine: The Ideas, Intellectual Context, and Influence of Petrus Severinus (1540/2-1602).* Copenhagen: Museum Tusculanum Press, 2004

Shanahan, John. 'Natural Magic in the Convent of Pleasure.' In *God and Nature in the Thought of Margaret Cavendish*, edited by Brandie R. Siegfried and Lisa T. Sarasohn, 141-160. Farnham: Ashgate, 2014

Shapin, Steven. *The Scientific Revolution*. Chicago: University of Chicago Press, 1996

Sharp, Lindsay. 'Walter Charleton's Early Life 1620-1659, and Relationship to Natural Philosophy in Mid-Seventeenth Century England.' *Annals of Science* 30, No. 3 (1973): 311-340

Siraisi, Nancy. 'The Faculty of Medicine.' In *A History of the University in Europe*, Volume 1, edited by Hilde De Ridder-Symoens, 377-384. Cambridge: Cambridge University Press, 1992

Siraisi, Nancy. *Avicenna in Renaissance Italy: The Canon and Medical Teaching in Italian Universities after 1500*. Princeton: Princeton University Press, 1987

Slack, Paul. 'Mirrors of health and treasures of poor men: the uses of the vernacular medical literature of Tudor England.' In *Health, Medicine, and Mortality in the Sixteenth Century*, edited by Charles Webster, 237-273. Cambridge: Cambridge University Press, 1979

Sorabji, Richard. *Emotion and Peace of Mind: From Stoic Agitation to Christian Temptation*. Oxford: Oxford University Press, 2002

Stolberg, Michael. 'Emotions and the Body in Early Modern Medicine.' *Emotion Review* 11, No. 2 (2019): 113-122

Stringer, Sarah, Laurence Church, Susan Davison, Maurice Lipsedge (eds.). 'Medically Unexplained Symptoms.' In *Psychiatry PRN: Principles, Reality, Next Steps,* 167-174. Oxford: Oxford University Press, 2009

Sullivan, Erin. 'A Disease unto Death: Sadness in the Time of Shakespeare.' In *Emotions and Health, 1200-1700*, edited by Elena Carrera, 159-184. Leiden: Brill, 2016

Sullivan, Erin. 'The passions of Thomas Wright: Renaissance Emotion across Body and Soul.' In *The Renaissance of emotion: Understanding affect in Shakespeare and his contemporaries*, edited by Richard Meek and Erin Sullivan, 25-44. Manchester: Manchester University Press, 2015

Sumrall, Laura. 'Occult Properties in the Renaissance.' In *Encyclopedia of Renaissance Philosophy,* edited by Marco Sgarbi. Cham: Springer, 2018 https://doi.org/10.1007/978-3-319-02848-4_959-1

Sutton, John. 'Soul and Body in Seventeenth-Century British Philosophy.' In *The Oxford Handbook of British Philosophy in the Seventeenth Century*, edited by Peter Anstey, 292-295. Oxford: Oxford University Press, 2013

Sytsma, David S. 'Calvin, Daneau, and Physica Mosaica: Neglected Continuities at the Origins of an Early Modern Tradition.' *Church History and Religious Culture* 95, No. 4 (2015): 457-476

Sytsma, David S. 'The Logic of the Heart: Analyzing the Affections in Early Reformed Orthodoxy.' In *Church and School in Early Modern Protestantism*, edited by Jordan Ballor, David Sytsma, and Jason Zuidema, 471-488. Leiden: Brill, 2013

Szanto, Veronika. 'Vitalistic Approaches to Life in Early Modern England.' *Theory of Science* 37 (2015): 209-230

Trevor-Roper, Hugh. E*urope's Physician: The Various Life of Sir Theodore de Mayerne.* New Haven: Yale University Press, 2006

Tutino, Stefania. *Thomas White and the Blackloists: Between Politics and Theology during the English Civil War.* Aldershot: Ashgate, 2008

Vickers, Brian (ed.). *Occult and Scientific Mentalities in the Renaissance*. Cambridge: Cambridge University Press, 1984

Vickers, Brian. 'Francis Bacon and the Progress of Knowledge.' *Journal of the History of Ideas*, 53, No. 2 (1992): 495-518

Vidal, Fernando. *The Sciences of the Soul: The Early Modern Origins of Psychology*. Chicago: University of Chicago Press, 2011

Walker, Daniel P. 'Ficino's spiritus and Music.' In *Music, Spirit and Language in the Renaissance*, edited by Penelope Gouk, London: Variorum, 1985

Walker, Daniel P. 'Francis Bacon and Spiritus.' In *Science, Medicine and Society in the Renaissance*, edited by A.G. Debus, 121-130. New York: Science History Publications, 1972

Walker, Daniel P. 'Medical Spirits and God and the Soul.' In *Spiritus IV° Colloquio Internazionale del Lessico Intellettuale Euopeo*, edited by Marta Fattori and Massimo Bianchi, 223-244. Rome: Edizioni dell' Ateneo, 1984

Walker, Daniel P. 'Medical Spirits in Philosophy and Theology from Ficino to Newton.' In *Music, Spirit and Language in the Renaissance*, edited by Penelope Gouk, London: Variorum, 1985

Walker, Daniel P. 'The Astral Body in Renaissance Medicine.' *Journal of the Warburg and Courtauld Institutes* XXI (1958): 119-133

Walker, Daniel P. *Spiritual and Demonic Magic from Ficino to Campanella.* London: The Warburg Institute, 1958

Walker, Matthew. 'Architecture, Anatomy and the New Science in Early Modern London: Robert Hooke's College of Physicians.' *Journal of the Society of Architectural Historians* 72, No. 4 (2013): 475-502

Walters, Lisa. 'Epicurus and Gender in the British Newcastle Circle: Charleton, Hobbes, and Margaret Cavendish.' In *A Companion to the Cavendishes*, edited by Lisa Hopkins and Tom Rutter, 181-198. Amsterdam: ARC Humanities Press, 2020

Walters, Lisa. *Margaret Cavendish: Gender, Science, Politics*. Cambridge: Cambridge University Press, 2014

Walton, Michael T. *Genesis and the Chemical Philosophy: True Christian Science in the Sixteenth and Seventeenth Centuries*. Brooklyn: AMS Press, 2011

Wang, Xiaona. 'Francis Bacon and Magnetical Cosmology.' *Isis* 107, No. 4 (2016): 707-721

Wang, Xiaona. *'Though their Causes be not yet discover'd': Occult Principles in the Making of Newton's Natural Philosophy* (PhD dissertation). The University of Edinburgh, 2019

Wang, Xiaona. *Handling "Occult Qualities" in the Scientific Revolution: Disciplines and New Approaches to Natural Philosophy, from John Dee to Isaac Newton*. Leiden: Brill, 2023

Webster, Charles. 'Alchemical and Paracelsian Medicine.' In *Health, Medicine and Mortality in the Sixteenth Century,* edited by Charles Webster, 301-334. Cambridge: Cambridge University Press, 1979

Webster, Charles. *From Paracelsus to Newton: Magic and the Making of Modern Science*. Cambridge: Cambridge University Press, 1982

Webster, Charles. *The Great Instauration: Science, Medicine and Reform, 1626-1660*. London: Duckworth, 1975

Weeks, Sophie. *Francis Bacon's Science of Magic* (PhD dissertation). University of Leeds, 2007

West, Muriel. 'Notes on the Importance of Alchemy to Modern Science in the Writings of Francis Bacon and Robert Boyle.' *Ambix* 9, No. 2 (1961): 102-114

Westfall, Richard S. 'Newton and the Hermetic Tradition.' In *Science, Medicine and Society in the Renaissance* 2, edited by Allen G. Debus, 183-198. London: Heinemann, 1972

Westfall, Richard S. *The Construction of Modern Science: Mechanisms and Mechanics*, New York: Wiley, 1971.

Wilkins, Emma. "Exploding' Immaterial Substances: Margaret Cavendish's Vitalist-Materialist Critique of Spirits.' *British Journal for the History of Philosophy* 25, No. 5 (2016): 858-877.

Wolfe, Charles T. 'Vitalism in Early Modern Medical and Philosophical Thought' in *Encyclopedia of Early Modern Philosophy and the Sciences*, edited by D. Jalobeanu and C. T. Wolfe. Cham: Springer, 2021 https://doi.org/10.1007/978-3-319-20791-9_314-1

Yates, Frances A. 'Bacon's Magic.' In *Ideas and Ideals in the North European Renaissance: Collected Essays Volume III*, 60-66. London: Routledge & Keegan Paul, 1984

Yates, Frances A. 'The Hermetic Tradition in Renaissance Science.' In *Science and History in the Renaissance*, edited by Charles S. Singleton, 255-274. Baltimore: The John Hopkins University Press, 1967

Yates, Frances A. *Giordano Bruno and the Hermetic Tradition*. London: Routledge and Kegan Paul, 1964

Yates, Frances A. *The Occult Philosophy of the Elizabethan Age*. London: Routledge and Kegan Paul, 1979

Yates, Frances A. *The Rosicrucian Enlightenment*. London: Routledge & Keegan Paul, 1972

Young, A. R. 'Henry Peacham, Ripa's Iconologia, and Vasari's Lives.' *Renaissance and Reformation/Renaissance et Réforme* 9, No. 3 (1985): 177–88

British Heart Foundation. ‘Takotsubo Cardiomyopathy’, https://www.bhf.org.uk/informationsupport/conditions/cardiomyopathy/takotsubo-cardiomyopathy/

KU Leuven, *Spirit: Mapping the Boundaries of the Material and the Immaterial from Late Antiquity to the Early Modern Period*. Leuven: 14-15 December 2023, https://hiw.kuleuven.be/dwmc/conferences-lectures/spirit-mapping-the-boundaries-of-the-material-and-the-immaterial-from-late-antiquity-to-the-early-modern-period

NHS. ‘Medically Unexplained Symptoms.’ https://www.nhs.uk/conditions/medically-unexplained-symptoms/

OED. ‘vitalism, n.’, in *OED Online*. Oxford University Press, June 2022, https://www.oed.com/view/Entry/224022

Project Vox Team. ‘Margaret Cavendish, Duchess of Newcastle-upon-Tyne.’ *Project Vox.* Duke University Libraries, 2019, https://projectvox.org/cavendish-1623-1673/

University of Cambridge, Faculty of Philosophy, ‘Vitalism in Early Modern Philosophy’, https://www.phil.cam.ac.uk/events/vitalism-conference