The scholarly self under threat: language of vice in British scholarship (1870-1910)

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Introduction

'Do not be led away by megalomania: do not think that you can possibly write a book without mistakes.'

Charles Oman, 1904[1]

Be modest. That was Charles Oman's central advice to the audience that attended his inaugural lecture as Chichele Professor of Modern History at Oxford University in 1906. In this lecture, Oman (1860-1946) presented his view of the ideal historian: someone who practiced virtues of 'modesty' and 'conviction' and possessed a 'dogged determination to work at all times'.[2] Interestingly however, Oman did not only describe the ideal character traits of a historian. He also devoted a significant part of his lecture to the vices and shortcomings of *bad* historians. He told his listeners to be wary of a desire for 'absolute accuracy' and the vice of 'megalomania'.[3] It was impossible, Oman pleaded, to write an 'infallible magnum opus', so historians should not strive after it.[4] In Oman's eyes, the difference between good scholarship and bad scholarship was defined in terms of virtue and vice. Good historians displayed traits of modesty, discipline and laboriousness, while bad historians tried to be too accurate and too ambitious. Bad historians, Oman stated, suffered from vices such as megalomania. Being a scholar was fundamentally a matter of practicing virtues and withstanding threats of vice.[5]

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1 Charles Oman, *Inaugural Lecture on the Study of History* (Oxford: Clarendon Press, 1906) 28.
2 Ibid. 24
3 Ibid. 28
4 Ibid.
5 Oman did not literally use the terms 'virtue' and 'vice' in his inaugural lecture: these terms are my own. Oman did, however, point repeatedly to traits of character. In this dissertation, I will treat virtues and vices as traits of character. See the next section for a lengthier discussion of these terms.

This moral language of virtue and vice might sound abstract and rather outdated now, but ambition and megalomania were certainly no abstract threats to Oman. In fact, his juxtaposition of virtuous and vicious scholarship served an acute purpose: it was an attack on a prominent group of historians who sought to 'professionalise' the writing of history by instituting very high standards of accuracy, precision and completeness in the curricula of universities.[6] The champion of this group was the recently deceased historian Lord Acton (1834-1902), who functioned as the epitome of what a good scholar should be: completely accurate, thorough and precise. At least, that was the image that 'professionalising' historians like Charles Harding Firth (1857-1936) sought to communicate. Oman, on the other hand, abhorred the 'professionalisation' and 'specialisation' of history at the universities, and attacked the image of the exemplary Acton in order to neutralise this threat to his ideal of scholarly selfhood.[7]

Despite all the efforts of his biographers and supporters to turn him into a scholarly hero, Acton was actually an easy target: he had never finished the magnum opus he had worked on since forty years before his death. In fact, he had never finished any book. This was grist to Oman's mill. Acton was not a hero, but an immensely unproductive icon of vanity. 'Never was there such a pathetic sight of wasted labour. . . . I never saw any sight which so much impressed on me the vanity of human life', Oman reflected in his inaugural address.[8] Instead of aiming for an 'infallible magnum opus' like Acton did, historians should above all be modest. By drawing attention to Acton's vices of megalomania, unproductiveness and

6 For the debates over the meaning of professionalisation at British universities around 1900, see: Peter Slee, *Learning and a Liberal Education: The Study of Modern History in the Universities of Oxford, Cambridge and Manchester 1800-1914* (Manchester: Manchester University Press, 1986); and: Arthur Engel, *From Clergyman to Don: The Rise of the Academic Profession in Nineteenth-Century Oxford* (Oxford: Oxford University Press, 1983).

7 For a more detailed analysis of the memory culture surrounding Lord Acton, see: Léjon Saarloos, 'Virtue and Vice in Academic Memory: Lord Acton and Charles Oman', *History of Humanities* 1:2 (2016) 339-354.

8 Oman, *Inaugural Lecture*, 25-26.

vanity, Oman thus sought to legitimise his own agenda as professor, and his own ideal of scholarly selfhood. Accusation of vice and attribution of virtue, in sum, played a major role in determining what it meant to be an historian.

Oman's attack on Acton is but a minor episode in the history of late Victorian and early Edwardian scholarship. Yet it forcefully illustrates the immense importance that British scholars around 1900 attached to their own virtuous character, their ability to withstand the threat of vices and their heartfelt duty to challenge the vices of others. Oman's case, moreover, is far from unique. As this study will show, the language of vice was employed regularly by scholars working in all kinds of late Victorian and early Edwardian disciplines, ranging from history, Shakespearean scholarship and classics, to energy physics, geology and chemistry.[9] The discourse of vice is prominent in all types of sources too: obituaries, monographs, articles, diaries and private correspondence all show the prominence of vice language. Finally, the language of vice was used across regional, institutional and social boundaries. Vices threatened aristocratic Cambridge dons and petty-bourgeois Lancashire schoolteachers alike.

9 Because this dissertation covers all kinds of disciplines, ranging from physics and chemistry, to history and Shakespeare scholarship, I will use the terms 'scholar' and 'scholarship' in the broadest sense of these words: 'scholar' refers to anyone pursuing knowledge, while 'scholarship' refers to the practice of pursuing knowledge and the collective project of knowledge acquisition. I treat the term 'scholarship' much as the German notion of *Wissenschaft* or the Dutch notion of *wetenschap*: categories that speak to the entire breadth of organized intellectual activity. The terms 'science' and 'men of science' are more exclusive and are used in this dissertation when actors use these categories themselves. The Victorian term 'man of science', in particular, needs some introduction, which is given by: Melinda Baldwin, *Making "Nature": the History of a Scientific Journal* (Chicago: University of Chicago Press, 2015), especially chapter 3; and: Ruth Barton, '"Men of Science": Language, Identity and Professionalization in the Mid-Victorian Scientific Community', *History of Science* 41 (2003) 73-119. Paul White has argued that Victorians and Edwardians saw science as a moral *and* epistemological pursuit and therefore preferred the term 'man of science' over 'scientist': Paul White, *Huxley: Making the "Man of Science"* (Cambridge: Cambridge University Press, 2003).

Vices, in other words, were everywhere in learned Britain around 1900. Despite this omnipresence, historians have scarcely studied the threat of vice systematically. To remedy this lack of attention, this study takes a closer look at the vices that shaped Victorian ideals of scholarly selfhood. Before reflecting on the Victorian context and my methodology, this introduction will discuss the state of historical scholarship on virtue and vice. This historiographical survey will lead me to my research question and argument.

Vices in historiography: public morality

First, a few words on my definitions of 'virtue' and 'vice'. Although these terms were also used by Victorians and Edwardians themselves, I use 'virtue' and 'vice' as analytical categories in this dissertation. The notions of virtue and vice have a long and complex history, stretching back to ancient philosophers like Plato and Aristotle, but scholars generally agree that both categories refer to traits of character.[10] In this dissertation, I follow this simple definition: virtues and vices are character traits. Where virtues can be described as traits that are beneficial to the acquisition of certain goods (knowledge, morality, and so on), vices are traits that are detrimental to this acquisition.[11] In other words: virtues are desirable traits of character, while vices are flaws of character. As such, vices can also be distinguished from other failings, like the lack of skills (an inability to read German, or

10 For the basic definition of virtues and vices as traits of character, see: Rosalind Hursthouse and Glen Pettigrove, 'Virtue Ethics', in: Edward N. Zalta (ed.), *The Stanford Encyclopedia of Philosophy* (Winter 2018), https://plato.stanford.edu/archives/win2018/entries/ethics-virtue/. For a short introduction into the history of 'virtue', see: Andreas Hellerstedt, 'Introduction', in: Andreas Hellerstedt (ed.), *Virtue Ethics and Education from Late Antiquity to the Eighteenth Century* (Amsterdam: Amsterdam University Press, 2018) 9-36.

11 A lengthier discussion of 'virtues' as 'human qualities conducive to goods that people . . . find worth pursuing in the context of a certain practice', can be found in: Herman Paul, 'What Is a Scholarly Persona? Ten Theses on Virtues, Skills, and Desires', *History and Theory* 53 (2014) 348-371, quote on page 360. Paul focuses specifically on epistemic virtues: virtues oriented towards the acquisition of knowledge. For epistemic virtues, see note 32 in this introduction.

incompetence in bookkeeping for example).[12] When I speak of the language of vice in British scholarship, then, I refer to the discourse that identified flaws of character as threats to the scholarly self.

In historiography, the language of virtue and vice has been studied mainly from two perspectives. Firstly, virtues and vices have been studied by historians interested in public morality and intellectual culture. Stefan Collini, for example, has drawn attention to the prominence of 'character' in Victorian political thought.[13] 'Character', for the Victorians, was a prerequisite for civilisation, and consisted of virtues such as 'self-restraint, perseverance, strenuous effort, [and] courage in the face of adversity'.[14] Moreover, Collini argues that the idea of character was so important to the Victorians because it tied in with their 'vision of life as a perpetual struggle', in which 'one's ability to resist temptation and overcome obstacles' was paramount: virtues were needed to remedy vices.[15] In the moral imagination of the Victorians, Collini states, the virtue of 'altruism' was in a constant struggle with the vice of 'egoism'.[16] A virtuous character thus was

12 Incompetence in bookkeeping can of course be attributed to several vices, but it could also be that the technical skill is lacking. For the difference between skills and virtues, see also: Jason Baehr, *The Inquiring Mind: On Intellectual Virtues and Virtue Epistemology* (Oxford: Oxford University Press, 2012) 30.

13 Stefan Collini, 'The Idea of 'Character' in Victorian Political Thought', *Transactions of the Royal Historical Society* 35 (1985) 29-50, 31.

14 Ibid. 36.

15 Ibid. 38. A famous example of this fear of temptation and vice is Samuel Smiles' work, who refers to temptations and vices repeatedly in his *Self-Help* (1859) and *Character* (1871). For Samuel Smiles and Victorian morality, see: T. Travers, 'Samuel Smiles and the Origins of "Self-Help": Reform and the New Enlightenment', *Albion: A Quarterly Journal Concerned with British Studies* 9:2 (1977) 161-187; and: T. Travers, 'Samuel Smiles and the Pursuit of Success in Victorian Britain', *Canadian Historical Association, Historical Papers* (1971) 154-168. Also excellent is Peter Sinnema's introduction to Smiles' Self-Help: Peter Sinnema, 'Introduction', in: Samuel Smiles, *Self-Help. With Illustrations of Character, Conduct, and Perseverance* (Oxford: Oxford University Press, 2002) vii-xxviii.

16 This point is developed further in Stefan Collini, *Public Moralists: Political Thought and Intellectual Life in Britain 1850-1930* (Oxford: Clarendon Press, 1991) esp. pages 65-67.

an antidote to the threat that vices and temptations posed to individuals, and, consequently, civilisation.[17]

Other scholars, too, have looked at vices through this lens of public morality. Mike Huggins' monograph on (the fight against) Victorian vices such as drinking, betting and prostitution underlines Collini's point that vices were primarily seen as threats to 'social order, good government and respectable life.'[18] Walter Houghton, to mention an older example, resorted to the language of virtue and vice when describing the fundamental 'attitudes' that characterised the 'Victorian frame of mind'.[19] In many cases the binaries of virtue and vice were, as Huggins argues, a means of 'the more respectable' to define the 'moral centre' of society.[20] In this reading, virtues and vices are signifiers of the construction of distinctive higher- and middle-class moralities.[21]

Historians focusing on other national contexts have described the role of vice as being similar to the role described by Collini, Huggins and Houghton. Historians of American intellectual culture have shown, for example, that public moralists in the late nineteenth-century United States used the language of virtue and vice to integrate liberal theories of the market with personal morality.[22] In nineteenth-century Germany,

17 A similar point is made by Nathan Roberts: Nathan Roberts, 'Character in the mind: citizenship, education and psychology in Britain, 1880-1914', *History of Education* 33:2 (2004) 177-197.

18 Mike Huggins, *Vice and the Victorians* (London/New York: Bloomsbury Academic, 2016) 5.

19 Walter E. Houghton, *The Victorian Frame of Mind 1830-1870* (New Haven/London: Yale University Press, 1957) xiv-xvi, 3-5

20 Huggins, *Vice and the Victorians*, 14. For Collini, 'the more respectable' were a highly educated elite: Collini, *Public Moralists*, 2.

21 Collini notes that there were many competing views of what specifically was seen as virtuous, but that public moralists were in deep agreement over their moral duties.

22 See: David E. Tucker, *Mugwumps: Public Moralists of the Gilded Age* (Columbia, MO: University of Missouri Press, 1998). For anti-vice campaigning in the United States, see: Nicola Beisel, 'Class, Culture, and Campaigns against Vice in Three American Cities, 1872-1892', *American Sociological Review* 55:1 (1990) 44-62.

likewise, the definition of moral virtue was central to the constitution of the 'bürgerliche Wertehimmel'[23], while in the Dutch context too, virtues and vices were prominent in the language of public moralists, who pointed to the national virtues of the Dutch.[24] In other words, the categories of virtue and vice have been studied as an integral part of a discourse that structured debates on public morality, class and national identity.

Vices in historiography: epistemology

The second perspective from which virtues and vices have been studied is the history of scholarship.[25] Unlike historians of public morality and broad intellectual culture, historians of scholarship have drawn attention to specific virtues and vices that they deem to have been central to scientific ideals and scientific practice. Lorraine Daston and Peter Galison, in their seminal *Objectivity*, analyse how the 'new epistemic virtue' of objectivity

23 Manfred Hettling and Stefan-Ludwig Hoffmann, 'Der bürgerliche Wertehimmel. Zur Problem individueller Lebensführung im 19. Jahrhundert', *Geschichte und Gesellschaft* 23 (1998) 333-359. See also: Madeleine Hurd, 'Education, Morality, and the Politics of Class in Hamburg and Stockholm, 1870-1914', *Journal of Contemporary History* 31:4 (1996) 619-650.

24 Henk te Velde, *Gemeenschapszin en plichtsbesef: liberalisme en nationalisme in Nederland, 1870-1918* ('s Gravenhage, 1992). For stereotypes about national character, see: Joep Leerssen, 'The Rhetoric of National Character: A Programmatic Survey', *Poetics Today* 21 (2000) 267–292.

25 Recently, there have been calls for a history of knowledge, which offers a broader view of intellectual activity. I consider the broad history of scholarship to be a subset of this even broader history of knowledge. For a historiographical discussion of the breadth of scholarship into the history of knowledge, see: Simone Lässig, 'The History of Knowledge and the Expansion of the Historical Research Agenda', *Bulletin of the German Historical Institute* 59 (2016) 29-58. For the relationship between the history of scholarship and the history of knowledge, see: Peter Burke, *What is the History of Knowledge?* (Cambridge: Polity Press, 2016). The first issue of the new *Journal for the History of Knowledge* also seeks to define the history of knowledge and its research agenda. See especially: Johan Östling and David Larsson Heidenblad, 'Fulfilling the Promise of the History of Knowledge: Key Approaches for the 2020s', *Journal for the History of Knowledge* 1:1 (2020) 3, 1-6.

'emerged as a new way of studying nature, and of being a scientist.'[26] Daston and Galison, struck by the sudden rise of scientific objectivity in the nineteenth century, describe the history of objectivity as a history of the self: only by suppressing one part of the self, subjectivity, could scientific objectivity be obtained.[27] Therefore, Daston and Galison argue, knowledge should not be seen as independent of the knower: epistemology was thoroughly moralised.[28] Although the authors put the epistemic virtue of objectivity in the front and centre of their argument, they do touch on other virtues that are related to the reign of objectivity: virtues of self-restraint, self-discipline and other technologies of the self that were meant to reach a state of 'self-imposed selflessness'.[29]

Daston and Galison are not alone in arguing for a study of moralised epistemology through a focus on virtues such as objectivity. George Levine, for example, has described Victorian men of science as literally 'dying to know' in their ascetic efforts to restrain and sacrifice their very selves to come to knowledge.[30] Similarly, historians of science like Richard Bellon have stressed the epistemic virtues of 'self-discipline', 'patience', and 'humility' in nineteenth-century images of Newton and Darwin, while historians of scholarship like Kasper Eskildsen have underlined the virtues

26 Lorraine Daston and Peter Galison, *Objectivity* (New York: Zone Books, 2010), 16-17.
27 Ibid. 35-42.
28 Ibid. 39.
29 Ibid. 203.
30 George Levine, *Dying to Know. Scientific Epistemology and Narrative in Victorian England* (Chicago: University of Chicago Press, 2002).

of 'accuracy' and 'impartiality' in Leopold von Ranke.[31]

Historians of scholarship, the above shows, are mainly interested in so-called epistemic virtues: character traits that were considered necessary for a successful pursuit of knowledge.[32] These virtues were often ascetic in nature (in fact, Daston and Galison argue that the epistemic virtue of objectivity was 'parasitic' on religious impulses 'to discipline and sacrifice') and aimed exclusively towards the acquisition of knowledge about the world outside of the self by disciplining the self.[33] This strong focus on the epistemic

31 Richard Bellon, 'There is Grandeur in This View of Newton: Charles Darwin, Isaac Newton and Victorian Conceptions of Scientific Virtue', *Endeavour* 38:3-4(2014) 222–234, 222; Kasper Risbjerg Eskildsen, 'Inventing the Archive: Testimony and Virtue in Modern Historiography', *History of the Human Sciences* 26:4 (2013) 8–26, 12. Other examples of studies on scholarly virtues and vices include: Graeme Gooday, *The Morals of Measurement: Accuracy, Irony, and Trust in Late Victorian Electrical Practice* (Cambridge: Cambridge University Press, 2004); M. Norton Wise (ed.), *The Values of Precision* (Princeton, NJ: Princeton University Press, 1985); Matthew Stanley, *Huxley's Church and Maxwell's Demon: From Theistic Science to Naturalistic Science* (Chicago: University of Chicago Press, 2015); Rebecca Herzig, *Suffering For Science: Reason and Sacrifice in Modern America* (New Brunswick: Rutgers University Press, 2005); and: Kathryn Murphy and Anita Traninger (eds.), *The Emergence of Impartiality* (Leiden: Brill, 2014).

32 There is a large body of philosophical scholarship on epistemic virtue as well, some of which has inspired historians to historicise these virtues. See for example: Jason Baehr, 'Character in Epistemology', *Philosophical Studies* 128 (2006) 479-514; Robert Roberts and Jay Wood, *Intellectual Virtues: An Essay in Regulative Epistemology* (Oxford: Oxford University Press, 2007); Linda Zagzebski, *Virtues of the Mind: An Inquiry into the Nature of Virtue and the Ethical Foundations of Knowledge* (Cambridge: Cambridge University Press, 1996); for a historical case study of epistemic virtue, see: Ian James Kidd, 'Was Sir William Crookes epistemically virtuous?', *Studies in History and Philosophy of Science Part C* 48 (2014) 67-74. Some philosophers have recently turned to the topic of epistemic vices: see: Quasim Cassam, *Vices of the Mind. From the Intellectual to the Political* (Oxford: Oxford University Press, 2019).

33 Daston and Galison, *Objectivity*, 40.

dimension of virtues has influenced scholars to date.[34] Additionally, because of their interest in the history of knowledge acquisition, many historians of scholarship have focused primarily on character traits that support, rather than obstruct the pursuit of knowledge: virtues have figured much more prominently than vices.

Historiographical relevance and research question

The category of vice, then, has been studied from two main perspectives. There is, however, a rather large gulf between these two rich historiographical traditions. One historiographical tradition emphasises how vices were employed as markers of morality in public debate and intellectual culture, while the other specifically stresses the role of virtues and vices in scientific epistemology. For one group of historians, categories of virtue and vice are part of a generic language of morality, while for the other, these categories play a very specific epistemic role in the shaping of a scholarly self. When applied to the example of Charles Oman in the introduction, moreover, neither of the two perspectives can fully explain the role that vices played.

34 Jeroen van Dongen, for example, has written on Einstein's conception of epistemic virtue: Jeroen van Dongen, 'The Epistemic Virtues of the Virtuous Theorist: On Albert Einstein and his Autobiography', in: Jeroen van Dongen and Herman Paul (Eds.), *Epistemic Virtues in the Sciences and the Humanities*, Boston Studies in the Philosophy and History of Science 321 (Cham: Springer, 2017) 63-77. A similar focus on the epistemic orientation of virtues can be found in: Chaokang Tai and van Jeroen van Dongen 'Anton Pannekoek's Epistemic Virtues in Astronomy and Socialism: Personae and the Practice of Science', *BMGN - Low Countries Historical Review*, 131:4 (2016) 55–70. An argument against this view of 'ascetic' virtues is offered by Paul White, who has written on Charles Darwin, objectivity and the scientific self as a 'feeling subject': Paul White, 'Darwin's Emotions: The Scientific Self and the Sentiment of Objectivity', *Isis* 100:4 (2009) 811-826. In an earlier article, I have also identified problems with this ascetic view of epistemic virtues: Léjon Saarloos, 'Virtues of Courage and Virtues of Restraint: Tyndall, Tait and the Use of the Imagination in Late Victorian Science', in: Jeroen van Dongen and Herman Paul (Eds.), *Epistemic Virtues in the Sciences and the Humanities*, Boston Studies in the Philosophy and History of Science 321 (Cham: Springer, 2017) 109-128.

The perspective of Collini, Huggins and others does offer clues about the language of vice and its embedment into broader intellectual culture, but it does not explain why Oman saw Acton's vices as so detrimental for scholarship: the epistemic dimension is lacking. The perspective of Daston, Levine and others, likewise, might explain the conflict between Acton's emphasis on accuracy and Oman's call for modesty, but cannot take into account the broader context of Acton and Oman's debate and the meaning of virtue and vice in their minds. In other words: whereas the first perspective is too generic for my purposes and glosses over the specifically epistemic or scholarly dimension of the categories of virtue and vice, the second perspective is too specific and focuses almost exclusively on singular and narrowly defined epistemic virtues, while vices receive less attention.[35]

None of these perspectives, therefore, can explain the importance of vices in Victorian thinking about scholarship. The question remains: what did vices mean to nineteenth-century scholars? Why did they use the time-honoured language of virtue and vice? How did they perceive the relationship between personal character and the pursuit of knowledge? These and many other questions about virtues and vices in late nineteenth century scholarship cannot satisfyingly be answered by simply adopting one of the two main perspectives that the historiography of virtue and vice has to offer.

For the early modern period, the state of the debate is somewhat

35 The problem with narrowly defining epistemic virtue or vice is that historical actors themselves did not distinguish between epistemological, social, political or religious meanings of the term: Jeroen van Dongen and Herman Paul, 'Introduction: Epistemic Virtues in the Sciences and the Humanities', in: Jeroen van Dongen and Herman Paul (eds.), *Epistemic Virtues in the Sciences and the Humanities*, Boston Studies in the Philosophy and History of Science 321 (Springer 2017) 1-10. See also: Camille Creyghton, Pieter Huistra, Sarah Keymeulen, and Herman Paul, 'Virtue language in historical scholarship: the cases of Georg Waitz, Gabriel Monod and Henri Pirenne', *History of European Ideas* 42:7 (2016) 924-936.

different.[36] Two monographs in particular have drawn attention to vices in early modern learning: Anne Goldgar's *Impolite Learning* and Sari Kivistö's *The Vices of Learning*. Goldgar shows how the world of learning and the world of politics, economics and religion collided in the period between 1680 and 1750. In this turbulent environment, scholars sought to cultivate virtues of 'politeness' and 'selflessness' to set themselves apart from society, while, at the same time, a scholar was intrinsically part of that society and had to adhere to other codes of conduct as well, which resulted in a 'complicated juggling act'.[37] In her monograph on seventeenth and eighteenth-century learned treatises about scholarly vice, Sari Kivistö shows how the language of vice was employed by early modern academics themselves to reflect on their intellectual pursuits, while, at the same time, the discourse fulfilled an important pejorative function. Kivistö argues that the discourse of vice was used to define a new relationship between morality and knowledge in a period of 'secularization, rationalization and diversification of knowledge, which challenged the age-old dominance of theology.'[38]

Goldgar and Kivistö show how the perceived vices of the learned were neither specifically epistemic, nor exclusively part of debates over public morality. The language of vice in early modern learning connected

36 In general, scholars do not agree about what exactly constitutes modern science, but many do agree that there are significant differences between early modern and modern science and that the seventeenth century saw many 'revolutionary' changes. For a recent monograph that argues just that, see: Floris Cohen, *How Modern Science Came into the World*: *Four Civilizations, One 17th-Century Breakthrough* (Amsterdam: Amsterdam University Press, 2012). For more scholarship on periodisation in the history of science, see: John V. Pickstone, *Ways of Knowing: a New History of Science, Technology and Medicine* (Manchester: Manchester University Press, 2000); John V. Pickstone, 'Sketching Together the Modern Histories of Science, Technology, and Medicine', *Isis* 102:1 (2011) 123-133; and: Hasok Chang, 'Pluralism versus Periodization', *Isis* 107:4 (2016) 789-792.

37 Anne Goldgar, *Impolite Learning: Conduct and Community in the Republic of Letters, 1680-1750* (New Haven, CT: Yale University Press, 1995) 211.

38 Sari Kivistö, *The Vices of Learning: Morality and Knowledge at Early Modern Universities* (Leiden: Brill, 2016) 6.

learning in particular with broader intellectual culture. Kivistö and Goldgar, moreover, draw attention to a whole array of intellectual vices in explaining the appeal of vice in intellectual debate.[39] Where the monographs of Daston and Galison, Levine and others focus specifically on epistemic vice in modern science, Goldgar and Kivistö are able to explain the appeal and usage of the language of virtue and vice with reference to the broader intellectual culture in which scholars were embedded. There are many years, however, between the early modern Latin dissertations on which Kivistö writes and Oman's inaugural speech with which this introduction opens. Charles Oman would probably not have recognised the social codes of politeness on which Goldgar writes.

What is lacking in the historiography of modern scholarship is an approach to the category of vice that moves beyond accounts of singular and narrowly defined epistemic vices: an approach that, like those of Kivistö and Goldgar, is able to historicise and explain the appeal and the usage of vice-language to scholars with reference to the broad intellectual environment in which they operated. To date, only a few scholars have focused on modern scholarly vices in this way, and with interesting results. One account of modern scholarly vices is offered by Christiaan Engberts, in an article on the German orientalist Heinrich Ewald (1803-1875) and his vices of 'arrogance' and 'dogmatism'.[40] Engberts shows how the language of vice was used by Ewald's opponents to make him into an 'unscholarly persona': a shorthand for bad scholarship.[41] In a co-authored article by Engberts and Herman Paul, the role of vices in modern scholarly debates is developed further. Engberts and Paul present two nineteenth-century

39 Other accounts discussing the language of vice in early modern learning are: Sorana Corneanu, *Regimens of the Mind: Boyle, Locke, and the Early Modern Cultura Anima Tradition* (Chicago: University of Chicago Press, 2011); and: Marian Füssel, '"The Charlatanry of the Learned: On the Moral Economy of the Republic of Letters in Eighteenth-Century Germany"', *Cultural and Social History* 3 (2006) 287-300.

40 Christiaan Engberts, 'Gossiping about the Buddha of Göttingen: Heinrich Ewald as an Unscholarly Persona', *History of Humanities* 1:2 (2016) 371-385.

41 Ibid. 378-383.

case studies to show that scholars around 1900 did not pursue epistemic aims 'in isolation from social, moral, religious, or political ones', and that it would be anachronistic to focus exclusively on 'epistemic vices'.[42] Rather, the authors claim, the more inclusive term of 'scholarly vices' would be in order.[43] Although there is great potential in these approaches, a broad but systematic study of the language of vice in modern scholarship is still missing.

This dissertation aims to contribute primarily to the historiographical debate on modern scholarly vices by offering the first book-length analysis on this topic. For reasons that will be explained shortly, this study focuses on the language of vice in British scholarship between roughly 1870 and 1910. It will answer the following question:

> *Why was the category of vice so important to British scholars around 1900?*

This dissertation thus starts from the observation that the discourse of vice was central to the ways in which British scholars around 1900 conceptualised their own pursuit of knowledge. Its frequent appearance in a great variety of sources, disciplines, institutions and regions of British scholarship is more than remarkable. Answering this question will not only offer historians a thorough account of vices in modern British scholarship, it will also help to bridge the gap between the historiographies of public morality and epistemic vice. I will now elaborate on the benefits of choosing the British case, and will subsequently turn to my answer and methodology.

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42 Christiaan Engberts and Herman Paul, 'Scholarly Vices: Boundary Work in Nineteenth-Century Orientalism', in: Jeroen van Dongen and Herman Paul (eds.), *Epistemic Virtues in the Sciences and the Humanities*, Boston Studies in the Philosophy and History of Science 321 (Cham: Springer, 2017) 79-90.

43 Ibid., see also: Herman Paul, 'Virtue Language In Nineteenth-Century Orientalism: A Case Study In Historical Epistemology', *Modern Intellectual History* 14:3 (2017) 689–715.

The context of late Victorian and early Edwardian Britain

Two main benefits merit a focus on British scholarship around 1900.[44] The first benefit is the varied institutional landscape that characterised British scholarship, while the second benefit is the prominence of gentlemanly morality in Victorian intellectual culture. I will explain both peculiarities of the British context and the benefits for students of the language of vice, but first, some words on periodisation are in order.

This study focuses on the period between 1870 and 1910. In historiography of western European scholarship, this period has generally been regarded as a period of discipline formation. The late nineteenth and early twentieth centuries witnessed the institutionalisation of modern disciplines through the establishment of specialised journals, professorial chairs and scholarly associations. Alongside the institutionalisation of modern disciplines, the period between 1870 and 1910 also saw the

44 For a discussion of virtue in the Dutch humanities, see: Jo Tollebeek, *Men of Character: The Emergence of the Modern Humanities* (Wassenaar: Netherlands Institute for Advanced Study in the Humanities and Social Sciences, 2011). For a German example, see: Herman Paul, 'Weber, Wöhler, and Waitz: Virtue Language in Late Nineteenth-Century Physics, Chemistry, and History', in: Jeroen van Dongen and Herman Paul (eds.) *Epistemic Virtues in the Sciences and the Humanities*, Boston Studies in the Philosophy and History of Science 321 (Cham: Springer, 2017) 91-107. The language of virtue also crossed national boundaries, see: Herman Paul, 'German Thoroughness in Baltimore: Epistemic Virtues and National Stereotypes', *History of Humanities* 3:2 (2018) 327-350.

development of shared standards of scholarship, and shared methodologies.[45] For contemporaries, however, the outcome of these discussions was never clear. In fact, discipline formation was a complex and complicated process and led to fundamental discussions about the nature of scholarship, proper methodology, and the identity, self-image and persona of the scholar.[46] These debates make the period between 1870 and 1910 all the more interesting for students of the language of vice, as the essence of what it meant to be a scholar was discussed and reconfigured.

That being said, let me turn to the two benefits of focusing on the British context in this period. Firstly, the institutional landscape of scholarship in Britain around 1900 was quite different from the situation in, for instance, France or Germany.[47] The early nineteenth-century institutional landscape in Britain was dominated by the old clerical universities of Oxford and Cambridge, but as the century progressed, new civic universities were established, often supported by wealthy individuals or groups, or municipal

45 For accounts of nineteenth-century discipline formation and discussions on specialisation, identity or method in general, see for example: David Cahan, 'Institutions and Communities', in: David Cahan (ed.), *From Natural Philosophy to the Sciences: Writing the History of Nineteenth-Century Science* (Chicago: University of Chicago Press, 2003) 291-328; Ilaria Porciani and Lutz Raphael (eds.), *Atlas of European Historiography: The Making of a Profession, 1800-2005* (Hampshire: Palgrave, 2010); Rolf Torstendahl, 'Fact, Truth, and Text: The Quest for a Firm Basis for Historical Knowledge around 1900', *History and Theory* 42 (2003) 305-331; Ulrich Johannes Schneider, *Philosophie und Universität: Historisierung der Vernunft im 19. Jahrhundert* (Hamburg: Felix Meiner Verlag, 1998); Frans van Lunteren, 'Het ontstaan van het systeem van bètadisciplines: de natuurkunde', *Studium* 6:2 (2013) 91–112.

46 For one example of how discussions on professionalisation, specialisation and discipline formation centred on questions of what it meant to be a scholar, see: Saarloos, 'Virtue and Vice in Academic Memory'.

47 For an analysis of the German idea of the research university, see: Rainer Christoph Schwinges (ed.), *Humboldt International*: *Der Export des deutschen Universitätsmodel im 19. und 20. Jahrhundert* (Basel: Schwabe & Co. AG Verlag, 2001); and: Johan Östling, *Humboldt and the Modern German University: An Intellectual History* (Lund: Lund University Press, 2018). For the more centralised intellectual climate in France, see: Emmanuelle Picard, 'Recovering the History of the French University', *Studium* 5:3 (2012) 156-169.

authorities.[48] The establishment of new universities alongside the clerical bastions of Oxford and Cambridge made for a diverse institutional environment.[49] Scholarship flourished outside of academic confines as well: in societies, institutes, clubs, observatories, factories, museums, schools, and academies, knowledge was created and transmitted.[50] The very diversity of British scholarship (clerical dons in age-old universities, practical electrical engineers, and socialist Shakespearean scholars operating alongside each other) resulted in coexistence and competition between very different ideals of what it meant to pursue knowledge.[51]

A second peculiarity of the British intellectual context is the power of gentlemanly ideals in defining Victorian morality. Although gentlemanliness was an important marker of respectability, what it meant to be a gentleman was highly disputed in the Victorian age.[52] Being a gentleman was not only a social description, nor was it exclusively linked to class. Above all, gentlemanliness became a moral designation: a marker

48 See Walter Rüegg (ed.), *A History of the University in Europe. Volume II: Universities in the Nineteenth and Early Twentieth Centuries (1800-1945)* (Cambridge: Cambridge University Press, 2003).

49 In such an environment, different forms of knowledge flourished in different places. Cities like Glasgow, Liverpool and Manchester became hotbeds for the new 'Science of Energy', while Oxbridge remained a haven for the liberally educated elite. See: Crosbie Smith, *The Science of Energy: A Cultural History of Energy Physics in Victorian Britain* (Chicago: University of Chicago Press, 1998); Slee, *Learning and a Liberal Education*; and: Stuart Jones, *Intellect and Character in Victorian England: Mark Pattison and the Invention of the Don* (Cambridge: Cambridge University Press, 2007).

50 Martin Daunton (ed.), *The Organisation of Knowledge in Victorian Britain* (Oxford: Oxford University Press, 2005), especially chapter two, in which John Pickstone tackles the 'plural configurations' of British science.

51 A good example of these clashing conceptions is offered in: Ian Hesketh, 'Diagnosing Froude's Disease: Boundary Work and the Discipline of History in Late-Victorian Britain', *History and Theory* 47:3 (2008) 373-395; and: Gowan Dawson and Bernard Lightman (eds.), *Victorian Scientific Naturalism: Community, Identity, Continuity* (Chicago: University of Chicago Press, 2014).

52 See for a classic account of the Victorian gentleman: Robin Gilmour, *The Idea of the Gentleman in the Victorian Novel* (London: Routledge, 1981).

of a middle and upper-class morality, instilled through liberal education.[53] The ideal stressed, amongst other traits, heavily gendered virtues of self-sacrifice, nobility, selflessness, responsibility and dignity.[54] Moreover, gentlemanly ideals of morality played a major role in Victorian definitions of vice, as Mike Huggins has argued. Middle class morality prescribed gentlemanly virtues as a way to keep vices (often associated with women and the working classes) at bay.[55] The self-identification of some Victorian scholars as 'gentlemen' or 'gentlemen of science', moreover, suggests that these debates on the proper moral makeup of a gentleman were entwined with scholarly culture too.[56] As Heather Ellis has shown, the nineteenth-century construction of male scientific authority was deeply bound up with discussions about ideals of masculinity, of which the scholar-as-gentleman was one example.[57]

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53 See for example: Reba N. Soffer, *Discipline and Power: The University, History and the Making of an English Elite, 1870–1930* (Stanford: Stanford University Press, 1994).

54 In Houghton's analysis, at least: Houghton, *Victorian Frame of Mind*, 283-284. More recent and critical renditions of 'gentlemanliness' stress the darker side of Victorian gentlemanliness and its relation to empire: Praseeda Gopinath, *Scarecrows of Chivalry: English Masculinities after Empire* (Charlottesville: University of Virginia Press, 2013) especially chapter 1, in which the Victorian gentleman is analysed; and: Edward Beasley, *Mid-Victorian Imperialists: British Gentlemen and the Empire of the Mind* (London: Routledge, 2005). For an analysis of the gendered nature of character in Victorian discussions about the gentleman, see: Mary Poovey, *Uneven Developments: the Ideological Work of Gender In Mid-Victorian England* (Chicago: University of Chicago Press, 1988).

55 Huggins, *Vice and the Victorians*, 22-23.

56 For 'gentlemen of science', see: Jack Morrell and Arnold Thackray, *Gentlemen of Science: Early years of the British Association for the Advancement of Science* (Oxford: Clarendon Press, 1981). For a more recent account of what it meant to be a gentleman in science, see: Richard Bellon, 'Joseph Dalton Hooker's Ideals for a Professional Man of Science', *Journal of the History of Biology* 34 (2001) 51-82. For the gendered nature of 'character' in science and the instability of elite masculinity in science, see: Heather Ellis, 'Knowledge, character and professionalisation in nineteenth-century British science', *History of Education* 43:6 (2014) 777-792; and: Heather Ellis, *Masculinity and Science in Britain, 1831–1918* (London: Palgrave Macmillan, 2017).

57 Ellis, *Masculinity and Science in Britain*, 8-12.

Focusing on the British context thus has two benefits. The variety of the learned landscape in nineteenth century Britain allows me to focus on the coexistence of and competition between different ideals of scholarly selfhood, while the entanglement between gentlemanly and scholarly ideals of selfhood enables me to embed my case studies in broader Victorian conceptions of virtue and vice. The British context is not unique, and notions of virtue and vice were important markers of scholarly identity elsewhere as well, but these two benefits justify a focus on the mapping of the British debates on scholarly vice. If we want to know why British scholars around 1900 were so preoccupied with vices, the diverse institutional landscape of British scholarship and the power of gentlemanly morality should be taken into account: they shape in many ways the discussions about the specialisation, professionalisation and discipline formation that characterise the period in question.

Two reasons for the importance of vices

Why were vices so important to British scholars around 1900? I will argue in this dissertation that there are two answers to that central question. Firstly, the category of vice was so important because around 1900, all scholars agreed that the scholarly self was under threat of vice. Consequently, Victorians and Edwardians agreed that the project of scholarship could only succeed if individuals withstood this common threat. The fight against vices, then, was an integral part of what it meant to be a scholar. Victorians and Edwardians, I will argue, believed that the pursuit of knowledge was

like walking a precipitous ridge: a narrow path with vices on each side.[58] Walking this path required balance and an inner compass: an array of virtues and a love of science. This first reason for the Victorian and Edwardian preoccupation with matters of vice is thus a story of consensus: scholars from all disciplines and regions of British scholarship agreed that to be a scholar was to withstand the threat that vices posed to the scholarly self. As a common enemy, vices played an important role in the construction of ideals of scholarly selfhood. The first two chapters of this dissertation will show how these shared ideals of scientific selfhood relied on the language of vice. They will show how these ideals were constructed in various contexts, what its sources were and how Victorians and Edwardians learned to inhabit these ideals.

There is, however, a second reason for the British preoccupation with vices around 1900. This is not a story of consensus, but one of dissent. Although there was agreement about the threat that vices posed to the scholarly self, there was deep dissent about what good scholarship actually was. The second reason for the omnipresence of vices in Victorian and Edwardian scholarship was disagreement about what was virtuous and what was vicious in the pursuit of knowledge. Notions of virtue and vice were used not only to construct ideals of scientific selfhood, they were also weapons with which the borders of these ideals were demarcated and policed. Vices were often used pejoratively. Accusing an opponent of vices and drawing attention to the faults in someone's character were very

58 This is a classic Aristotelian conception of virtue as a mean between two vices, see: Karen Margrethe Nielsen, 'Vice in the Nichomachean Ethics', *Phronesis* 62:1 (2017) 1-25. The metaphor of mountaineering fits Victorian scholarship particularly well: many scholars took to the Alps to test their masculinity, their 'balanced' bodies and to practice science. See: Michael S. Reidy, 'Evolutionary Naturalism on High: The Victorians Sequester the Alps', in: Dawson and Lightman (eds.), *Victorian Scientific Naturalism,* 55-78; and: Michael S. Reidy, 'Mountaineering, Masculinity, and the Male Body in Mid-Victorian Britain', *Osiris* 30:1 (2015) 158-181. Writers of obituaries of Victorian mountaineers often stress the 'energy' of their subjects, while at the same time underlining their carefulness. See for example: E.A.S., 'William Marcet. 1828-1900', *Proceedings of the Royal Society of London* 75 (1905) 165-169, 169.

effective strategies to discredit any opponent, just because the threat of vice was so central to ideals of scholarly selfhood in Britain around 1900. Chapters 3 and 4 in particular will make this argument by zooming in on this dissent and the boundary-setting role of vices in scholarly debates.

In the example of Acton and Oman, we can see both aspects of vices at work. Oman used the shared language of vice, first of all, to establish his own ideal of scientific selfhood. With reference to the vices of excessive accuracy, unproductiveness and megalomania (personified by Acton), Oman could formulate his ideal of the historian as modest, disciplined and laborious. In other words: examples of vicious scholarship helped Oman to define the nature of virtuous scholarship. Secondly, Oman's account of Acton's vices shows how this common ground was at the same time contested. By drawing attention to Acton's vices, Oman was also charging an influential group of historians with vices. Oman pointed to the threat that their scholarly ideals posed for the writing of history, and, in effect, vindicated his own view of what the historian should be. It was agreed upon that being a scholar entailed a battle against vices, but since there was no agreement on the actual meaning of good scholarship, vices were thrust into the centre of the debate. In this dissertation, I will analyse these two aspects of the discourse of vice in late Victorian and early Edwardian scholarship: 1) vices as a common enemy, and 2) vice as a contested category.

Methodology: a cultural history of scholarship

How will I proceed? To develop the argument sketched above, this dissertation studies how the language of vice functioned in three different contexts: academic memory culture, scholarly socialisation, and scholarly controversy. In each context, vices played an important but different role in the establishment, demarcation and policing of ideals of scholarly selfhood. It is especially on the interplay between the language of vice and these ideals

of scholarly selfhood that this dissertation focuses.[59] Let me turn, briefly, to the three contexts that I will study.

Firstly, I will sketch the *outlines* of shared Victorian and Edwardian attitudes towards the category of vice through an analysis of learned memory culture. Memory culture, as I will argue, offers a mine of information for scholars interested in ideals of scholarly selfhood.[60] The notion of vice figured prominently in British memory culture around 1900 and was central to the description of idealised lives of scholars. Secondly, I will show how the ideals of scholarly selfhood were instilled in aspiring scholars, by studying the context of scholarly socialisation and the role played by vices in that process. I will argue that socialisation into the moral economy of scholarship was built on a more generic process of moral instruction, in which youngsters learned how to identify and deal with vices. Thirdly and finally, I will study how vices functioned in debates and controversies surrounding the ideals of scholarly selfhood: how did scholars delineate and transmit their conceptions of what a good scholar was, and how did they charge those who did not conform to such ideals? This final context shows how differing ideals of scholarly selfhood might clash and lead to vice charges.

This approach to the history of vices in learned Britain around

59 Other scholars have focused on the interplay between everyday practices and notions of virtue and vice. See for example: Kasper Risbjerg Eskildsen, 'Private Übungen und verkörpertes Wissen: Zur Unterrichtspraxis der Geschichtswissenschaft im neunzehnten Jahrhundert', in: Martin Kitzinger and Sita Steckel (eds.*), Akademische Wissenskulturen: Praktiken des Lehrens und Forschens vom Mittelalter bis zur Moderne* (Bern: Schwabe, 2015) 143–61; Gooday, *The Morals of Measurement*; Kathryn M. Olesko, 'The Meaning of Precision: The Exact Sensibility in Early Nineteenth-Century Germany', in: Wise, *The Values of Precision,* 103–134; Andrew Warwick, *Masters of Theory: Cambridge and the Rise of Mathematical Physics* (Chicago: University of Chicago Press, 2003) esp. chapter 3.

60 The importance of memory culture in the construction of academic identities has been identified by: Anna Echterhölter, *Schattengefechte: Genealogische Praktiken in Nachrufen auf Naturwissenschaftler (1710–1860)* (Göttingen: Wallenstein, 2012).

1900 is built on the insight that ideals about what it meant to be a scholar seem to operate on at least three levels of generalisation.[61] First of all –at the highest level of generalisation– there are very broad cultural ideas about what being a 'scholar' (or 'artist', or 'politician', or 'knight' for that matter) actually meant.[62] Such generic cultural models of being in the world –often called personae in scholarly discourse–, although shaped by heterogeneous forces, hold great power: they dictate the realm of possibilities within which a 'scholar' could fashion his or her identity.[63]

If we zoom in slightly, however, such cultural consensuses about what it meant to be a scholar become laden with conflict and internal tension. Although we might all recognise the cultural model of the 'historian', for example, actual historians vigorously disagreed about what it was that made them historians. If we remember the opening of this introduction –Charles Oman ripping apart the legacy of Lord Acton–, it becomes clear that broad cultural models of selfhood were negotiated and transformed into 'regulative ideals' of scholarly selfhood within specific scholarly communities.[64] On this second level of generalisation, the meso-level, we can see how debates on the aims and methods of scholarship were entwined with debates over scholarly selfhood.

Finally, if we zoom to the level of the individual, ideals of scholarly selfhood become personally held convictions or ways to perform one's one identity to fit or appropriate these cultural models. On this micro-level,

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61 Gadi Algazi offers that analysis with great clarity here: Gadi Algazi, '*Exemplum* and *Wundertier*: Three Concepts of the Scholarly Persona', *BMGN - Low Countries Historical Review* 131:4 (2016) 8-32.

62 Ibid. 12-15.

63 Such broad cultural models of selfhood are also the categories to which Lorraine Daston and H. Otto Sibum refer in their conceptualisation of the scientific persona: Lorraine Daston and H. Otto Sibum, 'Introduction: Scientific Personae and Their Histories', *Science in Context* 16:1-2 (2003) 1-8, 4.

64 Algazi, '*Exempletum and Wundertier*', 10-11. For more examples, see: Saarloos, 'Academic Memory'; and: Herman Paul, 'The Virtues of a Good Historian in Early Imperial Germany: Georg Waitz's Contested Example', *Modern Intellectual History* 15:3 (2017) 681-709.

big cultural models of what it means to be a 'scholar' in the broad sense of the word, as well as intermediate ideals of what kind of scholar one aspired to be, become personalised, embodied and performed.[65] Seen from this perspective, models of scientific selfhood become repertoires of acting in and on the world.[66]

The notion of vice, so central to Victorian and Edwardian conceptions of scholarly selfhood, can likewise be traced easily through the same levels of generalisation. On a macro-level, broad and time-honoured cultural ideas about what vice was and how it should be fought can be distinguished.[67] On the meso-level, accusations of vice played a major role in scholarly discussions about what it meant to be a scholar. Finally, on the micro-level, vice was the central category to personal reflections on a scholarly life. In other words, vice is a category bound up with ideal conceptions of scholarly selfhood, which can be traced through various levels of generalisation. An analysis of the language of vice, then, should take into account the interplay between all these levels: from broad cultural ideas and regulative ideals of groups, to individual appropriations and embodiments.[68] In the three contexts in which this dissertation studies vices and ideals of scholarly selfhood, this interplay between broad ideas,

65 See for example: Richard Kirwan (ed.), *Scholarly Self-Fashioning and Community in Early Modern Germany* (Farnham: Ashgate, 2013).

66 See: Mineke Bosch, 'Scholarly Personae and Twentieth-Century Historians. Explorations of a Concept', *BMGN - Low Countries Historical Review* 131:4 (2016) 33-54; Rozemarijn van de Wal, 'Constructing the persona of a Professional Historian. On Eileen Power's early career persona formation and her year in Paris, 1910-1911', *Persona Studies* 4:1 (2018) 32-44.

67 See: Ursula Konyndyk DeYoung, *Glittering vices. A new look at the seven deadly sins and their remedies* (Grand Rapids, MI: Brazos Press, 2009); and Huggins, *Vice and the Victorians*, for such broad ideas of what vice was considered to be.

68 In debate with Mineke Bosch, who stressed the importance of this personal dimension for the history of science, Herman Paul has retorted that any account of scientific identity should take into account the interplay between embodiment and more generalised typologies of scholarly selfhood: Herman Paul, 'Sources of the Self Scholarly Personae as Repertoires of Scholarly Selfhood', *BMGN- Low Countries Historical Review* 131:4 (2016) 135-154.

regulative ideals and individual articulations will be central.

The above methodological reflections betray my general indebtedness to a distinctively *cultural* history of scholarship. I agree with scholars like Steven Shapin that the history of scholarship should not purely be studied as the progression of ideas, or the disinterested discovery of facts, but rather, culturally: 'as if it was produced by people with bodies, situated in time, space, culture, and society, and struggling for credibility and authority.'[69] This implies that human knowledge is not the main character in this dissertation, and that its growth and transformation as a corpus of knowledge is not at the centre of my analysis. Rather, I seek to understand the culture in which theories were formed, experiments performed and knowledge communicated.

My alignment with this cultural history has four major methodological consequences. For one, I focus especially on *meanings*: what did the language of vice *mean* to the Victorians, and how and why did they *use* this language? In other words, I aim to historicise the meaning and usage of vice language in the British context around 1900. As such, my approach ties in with other culturally-oriented histories of British scholarship, which, for example, trace the meaning and usage of shifting *images* of Newton,

69 Steven Shapin, *Never Pure: Historical Studies of Science as if It Was Produced by People with Bodies, Situated in Time, Space, Culture, and Society, and Struggling for Credibility and Authority* (Baltimore: Johns Hopkins University Press, 2010).

Bacon or Faraday in later centuries.[70] What such studies bring to light is how the past (the historical construct of 'Newton' or 'Bacon') was utilised in the nineteenth-century present and served an important function: by reframing Newton or Bacon in a particular way and stressing different aspects of their life and work, identity-work was performed. The category of vice is, obviously even more so than 'Newton' or 'Bacon', a time-honoured category, and individual vices have a rich history of their own. Studying the shifting meaning and usage of such vices in nineteenth-century intellectual debate will likewise require me to show how a reinterpretation of vice in a particular context performed identity work.

Secondly, to understand the contexts which give meaning to the discourse of vice, my cultural approach to the history of knowledge requires me to use rather thick descriptions of vice-language in action. To understand meaning and usage of discourses, thorough descriptions of contexts are paramount. For the British context, luckily, there are many examples of such thick descriptions of scholars in action. A great example of a study offering such a thorough account of a scholar's life, while at the same time honouring broader historiographical and theoretical questions, is Stuart Jones' monograph on Mark Pattison (1813-1884).[71] Jones uses a

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70 For Newton, see: Richard Yeo, 'Genius, Method and Morality: Images of Newton in Britain 1760-1860', *Science in Context* 2 (1988) 257-284; Patricia Fara, *Newton: The Making of Genius* (London: Macmillan, 2002); Rebekah Higgitt, *Recreating Newton: Newtonian Biography and the Making of Nineteenth-Century History of Science* (London: Pickering & Chatto, 2007); and Richard Bellon, 'There is grandeur in this view of Newton'. For Bacon, see: Richard Yeo, 'An Idol of the Marketplace: Baconianism in Nineteenth Century Britain', *History of Science* 23:3 (1995) 251-298. For Faraday, see: Geoffrey Cantor, 'The scientist as hero: public images of Faraday', in: Michel Shortland and Richard Yeo (eds.), *Telling Lives in Science: Essays on Scientific Biography* (Cambridge: Cambridge University Press, 2008) 171-194. For a similar study on the history and reinterpretation of objectivity in the nineteenth century, see: George Levine, *Dying to Know.* Other seminal works on the cultural history of British science include: James Secord, *Visions of Science. Books and readers at the dawn of the Victorian Age* (Oxford: Oxford University Press, 2014); Dawson and Lightman (eds.), *Victorian Scientific Naturalism*; and: Smith, *The Science of Energy.*

71 Stuart Jones, *Intellect and Character in Victorian England.*

biographical approach to the life of Mark Pattison to rethink some of our ideas about 'intellect', 'character', and the idea of the university. His in-depth study of Pattison's life and thought brings to light its enormous complexity, and shows that only such thorough accounts can help us understand the meaning of complex concepts such as the 'don' or the 'research university' for historical actors. At the same time however, as Heather Ellis has observed in a thorough review of Jones' work, the biographical approach actually limits an understanding of Pattison's thought vis-à-vis broader Victorian intellectual debates.[72]

Monographs comparable to Jones' *Mark Pattison* –at least in terms of ambitions– are Jim Endersby's biography of Joseph Hooker (1814-1879) and Paul White's biography of Thomas Huxley (1825-1895).[73] Both monographs take a biographical approach while endeavouring to answer a broader question: White is interested in the meaning of the 'man of science', while Endersby focuses on scientific practices and shows how complex 'professionalisation' was to people like Hooker. Like Jones's book, both monographs are admirable studies: they are very successful in showing the complexity of their cases and the problems this complexity of meaning raises for broader historiographical narratives. However, like in Jones' case, it is hard to rise above the particulars of Huxley's and Hooker's cases: biographies necessarily operate at the micro-level of individual meaning, while, as I have argued earlier, ideals of scholarly selfhood function in interplay between micro, meso and macro-levels.

In this study, as mentioned, I will focus on this interplay between broad traditions of thought, regulative ideals of groups, and individual meanings. In chapters 3 and 4 especially, I will focus on the individual side of this equation and adopt a perspective that verges on the biographical

72 Heather Ellis, 'Review of Jones, H. Stuart, *Intellect and Character in Victorian England: Mark Pattison and the Invention of the Don*' *H-Albion, H-Net Reviews* (2008).

73 Jim Endersby, *Imperial Nature: Joseph Hooker and the Practices of Victorian Science* (Chicago: The University of Chicago Press, 2008); Paul White, *Huxley.*

by looking closely at individuals engaged in debates in which accusations of vice were central: the context of controversy that I mentioned earlier. Nonetheless, I constantly seek to combine this focus on specific individuals with a broader analysis of group ideals and cultural models of what it takes to be a scholar. The same goes for chapter 2, which will focus on the interplay of very generic processes of moral instruction and the moulding of one particular scholar's morality. Chapter 1, on the context of memory culture, will, finally, lean more heavily on the group side of the equation, but again, I will make use of individual thick descriptions as they are offered by other scholars.

Thirdly, studying vices in Victorian scholarship demands a transdisciplinary approach to the history of scholarship. As argued earlier, the language of vice was not at all restricted to one particular discipline: the threat of vice was felt across all kinds of disciplinary, social and institutional boundaries. And if the scholarly language of vice was indeed embedded in broader Victorian conceptions of public morality, it make no sense to focus on just one scholarly discipline. Instead, this study will trace conceptions of vice across disciplines as diverse as physics and Shakespearean scholarship.

My research therefore ties in with a broader trend in the cultural historiography of scholarship that seeks to deconstruct the divide between the two cultures –the natural sciences and the humanities.[74] A vocal proponent of this trend in historiography is Rens Bod, whose monographs cross conventional national, disciplinary and chronological boundaries in an effort to show the interrelations between almost all kinds of knowledge

74 The term 'two cultures' is based on C.P. Snow's Rede Lecture, later printed as: C.P. Snow, *The Two Cultures and the Scientific Revolution* (London: Cambridge University Press, 1959). Historians often distinguish a third culture, the social sciences. See: John Brockman, *The Third Culture: Beyond the Scientific Revolution* (New York: Simon & Schuster, 1995).

production, which Bod defines as the search for patterns and principles.[75] The potential of such approaches is enormous: it opens up new questions and brings to light new interrelations between subjects that were previously only studied separately.[76] Bod's is not a lonely voice, nor was he a pioneer: over the past decades, many scholars have endeavoured to look across the boundaries between the natural, social and human sciences, and between different disciplines.[77] Methodologically, many of these scholars focus not on specific ideas or theories, but compare practices, personae, identities and

75 Rens Bod, *A New History of the Humanities: The Search for Principles and Patterns from Antiquity to the Present* (Oxford: Oxford University Press, 2013). There are many predecessors to Bod: an earlier revision of C.P. Snow's two cultures was offered by Theodore Porter and others in a special issue of *History of Science*: Theodore Porter (ed.), 'Two Cultures?', *History of Science* 43:2 (2005). Of course, C.P. Snow was criticised already in his own days. For Snow and other perspectives on the two cultures, see: Fabian Krämer, 'Shifting Demarcations: An Introduction', *History of Humanities* 3:1 (2018), 5-14.

76 Bod even goes as far as to say that the search for patterns transcends easy dichotomies. He claims, in fact, that 'from a practice-based point of view, the divide between the humanities and the sciences is nonexistent': Rens Bod, 'Has There Ever Been a Divide? A *Longue Durée* Perspective', *History of Humanities* 3:1 (2018) 15-25, 24. For a more recent boundary-crossing approach that focuses on the transfer of 'cognitive goods': Rens Bod, Jeroen van Dongen, Sjang ten Hagen, Bart Karstens & Emma Mojet, 'The flow of cognitive goods: A historiographical framework for the study of epistemic transfer', *Isis* 110:3 (2109) 483-496.

77 There are numerous examples: Peter Burke has written a two-volume social history of knowledge, which discusses knowledges in plural, while John Pickstone's concept of 'ways of knowing' and Ian Hacking's 'styles of reasoning' have been picked up by historians as tools to look beyond strict disciplinary lines: Peter Burke, *A Social History of Knowledge*: *From Gutenberg to Diderot* (Cambridge: Polity Press, 2000); Peter Burke, *A Social History of Knowledge: From the Encyclopédie to Wikipedia* (Cambridge: Polity Press, 2012); Pickstone, *Ways of Knowing*; Ian Hacking, 'Styles of Scientific Thinking or Reasoning: A New Analytical Tool for Historians and Philosophers of the Sciences', in: K. Gavroglu, J. Christianidis, and E. Nicolaidis (eds.), *Trends in the Historiography of Science.* Boston Studies in the Philosophy of Science 151 (Dordrecht: Springer, 1994) 31-48.

methods (things that travel more easily across disciplinary boundaries).[78]

This was much needed, as Lorraine Daston and Glenn Most have argued: 'current ways of conceptualising both the history of science and the history of the humanities have imposed anachronistic divisions among the great regions of knowledge and thereby obscured commonalities that are deeper, broader, and more enduring than this or that case study'.[79] In other words: by focusing on precious details, we might miss the more important bigger picture –you miss the tree when you stare at a leaf with a microscope. Daston and Most argue that one way to transcend this microscopical view is through a focus on practices: practices connect common contexts and are usually more enduring and widespread than classifications of knowledge.[80]

Practices offer one way of revising disciplinary divisions, but recent scholarship has attributed a similar role to notions of scientific identity and persona.[81] Daston and Otto Sibum have argued that the very existence of the persona of the 'scientist . . . resists the multiplication of identities even at the disciplinary level, not to speak of the level of the individual.'[82] Numerous new studies have supported this view of Sibum and Daston, either through the in-depth analysis of specific case studies of scientific personae, or through

78 The field is burgeoning: there are many new research projects in the history of science that problematise or altogether ignore disciplinary demarcations. One Scandinavian example is Johan Östling's group, see: J. Östling, E. Sandmo, D. Larsson Heidenblad, A. Nilsson Hammar, & K. Nordberg (eds.), *Circulation of Knowledge: Explorations in the History of Knowledge* (Lund: Nordic Academic Press, 2018).

79 Lorraine Daston and Glenn W. Most, 'History of Science and History of Philologies', *Isis* 106:2 (2015) 378-390, 381.

80 Ibid. 389-390.

81 It is important to note, though, that much of the scholarship on personae and scholarly identities does not specifically aim at transcending disciplinary boundaries. Rather, concepts like personae move across those boundaries easily and offer arguments for bringing down the barriers in effect.

82 Daston and Sibum, 'Introduction: Scientific Personae and Their Histories', 4.

further empirical and methodological refinement.[83] What all studies have in common, though, is an approach to the history of scholarship that does not take the boundaries between disciplines or scientific cultures as a given, but transcends those boundaries easily whenever their subject demands it.

This dissertation's focus on the language of vice thus ties in neatly with the often trans-disciplinary research into themes like scholarly identity and personae. Virtues and vices, as Jo Tollebeek and Herman Paul have argued, serve as markers of disciplinary identities, but, at the same time, the language transcends these disciplinary boundaries.[84] The language of virtue and vice was used in intense discussions about what it meant to be a specific kind of scholar (in this sense, it even disciplined), while it was also commonly used across all kinds of boundaries: social, national and disciplinary.[85] This offers a double benefit to the historian interested in the history of scholarship and disciplinarity: the widespread discourse of vice offered a common tongue to a diverse range of scholars, but, simultaneously, notions of vice were constantly appropriated and negotiated to serve more specific disciplinary aims. A cultural approach to vices in the history of scholarship should therefore historicise the boundaries between disciplines and the role that vices played in that process.

Finally, my focus on the meaning and usage of vice language allows me to draw from a very diverse range of source material. Cultural historians have successfully drawn a broad range of less-studied sources into the history of science, ranging from objects and practices, to diaries

83 Key texts are: Herman Paul, *How to Be a Historian: Scholarly Personae in Historical Studies, 1800-2000* (Manchester: Manchester University Press, 2019); Herman Paul, 'What Is a Scholarly Persona?'; Ian Hunter, 'The History of Philosophy and the Persona of the Philosopher', *Modern Intellectual History* 4 (2007) 571-600; and Irmline Veit-Brause, 'The Making of Modern Scientific Personae: The Scientist as a Moral Person? Emil Du Bois-Reymond and His Friends', *History of the Human Sciences* 15 (2002) 19-49.

84 Jo Tollebeek, *Men of Character;* Paul, 'The Virtues of a Good Historian in Early Imperial Germany'.

85 While at the same time, this discourse helped to enforce those boundaries.

and letters.[86] Where more traditional histories of scholarship study sources that relate primarily to scientific output, new trends in the cultural history of scholarship bring into focus other types of sources, because other questions are asked: if we want to know about the gendering of historiography in nineteenth-century Britain, it makes no sense to exclusively study men's professional histories.[87] Likewise, if we want to know what vices meant to individual scholars, or how specific groups of scholars sought to defend their ideals of scholarly selfhood against other groups, it makes no sense to exclusively study their magnum opuses, since many of the answers to those questions will not be found there. Instead, such questions force me (or any historian for that matter) to draw from a much broader range of sources, including less obvious sources such as journals, correspondence, diaries, draft letters, scribbles on envelopes and short notes.[88] Additionally, a cultural approach to the history of scholarship offers a new perspective on well-known sources such as 4obituaries and methodological manuals. By focusing on anecdotes, commonplaces, aphorisms and other shorthands, sources like the obituary can be used more productively, as this dissertation will show. Such figures of speech, as Steven Shapin has argued, often codify moral or epistemic heuristics for dealing with problems of the scientific

86 Peter Galison, 'Ten Problems in History and Philosophy of Science', *Isis* 99:1 (2008) 111-124; Suman Seth, 'Review: The History of Physics after the Cultural Turn', *Historical Studies in the Natural Sciences* 41:1 (2011) 112-122; John F.M. Clark, 'Intellectual History and the History of Science', in: Richard Whatmore and Brian Young (eds.), *A Companion to Intellectual History* (Chichester: Wiley, 2016) 155-169.

87 For a brilliant analysis of this process of gendering and the importance of source selection, see: Bonnie Smith, *The Gender of History: Men, Women, and Historical Practice* (Cambridge and London: Harvard University Press, 1998).

88 For correspondence, see: Peter Burke, 'The Republic of Letters as a communication system: An essay in periodization', *Media History* 18:3-4 (2012) 395-407; Erika Krauße, *Der Brief als wissenschaftshistorische Quelle* (Berlin: Verlag für Wissenschaft und Bildung, 2005); Willemijn Ruberg, *Conventionele Correspondentie: Briefcultuur van de Nederlandse Elite, 1770-1850* (Nijmegen: Van Tilt, 2005).

self.[89] In the following paragraphs, I will discuss my source material in more detail, while relating it to individual chapters.

Chapter outline and sources

This study consists of four substantial chapters. In short, chapters 1 and 2 focus on the relationship between ideals of scholarly selfhood and the language of vice, while chapters 3 and 4 deal with charges of vice and the clash between different ideals of scholarly selfhood. The order of these chapters corresponds with the two arguments I sketched earlier in this introduction: 1) vices were considered by all as threats to the scholarly self, 2) yet there was no agreement about what good scholarship actually was. In other words: the common ground is dealt with in chapters 1 and 2, while the dissent is dealt with in chapters 3 and 4.

The first chapter analyses Victorian and Edwardian academic memory culture between 1870 and 1910. Academic memory culture, as I will explain, is a rich source of information for scholars interested in ideals of scholarly selfhood. Important academic *rites de passage* (e.g. deaths, anniversaries, retirements, professorial inaugurations) in this period were often celebrated or remembered textually (through obituaries, commemorative volumes, retirement addresses, inaugural addresses).[90] Such practices and products of academic commemoration, as I will argue, served to construct ideals of what it meant to be a good scholar. In effect, they also defined what a bad scholar was.[91] Virtue and vice were central

89 Steven Shapin, 'Proverbial Economies: How an Understanding of Some Linguistic and Social Features of Common Sense Can Throw Light on More Prestigious Bodies of Knowledge, Science for Example', *Social Studies of Science* 31:5 (2001) 731-769. For a more thorough description of aphorisms, see chapter 2.

90 For an overview of such commemorative practices, see: Pnina G. Abir-Am and Clark A. Elliott (eds.) 'Commemorative Practices in Science: Historical Perspectives on the Politics of Collective Memory,' *Osiris* 14 (1999). Chapter 1 will discuss the historiography on academic memory culture in more detail.

91 Or vice versa, as I will show that the ideal scholar was more easily defined by referring to the shortcomings of other non-ideal scholars.

categories in this process of constructing ideals of scholarly selfhood.

More specifically, as I will argue on the basis of a large corpus of obituaries, Victorians and Edwardians identified six distinct dangers as the main threats to the scholarly self: uselessness, enthusiasm, prejudice, money, fame, and distraction. Additionally, chapter 1 argues that writers of obituaries not only identified these dangers, but also offered remedies for dealing with these ills. The six dangers could be dealt with by cultivating 1) a balanced constellation of virtues, and 2) a heartfelt love of science. Or, to return to the metaphor of mountaineering: walking the narrow ridge of virtue required Victorians and Edwardians to maintain balance and follow their inner compass.[92] Chapter 1 focuses on the common ground I described earlier: agreement about the fact that the moral project of scholarship required virtuous practitioners to keep vices at bay.

Chapter 2 picks up the themes from chapter 1, but will depart the ideal world of academic memory culture. The common ground –fighting against vice– is still central, but this second chapter asks where and how Victorian scholars were socialised into the moral economy of Victorian scholarship that described the pursuit of knowledge in terms of virtue and vice.[93] If there was a consensus on these matters, where and how did Victorians and Edwardians learn what virtue was, and what vice was? I will explore this question by analysing one case of socialisation into the moral universe of Victorian scholarship: the case of the young Edward Frankland (1825-1899). Frankland would later become one of the foremost British chemists, but grew up as an unlawful child in a petty middle class household in rural Lancashire. Frankland's personal archive for his period of scientific socialisation is rather rich, so we know a lot about the dynamics of moral instruction in his case. I have studied Frankland's diaries of the 1840s, read his correspondence during these years and even got to know the children's literature admired by young Frankland. Interestingly, these

92 See note 58 in this introduction.

93 See: Lorraine Daston, 'The Moral Economy of Science', *Osiris* 10 (1995) 2-24

sources are full of allusions to character, virtue, and especially vice. Chapter 2 analyses these sources and contends that the process of socialisation into the moral economy of science overlapped for a large part with more generic processes of moral instruction in Victorian Britain. Scholarly socialisation, I will argue, both built on more fundamental moral attitudes about virtue and vice, and shaped moral attitudes about vice. Frankland had been warned about avarice throughout his childhood, but it was his later chemical teachers who taught him about the sources of avarice in his specific vocation. This analysis of Frankland's moral instruction shows how scholarly attitudes towards vices were often drawn from or built on more general ideas about vice. As such, this chapter offers one clue for bringing together the two historiographies that I spoke of earlier: the historiography of moral instruction and the historiography of epistemology.

The following two chapters focus on dissent rather than consensus. Scholars agreed that good scholarship relied upon scholarly selves that could withstand the threat of vice, but they disagreed fundamentally about what good scholarship looked like. Where the first two chapters described and analysed how the discourse of vice helped to construct ideal-types of scholarly selfhood, chapters 3 and 4 will show how the boundaries of such ideals were enforced and how the language of vice was employed in debates about what it took to be a scholar.

Chapter 3 will show how the discourse of vice was used to fight out debates about what kind of science should be pursued in Victorian Britain. The main character of this chapter is Peter Guthrie Tait (1831-1901), a Scottish energy physicist. Central will be Tait's controversies with other men of science: John Tyndall (1820-1893), Herbert Spencer (1820-1903), and Clement Ingleby (1823-1886). Central to many of these debates was the role of the imagination in Victorian science. As such, this chapter builds on a theme touched upon already in chapter 1: the danger that enthusiasm posed to the virtuous pursuit of science.[94] In these debates, I will show,

94 See chapter 1, the section on 'Enthusiasm'.

Tait consistently attacked the epistemic vices of his opponents, not only to discredit their views on scientific matters, but also to attack their ideals of scholarly selfhood. In Tait's controversies, we can see clearly how the discourse of vice was used to demarcate the boundaries between different conceptions of what it meant to be a 'man of science'. Besides this major point about the function of the discourse of vice, chapter 3 shows how ideals of scientific selfhood were projected on historical figures, like Newton, Leibniz, or Bacon. Tait's patient and disciplined 'Newton' was shorthand for a different type of scholarship than Tyndall's courageous 'Newton'.

Where chapter 3 will deal primarily with vices in relation to different conceptions of science, chapter 4 will zoom in on 'social' vices: traits that obstruct the process of scholarly cooperation, and, in effect, the collective pursuit of knowledge.[95] In doing so, this chapter also builds on a theme that is mentioned already in chapter 1: threats to the ideal of communicability.[96] The main character of chapter 4 is Frederick James Furnivall (1825-1910), literary scholar and founder of many literary societies. I will focus specifically on Furnivall's conduct in the New Shakspere Society, a society he dedicated to the professional study of Shakespeare. Since its inception in 1873, the New Shakspere Society was plagued by controversy, not in the least part due to the 'ungentlemanly' conduct of its founder. This chapter analyses the controversies of Furnivall in the context of the New Shakspere Society and argues that it was Furnivall's social vices that led to its downfall. By being rather impossible to work with, Furnivall threatened scholarly cooperation. As such, chapter 4 shows how the discourse of vice was not restricted to 'epistemic' discussions like Tait's in chapter 3. It also illustrates

95 The distinction between epistemic and social vices is one of degree: social vices can thwart the acquisition of knowledge as well, especially if we consider knowledge acquisition as a collective process. I will discuss the distinction between epistemic and social vices in more detail in chapter 4. For knowledge acquisition as a collective process and the epistemic harms of 'intellectually arrogant behavior', see: Alessandra Tanesini, 'I – 'Calm Down, Dear': Intellectual Arrogance, Silencing and Ignorance, *Aristotelian Society Supplementary Volume* 90:1 (2016) 71-92.

96 See chapter 1, especially the sections on 'Uselessness' and 'Distraction'.

how the discourse of vice was embedded in broader Victorian attitudes about gentlemanliness.

Chapter 4 is followed by a general conclusion, in which the question posed in this introduction is answered: why were late Victorian and early Edwardian scholars so preoccupied with matters of vice? I will suggest new routes of inquiry and turn to follow-up questions that this study has generated.

1

Virtues and vices in academic memory culture

Introduction

When he was 56 years old, Clement Le Neve Foster (1841-1904), Professor of Mining at the Royal School of Mines, narrowly escaped death in a mining accident. He and his crew descended a damaged mining-shaft to investigate the causes of an earlier fire in the Snæfell lead mine on the Isle of Man, in which several miners had found their death. The cage that carried him down, however, got stuck, and barred the way back to the surface. Since an underground fire had raged in the mines just before, the tunnels were filled with carbon monoxide. A dangerous situation: being stuck in the tunnels meant being slowly poisoned by the atmosphere. He was rescued just in time, unconscious, but holding on to a pocket-book, because he, 'when escape seemed utterly hopeless, had the presence of mind to take out his pocket-book and make a series of entries as to his sensations, for the benefit of medical men and chemists after his death.'[1] Even in the face of death and with diminishing consciousness, Le Neve Foster acted scientifically and tried to benefit fellow scholars. His final act, for all he knew, was scientific. Luckily, Le Neve Foster was rescued just in time, but he never recovered from the accident and the 'cardiac injury sustained during the process of

1 J.W.J., 'Sir Clement Le Neve Foster. 1841-1904', *Proceedings of the Royal Society of London* 75 (1905) 371-377, 375.

gradual suffocation.'[2]

This anecdote of Le Neve Foster was told in his obituary in the *Proceedings of the Royal Society*. We do not know whether the episode in the mine actually took place and how 'scientifically' Le Neve Foster actually behaved during his dreadful ordeal: did he really clutch a pocketbook with a final contribution to science? Did he really think about science when he passed out? Such a fact-check of this source, however, is rather beside the point: we should not wonder whether this obituary of Le Neve Foster was accurate in its historical representation. It probably was not. We should instead ask why Le Neve Foster was remembered the way he was. What was the function of this anecdote? And what other information was transmitted in Le Neve Foster's obituary? What can this man's obituary tell us about the ideals of scientific selfhood around 1900?

A closer reading of the obituary in the *Proceedings of the Royal Society* shows that the story of the mine was not told to amuse readers or to provide factual information about his life, but that it was meant to communicate an image of Le Neve Foster's life as being extremely devoted to science. The depth of this devotion was illustrated by his actions in the mine: even in suffocation, Le Neve Foster thought about science.[3] In fact, the writer of Le Neve Foster's obituary literally cited the story of the mine to be 'striking evidence of his devotion to science.'[4] This devotion to science was further underlined by the writer's observation that Le Neve Foster struggled with his health until his death in 1904, but 'still devoted a large part of his time with undiminished zeal to the duties of his Chair at the Royal School of Mines.'[5] Le Neve Foster's successful scholarly life was made into an example: if you want to be a scholar, be like Sir Clement Le Neve Foster! Before turning to the significance of obituaries like Le Neve Foster's,

2 J.W.J., 'Sir Clement Le Neve Foster', 375.

3 This kind of self-sacrifice entailed a view of science as something that was worthy of sacrifice, as Rebecca Herzig has masterfully argued for late nineteenth-century American scientific self-sacrifice: Herzig, *Suffering For Science*.

4 J.W.J., 'Sir Clement Le Neve Foster', 375.

5 Ibid. 376.

let us first take a further look at the contours of the ideal exemplified by Le Neve Foster in academic memory culture.

In addition to his 'devotion to science', the obituaries published after his death also praised Le Neve Foster for other personal qualities: his 'hard work', his 'freshness and alertness', his 'unflagging energy' and his 'love of scientific research'.[6] Another obituary praised his laboriousness, his 'severity' as an administrator, and his faithfulness of service to the country.[7] Additional obituaries speak of Le Neve Foster's 'extreme courage' and 'devotion' to the scientific cause, as well as the 'charm of his personal character'.[8] In many cases, these character-traits were directly linked to Le Neve Foster's accomplishments: it was his 'severity' and 'stringency' as an administrator that led to a decline of death in mining accidents, it was his 'methodical habits' and his 'unflagging energy' as a teacher that led to his success in the Royal School of Mines, and it was his 'love of scientific research' that enabled him to pursue such a distinguished career.[9]

In other words, central to the idealised account of Le Neve Foster's life was both his devotion and his virtues of courage, energy and zeal. These virtues enabled Le Neve Foster to do the noteworthy things that he did. In communicating such an idealised image of Le Neve Foster's scientific life, obituaries effectively offered a template for other scholars. The function of anecdotes like the story of the mine was to show how abstract virtues were translated into actual practice.[10] If we would ask not only the question to *how* Le Neve Foster was remembered, but also *why* he was remembered the way he was, it is this template function that would come to the fore. Le

6 Ibid. 373-374.

7 'Sir Clement Le Neve Foster, F.R.S.', *Nature* (28 of April, 1904) 614.

8 Henry Trueman Wright Wood, 'Le Neve Foster, Clement Le Neve', *Journal of the Society of Arts* (29 April 1904) 42-43; 'Sir Clement Le Neve Foster, D.Sc., F.R.S.', *Geological Magazine* 1:6 (1904) 286-287.

9 J.W.J., 'Sir Clement Le Neve Foster', 374-376. For 'severity', see: 'Sir Clement Le Neve Foster, F.R.S.', *Nature*, 614.

10 For a discussion of the position of anecdotes in historiography, see: Lionel Gossman, 'Anecdote and History', *History and Theory* 42:2 (2003) 143-168.

Neve Foster's life was made into an example of what a good scholar should be: his obituaries offered scholars the raw materials on which to base their own lives.

The example of Le Neve Foster is by no means isolated: it was common practice in late Victorian and early Edwardian Britain to remember scholars in such an idealising way. Whenever a scholar died, academic colleagues wrote one or often multiple obituaries about the character of the deceased. Such obituaries were often rather lengthy (varying from one or two pages to fifty pages) and provided ample anecdotes of how such a virtuous character functioned in practice. Obituaries described the personal character of a scholar and inscribed him in the progress of science and civilisation as a whole. Scientific periodicals such as the *Proceedings of the Royal Society*, and the *Proceedings of the British Academy* avidly published obituaries of all their deceased members and more specialised periodicals such as the *English Historical Review* or the *Geographical Magazine* did the same for a more specialised audience. Obituaries and other genres of academic memory culture (celebratory speeches, centennial volumes, and so on) were instrumental in the establishment of coherent and recognisable ideals of scholarly selfhood.[11] They retold idealised lives and so offered templates for scholarly lives that could be appropriated and inhabited. A crucial ingredient in these sources was the language of virtue and vice.

It comes as no surprise that virtues and vices figure prominently in these obituaries. As I have suggested in the introduction, there are two answers to the question of why Victorians and Edwardians were so preoccupied with matters of vice. The first answer is that this language helped scholars to identify and neutralise the dangers that beset the pursuit of knowledge. The language of virtue and vice instructed and communicated ways of being a scholar: it kept learned men on the straight and narrow path to knowledge. The second answer is that virtue and vice were, at the same

11 For a broad overview of commemorative practices in science, see: Abir-Am and Elliott (eds.), 'Commemorative Practices in Science'.

time, contested categories. Scholars disagreed about what good science was and what the make-up of a learned man ought to be. The language of vice thus also helped to demarcate and police all kinds of boundaries between these ideals.

Historians have never systematically studied sources such as the Victorian and Edwardian scholarly obituaries, despite the enormous production of such texts between 1870 and 1910. Historians have, however, drawn attention to the functions of scholarly obituaries in other national contexts. A groundbreaking study of scientific obituaries has been made by Charles B. Paul, who studied the eighteenth-century éloges of the Paris Academy of Sciences, written by the secretaries of the academies. Paul shows how eulogies of deceased scientists were modelled on much older traditions of commemorating heroes.[12] By transforming this old literary form, the secretaries of the Paris Academy of Sciences were successful in constructing an image of scientists as moral heroes, essential for the functioning of the state. The secretaries identified the pursuit of science as the pursuit of virtue. Through this representation of scientists as moral heroes, the secretaries of the Academy carved out a space for science in the French state.[13]

Paul's work focuses specifically on the representation of science to society. *Eloges* are presented to be a means to an end: presenting science as a moral endeavour helped to strengthen scientific institutions and the social standing of scientists in eighteenth-century France. Obituaries, however, played a more complex role in the culture of science, as others have shown. Not only did obituaries (or eulogies) function as instruments of representation, but they were also used to fight out scientific debates and to reconfigure scientific ideals. Anna Echterhölter, writing on eighteenth and nineteenth-century German obituaries of *Naturwissenschäftler*, shows how obituaries often served as an arena in which differing conceptions of

12 Charles B. Paul, *Science and Immortality. The Eloges of the Paris Academy of Sciences (1699–1791)* (Berkeley: University of California Press, 1980).
13 Ibid.

science clashed. Through what Echterhölter calls 'genealogical practices' –emphasising certain aspects of a life while downplaying others, or presenting a scientist as a specific 'type'– writers of obituaries used the genre to communicate their own ideals of science.[14] Following Echterhölter, then obituaries also served as battlegrounds for differing conceptions of what a good scientist ought to be.

Jo Tollebeek has drawn attention to an additional function of academic memory culture in the nineteenth-century humanities in the Low Countries: community building. Through commemorative practices, including the writing of obituaries, exchanging of photographs and commemorative gatherings, scholars sought to strengthen disciplinary identities and foster a sense of community within a discipline.[15] Obituaries, then, were not only used to communicate a virtuous image of science to the outside world, as Paul has argued. They were at the same time grounds for community building and arenas for scientific debates. Herman Paul, finally, has argued that academic memory culture explicitly offered 'ways of engaging with models of virtue'.[16]

As for the nineteenth-century British context, especially (successive) *biographies* of scholars have received attention. Scholars like Patricia Fara, Richard Yeo and Rebekah Higgitt have drawn attention to the many biographies of a crucial figure like Newton, and have shown that the image of Newton changed according to the needs of the biographer and his conception of what good science was.[17] Biographies, this scholarship shows, could very well serve as battlegrounds for differing conceptions of science.[18] Obituaries, however, have received far less attention from

14 Echterhölter, *Schattengefechte*.
15 Jo Tollebeek, 'Commemorative Practices in the Humanities around 1900', *Advances in Historical Studies* 4 (2015) 216-231, 217-220.
16 Paul, 'The Virtues of a Good Historian in Early Imperial Germany', 704.
17 Yeo, 'Genius, Method and Morality'; Higgitt, *Recreating Newton*; and: Fara, *Newton: The Making of Genius*.
18 For biographies and the history of science, see also: Shortland and Yeo (eds.), *Telling Lives in Science*.

scholars, even though the Victorian age produced a massive number of them. A systematic analysis of the hundreds and hundreds of Victorian and Edwardian scientific obituaries has never been attempted: obituaries are usually referenced as a source of biographical information, but no scholar has engaged with them like Echterhölter or Paul did for the German and French contexts.

In addition to the lack of systematic attention for the wealth of Victorian and Edwardian obituaries, the existing work on obituaries pays scant attention to the interplay between notions of virtue and vice in these sources. As the example of Le Neve Foster already illustrates, the moral language of virtue permeates the late nineteenth-century British obituary. But what catalogues of virtues were displayed in these sources? And why were British scholars so preoccupied with their virtuous characters in the first place?

The following sections will argue that the virtues eulogised in scholarly obituaries should be seen in the light of their dangerous alternative: vices. Obituaries offered templates of virtuous scholarly lives in an elaborate effort to neutralise the threat that vice posed to ideals of scholarly selfhood. Catalogues of virtue were juxtaposed to the threats of vice, even in idealising sources like the Victorian obituary. As I have suggested earlier, the language of virtue and vice in Victorian and Edwardian scholarship was so omnipresent because scholars agreed that to pursue knowledge was to walk the narrow path of virtue and to resist all kinds of vices. Walking this path also entailed the identification of vices, as well as strategies for dealing with them. This chapter corroborates these points, and argues that 1) Victorians and Edwardians used academic memory culture to identify the dangers that threatened scholarly selves, and 2) offered two strategies for keeping these dangers at bay: a balanced constellation of virtues, and

the cultivation of a 'love of truth'.[19]

Corpus and method

To corroborate these two points, this chapter draws on an analysis of over 500 scholarly obituaries published roughly between 1870 and 1910. This corpus has not previously been analysed. It includes obituaries of well-known Victorians such as experimentalist Michael Faraday (1791-1867), mathematician Arthur Cayley (1821-1895) and historian Edward August Freeman (1823-1892), as well as obituaries of lesser-known figures such as naturalist Thomas Hincks (1818-1899) or botanist Daniel Hanbury (1825-1875). It includes people from all kinds of disciplines and different regions of British scholarship. My selection of these obituaries is primarily based on their subjects' membership of learned societies such as the Royal Society of London and the British Academy. Since its early years, the Royal Society of London honoured its deceased fellows with a mention during an anniversary meeting, and since at least the early nineteenth century the President of the Society spoke eulogising words on deceased fellows during his anniversary speech. From the mid-nineteenth century, 'Obituary notices of fellows deceased' were annually included in the *Proceedings of the Royal Society*.[20] These obituary notices make up a large part of my corpus of obituaries, because fellows of the Royal Society were drawn from a great variety of disciplines (geology, mathematics, physics, chemistry, botany, biology, engineering, and so on) and membership of the Royal Society meant that these persons were influential and representative of science

19 The point that virtues should not be seen in isolation but as parts of constellations of virtue has been made by Herman Paul repeatedly. For a balance of virtues and the concept of persona, see: Herman Paul, 'Virtue Language in Nineteenth-Century Orientalism'. I will return to the concepts of 'danger' and 'vice' in a later section.

20 For this practice, see: Emma Davidson, 'Obituaries through the ages', The Royal Society. The Repository, accessed 05-06-2020, https://blogs.royalsociety.org/history-of-science/2012/05/03/obituaries-through-the-ages/. For a history of the Royal Society in the nineteenth century, see: Marie Boas Hall, *All Scientists Now. The Royal Society in the Nineteenth Century* (Cambridge: Cambridge University Press, 1984).

in Victorian and Edwardian Britain. The Royal Society, however, did not frequently allow scholars from the humanities as fellows. To ameliorate this, I have also included obituaries from the *Proceedings of the British Academy* (founded in 1902) and obituaries published in journals such as the *English Historical Review* (founded in 1886). The main bulk of my corpus is thus drawn from these sources, and I have included some from more specialised periodicals like *Nature*, or the *Geological Magazine*, and other periodicals. Obituaries were generally written by fellow scholars, signed with initials or written anonymously. The length of an obituary varies from one or two pages to fifty pages or more.

It is hard to probe how precisely Victorians and Edwardians engaged with the role models that were offered in academic memory culture, but it is certain that these obituaries were read and reflected upon. One example will suffice as illustration. When John Tyndall died in 1893, his widow Louisa C. Tyndall, née Hamilton (1845-1940), and his good friend and colleague Edward Frankland collaborated on the writing of Tyndall's obituaries.[21] The response to these obituaries was overwhelming. Both Louisa and Edward received numerous letters from old colleagues, students and other scholars, thanking them for commemorating Tyndall. What is most intriguing, however, is that the correspondents engaged with the themes of character that were central to the obituary. The former Principal of Owens College Manchester, Joseph Greenwood (1821-1894), for example wrote to Frankland that the obituary in the *Proceedings* was 'the record of a noble life and of a character far too genuine and original to make it likely that many would be found ready to echo or accept all its

21 This process is intriguing in itself. Louisa and Edward corresponded frequently and shared memories and documents in the process. See: Letter from Louisa C. Tyndall to Edward Frankland, 24 February 1894 [EFP, JRL, 13/1245]; Letter from Louisa C. Tyndall to Edward Frankland, 27 April 1894 [EFP, JRL, 13/1235]; Letter from Louisa C. Tyndall to Edward Frankland, 4 June 1894 [EFP, JRL, 16/1722]; Letter from Louisa C. Tyndall to Edward Frankland, 10 June 1894 [EFP, JRL, 21/1946]; Letter from Louisa C. Tyndall to Edward Frankland, 3 November 1898 [EFP, JRL, 10/411].

conclusions in the provinces of Ethics or politics.'[22] Others responded with lines of verse or a short memory. To sum up: obituaries were read, and the lessons of character that they provided were reflected upon.[23]

In this large corpus of obituaries, I have found that Victorians and Edwardians were very much preoccupied with the dangers that beset the pursuit of knowledge. They did not just eulogise the virtues of the deceased, but juxtaposed these virtues to the vices and temptations that threatened a good scholarly life. In these scholarly obituaries, Victorians and Edwardians identified a plethora of dangers, as almost every obituary reflected on how its subject overcame the difficulties and pitfalls of being a scholar. Their concerns, at first glance, look rather heterogeneous. Scholars worried, to name a few examples, about 'overconfidence' in one's own faculties[24], the lure of 'lucrative prospects' in business[25], being 'too modest'[26], 'sensitive

22 Letter from Joseph Gouge Greenwood to Edward Frankland, 16 June 1894 [EFP, JRL, 15/1597]. Greenwood referred to the controversial opinions of Tyndall and attributed these opinions to Tyndall's originality and genuineness.

23 The inventor of the incandescent lightbulb, Joseph Wilson Swan, wrote poetry in honour of Tyndall's 'fearless' character, see: Eight lines of verse on John Tyndall by Joseph Wilson Swan, 10 June 1894 [EFP, JRL, 21/1954]; there are many additional letters in Frankland's archive relating to the Tyndall obituaries. Sometimes, there was just a short line of thanks, but in many cases, the writers shared memories of Tyndall: Letter from Benjamin Vincent to Edward Frankland, 5 July 1894 [EFP, JRL, 16/1691]; Letter from Miss Fawcett to Edward Frankland, 4 July 1894 [EFP, JRL, 16/1692]; Letter from Sir Thomas Storey to Edward Frankland, 7 December 1894 [EFP, JRL, 17/1513]; Letter from M. Johnson to Edward Frankland, 23 June 1894 [EFP, JRL, 20/1943]; Letter from L.T. Thorne to Edward Frankland, 1 July 1894 [EFP, JRL, 20/1944]; Letter from Millicent Bence Jones, daughter of Henry Bence Jones to Edward Frankland, 3 July 1894 [EFP, JRL, 21/1981]; Letter from Hodgkinson to Edward Frankland, 14 June 1894 [EFP, JRL, 21/1952]; Letter from Emily Symonds to Edward Frankland, 17 June 1894 [EFP, JRL, 21/1955]; Letter from Newlands to Edward Frankland, 16 July 1894 [EFP, JRL, 21/1956].

24 J.H.G., 'David Brewster', *Proceedings of the Royal Society of London* 17 (1869) lxix-lxxiv, lxix.

25 'Peter Martin Duncan', *Proceedings of the Royal Society of London* 50 (1892) iv-vii, iv.

26 S.W., 'John Syer Bristowe', *Proceedings of the Royal Society of London* 59 (1896) x-xii, xii.

temperaments'[27], or 'political and religious prejudice'.[28] In other words: obituaries identified a great number of heterogeneous dangers, all differently phrased and applied to differing individual contexts. To make sense of the themes that worried Victorian and Edwardian scholars, a categorization of these dangers is needed. My method in coming to such categories has been one of close reading and contextualization: which language was used in what contexts? And which concerns underlie the examples and anecdotes that were offered in obituaries?

I have identified six distinct dangers that worried Victorian and Edwardian scholars: uselessness, enthusiasm, partiality, money, fame, and distraction. Emphatically, these categories are my own: they are clusters of moral concerns that recur often in the corpus of sources that I have analysed. Distinguishing between these six dangers does help, however, to get a grip on the multifarious threats to the project of science that the Victorians and Edwardians identified. The boundaries between these groups of dangers are blurred. The dangers of fame and fortune might overlap, and scholars enthusiastically pursuing private epistemic aims, for example, could be in danger of being distracted at the same time. These dangers are also not similar in kind: scholars would strive after money, but they would never strive after uselessness. I do not claim that these six dangers are the only possible categorization, nor do I contend that these six are the only dangers that worried Victorians and Edwardians.[29] I do claim, however, that these six clusters of concerns played an important role in the corpus of obituaries that I analysed, and that they offer a tool towards the understanding of the language of vice in late Victorian and Edwardian Britain.

Note also that I use the more general word 'danger' to describe these clusters of concerns, rather than the more specific terms of 'vice'

27 W.J.R., 'Abraham Follet Osler', *Proceedings of the Royal Society of London* 75 (1905) 328-334, 334.

28 Paul Vinogradoff, 'Frederic William Maitland', *English Historical Review* 22:86 (1907) 280-289, 284.

29 Other clusters of concerns could, for example, be: nationalism versus cosmopolitanism, religious bias, politics, or amateurishness.

or 'temptation'. Let me explain this choice. Victorian and Edwardian perception of these six dangers was complex. Dangers could be sources of vices (moneymaking could be the source of the vice of avarice and was therefore perceived as dangerous), as well as the end of vices (the vice of excessive thoroughness could lead to uselessness, which was perceived as a danger to the collective standing of science). Moreover, multiple vices were associated with one cluster. Associated with the danger of money, for example, were both the vice of avarice and the vice of reclusiveness.[30] The same goes for the danger of enthusiasm: scholars might be drawn away from the goals of science by their desire for novelty, or by failing to discipline their imagination with other virtues.[31] Speaking of dangers rather than singular vices provides the space to trace out the interrelations between the various vices and temptations. It also acknowledges the complexity of Victorian and Edwardian conceptions of science and the dangers that beset it. It was the job of academic memory culture to identify these dangers, and to show how they could be neutralised. Obituaries were not guides for dealing with specific and singular vices, but rather context-rich accounts of how science was threatened from all sides.[32] Obituaries showed how their subjects dealt with such dangers.

In the coming pages, I will first discuss these six dangers, before delving into the remedies that Victorian and Edwardian memory culture offered: a balanced constellation of virtues, and a guiding love of science. Both remedies were intended to neutralise the dangers that threatened the virtuous pursuit of knowledge. I will first discuss the six dangers one by one, drawing attention to these remedies in the process.

30 See the section on money.

31 See the section on enthusiasm.

32 Collini speaks of Victorian society as a society that saw an individual as a 'remote hill station' – surrounded by all sorts of threats: Collini, 'The Idea of 'Character'', 47.

Uselessness

Uselessness was a danger that we encountered already in the introduction, where I discussed the case of Lord Acton. In his desire to accumulate as much material as he could for his magnum opus, Acton never actually came to write and publish a book. His life, some commentators argued, was therefore wasted: useless. Reason for Acton's 'vanity' was his immense knowledge and his adherence to extremely high standards of completeness and accuracy.[33] His biographer James Bryce argued that Acton's 'passion for acquiring knowledge which his German education had fostered ended by becoming a snare to him, because it checked his productive powers.'[34] Others added that Acton's 'pen seemed to be cramped by too much knowledge'[35] and that 'his very learning seems to have stood in his way.'[36] In Acton's example, his immense knowledge and his high standards of completeness and accuracy stood in the way of productivity and general usefulness. Although accuracy and completeness would surely have been regarded as virtues in their own rights, an excessive adherence to such standards led to Acton's uselessness. He failed to make the impact he could have made.

Usefulness, scholars have argued, became a major concern for learned men in the first decades of the nineteenth century. The Society for the Diffusion of Useful Knowledge, founded by Lord Brougham in 1826, was explicitly designed to provide knowledge on a large scale, which

33 Oman described Acton's life as an example of 'the vanity of human life'. See introduction, note 7.

34 James Bryce, *Studies in Contemporary Biography* (London: Macmillan and Co., 1904) 392-393. Acton's German education instilled him with the high standards of accuracy and completeness.

35 Henry R. Tedder, 'Lord Acton as a book-collector', *Proceedings of the British Academy* 1903-1904 (London) 285-288, 288.

36 'Acton (John Emerich Edward Dalberg Acton) 1st Baron (1834-1902)', Hugh Chisholm (ed.), *Encyclopaedia Brittanica* (Cambridge: Cambridge University Press, 1911) 159.

required a recalibration of the priorities of learned men.[37] Although not everyone agreed on how and to what end knowledge should be diffused, a certain degree of usefulness came to be expected of scholars.[38] Usefulness could come in many forms: not all scholars were convinced that it was their moral obligation to educate the nation for example, but at the very least, they agreed that one's publications should be useful to other scholars. Lorraine Daston has argued that scholars from the mid-nineteenth century generally adhered to Kant's ideal of communicability: 'this ideal of objectivity as communicability, shorn of every idiosyncrasy and particular perspective.'[39] By emphasising communicability, Daston argues, scientists felt urged to 'standardize their instruments, clarify their concepts, and depersonalize their writing styles to achieve communicability and commensurability.'[40] Acton's excessive thoroughness and dense style of writing threatened this ideal of communicability, and therefore his life's work was deemed useless.

There are many more examples of the danger of uselessness in academic memory culture. The experimentalist Thomas Graham (1805-1869) for example, although he was praised for his 'great enthusiasm', 'his perseverance', and his 'intense desire to know the inner structure of matter', was above all remembered for writing too slowly and too suppressed.[41] When reflecting on Graham's *System of Chemistry*, his life writer makes remarks similar to the critiques of Acton:

> It was written so slowly that the publisher said that to press him was like drawing his blood. The anxiety to be correct was painful. It give a calmness to all his writing, but really goes too far, as it rather

37 See: James Secord, 'Early Science Literacy', *Natural History* 122:10 (2014) 28-33.

38 Alan Rauch argues that the debate on usefulness tied in with debates on the moral duty of the scholar. See: Alan Rauch, *Useful Knowledge: The Victorians, Morality, and the March of Intellect* (Durham: Duke University Press, 2001).

39 Lorraine Daston, 'Fear and Loathing of the Imagination in Science', *Daedalus* 127:1 (1998) 73-95, 82.

40 Ibid. 88.

41 R.A.S., 'Thomas Graham', *Proceedings of the Royal Society of London* 18 (1870) xvii-xxvi, xviii.

> represses the enthusiasm of the reader, and diminishes the force of the words.[42]

In other words, Graham's style of writing and his excessive drive to be correct kept him from making a useful contribution to science. He failed to live up to the standard of communicability. In other words, Graham was not as useful as he could have been.

Graham and Acton were both treated as examples of uselessness. Oman's critique of Acton extends to Graham as well: 'No great book has ever been or ever will be written by a historian who suppressed self as he wrote each word: what such a book may conceivably gain in accuracy it loses in spontaneity and conviction.'[43] These harsh words of scholars as thorough as Acton and Graham imply that a bargain had to be struck between individual desires for accuracy, correctness and completeness on the one, and spontaneity, conviction and general usefulness on the other. In the cases of Graham and Acton, the scales tipped to the side of uselessness.

Another example illustrating this danger is the case of John Percy (1817-1889), a British metallurgist, about whom his life writer claimed that 'his intolerance of inaccuracy often led him to magnify points which now seem to be somewhat trivial' and that his work lacks the 'expression of his own opinion when the reader has fairly a right to expect his guidance.'[44] Percy desired too much accuracy and neglected to guide his readers, which came at the cost of his usefulness. A similar example is exhibited in the obituary of physician George Rolleston (1829-1881). Rolleston was said to never even write if he did not master a subject completely, and in the rare case that he wrote, his sentences were incomprehensible, extremely long and bristling with quotations.[45] Thoroughness and completeness were not

42 R.A.S., 'Graham', xxvi.
43 Oman, *Inaugural Lecture*, 13.
44 W.C.R.A., 'John Percy', *Proceedings of the Royal Society of London* 46 (1890) xxxv-xl, xxxvii.
45 W.H.F., 'Professor Rolleston', *Proceedings of the Royal Society of London* 33 (1882) xxiv-xxvii, xxv.

a problem in themselves, unless they interfered with one's usefulness: the influence that learned men *ought* to exert. Virtues such as thoroughness could become vices when they were valued excessively.

Percy and Rolleston, like Acton and Graham, fell short: either their prose was too suppressed, incomprehensible and dense, or they did not write at all. They neglected to be useful, caused either by an adherence to overly high standards of completeness or accuracy, or by not taking a stance clearly enough. After all, scholars were to act as torchbearers. The results of their careful and virtuous research needed to be published. This concern is also recognisable in the case of the anatomist William Sharpey (1802-1880). Sharpey, a physiologist, anatomist and for some time one of the secretaries of the Royal Society, was praised by the writer of his obituary as one of the most 'judicious, learned, and accurate investigators.'[46] However, the anonymous author of his obituary added that this was to be regretted, because it kept Sharpey from publishing his views in a coherent volume.[47] Excessive accuracy also threatened usefulness in the case of philosopher Henry Sidgwick (1838-1900), who was characterised as being cautious at the expense of 'the popularity and the apparent effectiveness of some of his work.'[48]

The danger of uselessness was not restricted to written work; also in the governance of universities and learned institutions, excessive caution or thoroughness could lead to the loss of conviction and usefulness. It was, for example, said of James Thomson (1822-1892), the brother of Lord Kelvin and a renowned engineer in his own right, that he could no longer distinguish between smaller or greater error in the business of everyday life and that in his practice as administrator, 'his extreme conscientiousness

46 'Dr. William Sharpey', *Proceedings of the Royal Society of London* 31 (1881), x-xix, xii.
47 'Sharpey', xv-xvi.
48 James Bryce, 'Henry Sidgwick', *Proceedings of the British Academy 1903-1904* (London 1904) 271-276, 273-274.

gave rise to a want of rapidity of action.'[49]

Uselessness was expressed in multiple ways. One, obviously, was unproductivity. But aesthetic considerations were equally important in determining uselessness. Above examples show that one's style of writing (or governing, as in Thomson's case) could be an indicator of uselessness. Writing in an overly suppressed manner, lacking conviction, or failing to guide readers to valid conclusions, could be as dangerous as not writing at all.[50] But why would Victorian and Edwardian learned men avoid publishing their views, and what were the reasons for writing without conviction? A main reason has already been mentioned: an excessive adherence to high standards of accuracy or completeness. In the above cases, traits that would normally be regarded as virtues –completeness, conscientiousness, accuracy, correctness– were cultivated at the expense of other virtues. No one would argue that accuracy was detrimental to the pursuit of science, but it had to be balanced against other equally important concerns.

Another danger to useful science was posed by vices of pride, vanity and overambition, as Charles Oman here illustrates with reference to Acton:

> It is this, that 'the best', the ideal, the vision of the epoch-making and infallible *magnum opus* which hovers before the mind of many a would-be writer, is the enemy of 'the good', of the useful and worthy, but comparatively unambitious, book that he is really competent to write.[51]

Oman thus links humility and usefulness: science was a collective effort that required practitioners to adhere to shared standards of communicability. Personal ambition and excessively high standards stood in the way of useful

49 J.T.B., 'James Thomson', *Proceedings of the Royal Society of London* 53 (1893) i-x, ix-x.

50 The opposite was also true: writing with too much conviction or dramatic style could also be detrimental to science. See the next section on enthusiasm.

51 Oman, Inaugural Lecture, 28

scholarship.

As the above examples have illustrated, uselessness was a major worry to Victorian and Edwardian obituarists. The danger lurked in many corners: an excessive adherence to completeness or accuracy, overambition, or just a cramped style of writing. The danger, as this suggests, lay primarily in excess or imbalance: if one cherished accuracy at the cost of productivity, correctness at the cost of communicability and impartiality at the cost of conviction, usefulness was compromised. By identifying cases in which the balance was eschew, academic memory culture offered guidelines for scholars to navigate their own lives and to be useful. Moreover, memory culture advised its consumers to maintain a healthy balance of commitments: thoroughness was important, as long as it was in equilibrium with productivity. Standards of communicability, however, could be threatened from another side as well: enthusiasm.

Enthusiasm

Although enthusiasm might sound harmless to modern ears, nineteenth-century scholars were suspicious of enthusiasm and considered it a danger if it was left unchecked. In itself, enthusiasm was not dangerous (it was crucial in overcoming obstacles, for example), but it needed to be disciplined. Unchecked enthusiasm was associated with all kinds of vices in academic memory culture, ranging from a lack of thoroughness or accuracy, to excessive spontaneity or an excessive use of the imagination. Enthusiasm could lead scholars away from the recognised goals of science by valuing the personal attractions over the shared commitments of science. In this capacity, excessive enthusiasm threatened communicability, as the collective effort required by science was at odds with idiosyncrasy and personal epistemic desires. Personal attractions and whims were a danger to the disciplined love of science.

Allow me to present a first example of the danger of overenthusiasm, to make clear why it was considered so dangerous: the obituary of Charles

Smart Roy (1854-1897). Roy was a pathologist, and had tried to broaden traditional pathology using new chemical, physiological and physical methods.[52] In his obituary in the *Proceedings of the Royal Society of London,* his biographer and later Nobel Prize winner Charles Scott Sherrington (himself a laudable physiologist and experimentalist) reflected on the scientific character of Roy. He began by describing Roy's research in the innovative field of the intersection between anatomy and pathology, in which he was applying new chemical, physiological and psychical methods to traditional pathology. Although Sherrington described Roy as 'an investigator of originality and great experimental skill', who, in his 'ingenuity', 'dexterity' and 'courage' fought against the 'hair-splitting minuteness' of traditional pathology, he also drew attention to the 'enthusiasm' that sometimes led Roy from pursuing what was recognised as good science.[53] He wrote:

> It [Roy's ingenuity and originality] continually tempted him to wander from investigations towards which he had already accomplished the preliminaries to open fresh ground in some other direction. . . . the more difficult the experiment the more attraction it had for him. . . . [It was] harmful to the quality of his work.[54]

Roy's attraction to difficult experiments and his enthusiasm in devising them led him away from common scientific goals. Interesting is the use of the word 'tempted'; Roy was remembered as giving into temptation because he did not adhere to the recognised goals of scholarship. Instead, he followed his own enthusiasm.

This suggests that enthusiasm was a problematic category in the nineteenth century, though it had been problematic since at least the sixteenth century. Enthusiasm, in early modern Europe at least, was

52 For more information on Roy, see: Mark W. Weatherall, *Gentlemen, Scientists and Doctors: Medicine at Cambridge, 1800-1940* (Woodbridge: The Boydel Press, 2000) esp. chapter 5.

53 Charles Scott Sherrington, 'C.S. Roy. 1854-1897', *Proceedings of the Royal Society of London* 75 (1905) 131-136, 132, 134-136.

54 Sherrington, 'C.S. Roy', 135.

associated with prophetic fanaticism, as several historians have argued.[55] In the sixteenth and seventeenth centuries, however, 'enthusiasm' became a pejorative category that not only denoted religious fanaticism, but philosophical (or scientific) fanaticism as well.[56] In the Enlightenment period, finally, 'enthusiasm' described the process in which 'the mind . . . becomes the object of its own worship.'[57] Although nineteenth-century scholars would not regard enthusiasm as a notion laden with fanatic religious fervour, the association with the worshipping of one's own mind persisted. In nineteenth-century Germany for example, enthusiasm was closely associated with 'enthrallment', and debates over philological specialization referred pejoratively to enthusiasm.[58] In nineteenth-century France, likewise, enthusiasm was associated with fanaticism, monomania and insanity: it was something that needed to be kept at bay.[59] In Britain, finally, enthusiasm was often equated to 'inspired' amateurishness and contrasted to thorough distanced scholarship.[60] The notion of 'enthusiasm',

55 J.G.A. Pocock, 'Enthusiasm: The Antiself of Enlightenment', *Huntington Library Quarterly* 60:1/2 (1997) 7-28, 10. For eighteenth-century British discussions on enthusiasm, see: Lionel Laborie, *Enlightening Enthusiasm: Prophecy and Religious Experience in Early Eighteenth-Century England* (Manchester: Manchester University Press, 2015). For a broader history of the concept of enthusiasm in the context of the history of knowledge, see: Lorraine Daston and Katherine Park, *Wonders and the Order of Nature, 1150-1750* (New York: Zone Books, 1998) especially chapters VIII and IX.

56 Pocock, 'Enthusiasm', 16. See also: Michael Heyd, *"Be Sober and Reasonable": The Critique of Enthusiasm in the Seventeenth and Early Eighteenth Centuries* (Leiden: Brill, 1995).

57 Ibid. 26.

58 Constanze Güthenke, '"Enthusiasm Dwells Only in Specialization": Classical Philology and Disciplinarity in Nineteenth- Century Germany', in: Sheldon Pollock (ed.), *World Philology* (Cambridge MA: Harvard University Press, 2012) 265-284, 267.

59 W.L. Duffy, 'Monomania and Perpetual Motion: Insanity and Amateur Scientific Enthusiasm in Nineteenth-Century Medical, Scientific and Literary Discourse', *French Cultural Studies* 21:3 (2010) 155–166.

60 For enthusiasm in British philology, see: Richard Utz, 'Enthusiast or Philologist? Professional Discourse and the Medievalism of Frederick James Furnivall', in: Tom Shippey and Martin Arnold (eds.), *Appropriating the Middle Ages: Scholarship, Politics, Fraud*. Studies in Medievalism 11 (Cambridge: Brewer, 2001) 189-212.

in short, was associated with the imagination, with individuality, and with amateurishness. As such, it was contrasted to 'normal' disciplined and thorough scholarship.

This is also clear in Roy's example: he could not resist the pulling force of his own originality and this kept him from aligning with the shared goals of a science or discipline. There are many more examples in academic memory culture in which such excessive originality out of enthusiasm was identified as vicious. Charles Wheatstone (1802-1875), an experimentalist and inventor who contributed greatly to the development of the telegraph, was remembered for his exquisite imagination, which at the same time distracted him from finishing his work on a subject properly:

> The writer has frequently, but in vain, urged him to complete and publish: such was the fecundity of his imagination that he would frequently work steadily for a time at a given subject, and then entirely put it aside in pursuit, it may be, of some more important or more practical idea that had presented itself to his mind.[61]

Wheatstone's enthusiasm in pursuing his private epistemic pursuits was identified as dangerous to generally recognised goals of scholarship.

Not only experimentalists like Roy and Wheatstone were exposed to the danger of enthusiasm; there are examples of mathematicians as well. The eminent mathematician James Joseph Sylvester (1814-1897) was, according to his biographer, also prone to the temptation to let his imagination take over, instead of finishing a subject properly. As in the cases of Wheatstone and Roy, Sylvester's 'fresh imaginations' and 'luxuriant enthusiasm' were said to give rise to a flood of new ideas.[62] In fact, his biographer states that 'his character and temperament militated against continuity of thought', which was the reason that Sylvester did not publish

61 'Charles Wheatstone', *Proceedings of the Royal Society of London* 24 (1876) xvi-xxvii, xxvi.

62 P.A.M., 'James Joseph Sylvester', *Proceedings of the Royal Society of London* 63 (1898) ix-xxv, xxiv-xxv, xxxiii.

as much as was expected of a mathematical genius.[63]

Obituaries not only offered examples of learned men enthusiastically giving into their private epistemic attractions, they also gave notable examples of people resisting this urge. Edward Freeman, a prominent historian who was like Acton associated with the *English Historical Review*, was praised in his obituary for criticising German scholars for their passion for '*etwas Neues*, and the consequent disposition to disparage work which did not abound with novelties, however empty or transient such novelties might be.'[64] Freeman's antipathy for 'empty' novelties stemmed from his conception of history. Herman Paul has argued that Freeman adhered to a view of history that stressed unity and continuity and therefore underlined the importance of the historian's intellectual habits and the ability to sense 'what is of real value in the historical process.'[65] A preoccupation with work that only communicated empty or transient novelties out of enthusiasm for *etwas Neues* obscured the connection between the present and the past and complicated the writing of history as recognised by Freeman.

The supposedly Germanic enthusiasm for novelties in the form of new manuscripts, whatever their historical worth, was also reflected on in the obituary of Samuel Rawson Gardiner (1829-1902), a British historian of the seventeenth century.[66] Charles Harding Firth, the writer of his obituary, reflects on Gardiner's virtue in handling new manuscripts: 'nor did Gardiner yield to the temptation to overestimate the importance of the new manuscript materials his researches brought to light, and undervalue

63 Ibid. xxiv.

64 Bryce, *Contemporary Biography,* 284. For Freeman, see: G.A. Bremner, and J. Conlin (eds.), *Making History: Edward Augustus Freeman and Victorian Cultural Politics* (Oxford: Oxford University Press, 2015).

65 Herman Paul, 'Habits of Thought and Judgement: E. A. Freeman on Historical Method', in: G.A. Bremner, J. Conlin (eds.), *Making History: Edward Augustus Freeman and Victorian Cultural Politics* (Oxford: Oxford University Press, 2015) 273-289, 281.

66 British historians, in contrast with their German compatriots, tended in general to focus more on published sources than on new manuscripts.

that which was already published in print.'[67] Enthusiasm should not blind the eyes to the value of already existing scholarship. An experimentalist like William Vernon-Venables Harcourt (1789-1871), one of the founders of the British Association for the Advancement of Science, was remembered for being too much of a lover of truth 'to be hasty in publishing views on account of their novelty.'[68] In these examples, the goals of the learned community were juxtaposed to individual fancy.

In a discipline such as mathematics, imagination and new ideas were deemed quite important by obituarists, but once again, enthusiasm needed to be moderated. Charles Watkins Merrifield's (1827-1884) obituary reflects on the tendency of specialised mathematicians to lose themselves in abstraction:

> It is a common complaint against pure mathematicians, that while they are continually pursuing, or being led by, this subject into abstractions which lie outside the region of experience, they neglect to develop those branches relating to matters of experience sufficiently to render them useful as means of calculation. Merrifield was an important exception to this rule.[69]

Not all were able to discipline their imagination. Of the continental mathematicians Augustin Cauchy (1789-1857) and Leonhard Euler (1707-1783) was written that they were 'so overwhelmed with the exuberant wealth of their own creations . . . that they did not greatly care to expend their time in arranging their ideas in a strictly logical order or even in establishing by irrefragable proof propositions which they instinctively felt

67 C.S. Firth, 'Dr. S.R. Gardiner', *Proceedings of the British Academy* 1903-1904 (London 1904) 294-301, 298.

68 J.P., 'William Vernon-Venables Harcourt', *Proceedings of the Royal Society of London* 20 (1872) xiii-xvii, xvii.

69 'Charles Watkins Merrifield', *Proceedings of the Royal Society of London* 36 (1883) i-iii, i.

. . . to be true.'[70] These remarks echo the Enlightenment view of enthusiasm as the worship of one's own mind. As these conveniently foreign examples suggest, enthusiasm could lead men away from the recognised goals of science, such as the publishing of one's views in a thorough and complete manner.[71] Again, there is some overlap with the danger of uselessness: undisciplined enthusiasm threatened communicability as much as excessive thoroughness and unproductivity.

Enthusiasm was akin to ambition. Being identified with new theories like Darwinism, for example, offered many advantages for young scholars. The life of George John Romanes (1848-1894) shows how speculative essays like Romanes' 'Physiological Selection' caused anxiety in the ranks of established scholars. In this essay, he claimed that the principles of *separation* and *sterility* were central to natural selection. However, he offered no proof, which caused fellow naturalists to accuse him of trying to formulate an alternative to Darwin's theory of evolution. Although Romanes denied the accusation, the writer of his obituary states that if he had made a more modest claim concerning separation and sterility, 'no one would have fallen into the mistake of supposing that it was his intention to substitute a new doctrine for the Darwinian.'[72] Ambition, then, was also identified as a danger to the collective project of science.

Biographies and obituaries also offered ways to deal with enthusiasm. Firstly, obituaries stressed the importance of balance: imagination and ingenuity had to be balanced by virtues of thoroughness and accuracy, enthusiasm had to be curbed by discipline and distantiation. Charles Darwin (1809-1882), for example, was remembered both for having an 'atavic tendency' for hypotheses, but also 'an equally strong need

70 Alexander McFarlane, *Lectures on ten British Mathematicians of the Nineteenth Century* (London: Chapman & Hall, 1916), 76.

71 For virtue, vice and national stereotypes, see: Paul, 'German Thoroughness in Baltimore'.

72 J.B.S., 'George John Romanes', *Proceedings of the Royal Society of London* 57 (1895) vii-xiv, x-xi.

to test them by well-devised experiments.'[73] Secondly, enthusiasm could be checked by pursuing more practical objects of research alongside subjects in which one was intrinsically interested: a balance in practices. The above-mentioned mathematician Charles Watkins Merrifield was praised for holding himself 'free from the fascination of any line of abstract reasoning which his work may have exposed, and devoted his time and energy to the . . . task of increasing the usefulness of mathematics', by devising mathematical tables.[74] Something similar was said of the Irish mathematician George Francis Fitzgerald (1851-1901), who held public education in higher regard than selfish research on the cutting edge of science. His biographer wrote:

> Greater service could be done by working towards the raising of the general level than by a pioneering quest, solitary or with only a few like-minded spirits, into lands too far removed from human traffic to be capable of utilization and absorption for generations to come.[75]

Avoiding the dangers of enthusiasm required great self-discipline. Firstly, discipline was needed to pursue more mundane and practical research, as in the case of Merrifield. Enthusiasm could be checked by pursuing the right kind of useful knowledge. Secondly, self-discipline was a means to achieve a balanced constellation of virtues, in which imaginativeness was on par with accuracy, thoroughness and conscientiousness. This balancing act reflected a tension between individual desires and collective standards of communicability. Consequently, one had to discipline one's own desire: only by forgoing private attractions in favour of the collective could vices be avoided.

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73 Thomas Henry Huxley, 'Charles Robert Darwin', *Proceedings of the Royal Society of London* 44 (1888) i-xxv, xxiii.

74 'Charles Watkins Merrifield', i.

75 O.J.L. 'George Francis Fitzgerald. 1851-1901', *Proceedings of the Royal Society of London* 75 (1905) 152-160, 153, 157.

Prejudice

A third danger to the collective pursuit of knowledge identified by Victorian and Edwardian obituaries was prejudice. In short, obituarists were concerned with the tendency of some scholars to close their minds to new evidence, and to cling to preconceived ideas or positions that were no longer justifiable. Scholars did so, obituaries stated, either because they were afraid that their personal reputation was at stake, or because they were too attached to long-held ideas, theories or scholarly traditions. This danger was associated with vices of closed-mindedness, partiality, and unfairness.[76]

For some obituary writers, the danger of prejudice was closely related to the controversies that plagued scholarship around 1900: controversies could lead to personal feelings towards a given theory. To cite the obituary of John Frederick William Herschel (1792-1871), a famous polymath working in the fields of mathematics, astronomy, chemistry and botany:

> In all such transitions, besides the effect of habit, the adherents of an old theory are often bound to it by personal feelings, as if the giving up their former convictions implied some intellectual inferiority; and it may happen that the champions of the new one do not bear their triumph meekly.[77]

Personal feelings of inferiority on the account of old theorists and superiority on the account of the adherents to a new theory needed to be disciplined and virtues of modesty and selflessness needed to be employed in order to safeguard the pursuit of knowledge from these potentially damaging

76 Vice epistemologists often speak of closed-mindedness in this context: 'an unwillingness to engage seriously with relevant alternatives to the beliefs one already holds', Heather Battaly, 'Closed-Mindedness and Dogmatism', *Episteme* 15:3 (2018) 261–282, 261.

77 T.R.R., 'John Frederick William Herschel', *Proceedings of the Royal Society of London* 20 (1872) xvii-xxiii, xviii.

personal feelings.[78]

In geology, for example, controversy and prejudice had held sway since the end of the eighteenth century. The controversy between the plutonists, inspired by James Hutton (1726-1797), one of the first to propose a scientific theory concerning the age of the earth, and the neptunists, inspired by Abraham Gottlob Werner (1749-1817), who adhered to the then popular theory that all geology was once formed by oceans, had raged for several decades.[79] No consensus was reached and partaking in the debate was controversial, as personal feelings and biases were constantly at play.[80] Roderick Impey Murchison (1792-1871) was one of the first geologists to break through the fortified positions of both neptunists and plutonists. Although he was of the generation that could not escape bias from Wernerians or Huttonians, Murchison was at first educated as a soldier and only 'when his powers of observation had matured . . . he was happily left to acquire his knowledge direct from nature, with but little bias from the controversies then so keenly carried on between the followers of Hutton and Werner.'[81] As a geological collector, Murchison pursued knowledge in a disinterested and unbiased way. The simple practice of collecting facts kept him free from partiality and controversy.[82] As Merrifield withstood the pulling force of his imagination by focusing on more practical topics, so did Murchison focus on the disciplined collection of facts to avoid prejudice.

78 Mathematician and astronomer John Herschel argued as early as 1830 that true science was built on freedom from prejudice, of which the mind had to be actively cleared. See: Levine, *Dying to Know*, 19.

79 For the early reception of Hutton and Werner and the gradual breakdown of both theories, see: M. J. S. Rudwick, 'Hutton and Werner Compared: George Greenough's Geological Tour of Scotland in 1805', *The British Journal for the History of Science* 1:2 (1962) 117-135.

80 For a wonderful analysis of geological controversies, see: James Secord, *Controversy in Victorian Geology. The Cambrian-Silurian Dispute* (Princeton, NJ: Princeton University Press, 1986).

81 A.G. 'Roderick Impey Murchison', *Proceedings of the Royal Society of London* 20 (1872) xxx-xxxiii, xxxi.

82 For the avoidance of bias in early modern science, see: Cohen, *How Modern Science Came Into the World*, 486-487, and chapters xii, xiii and xvii.

Murchison overcame prejudice by studying nature in a disinterested way, while others actively sought controversy to break down old conceptions. Geologists Sir Charles Lyell (1797-1875), known for his *Principles of Geology,* and George Poulett Scrope (1796-1876) were praised for their boldness and courage in overcoming prejudice. Where Murchison avoided the debate, Scrope and Lyell attacked the old doctrines head on, leading to accusations of prejudice and atheism. Only through Scrope's 'boldness and sagacity' and his capability to 'profit alike from the judicious criticism of friends and the unsparing ridicule of opponents' could prejudice in geology be overcome.[83] Men like Scrope and Lyell provided counter-narratives to existing views in science, but were liable to prejudice as well: they had to avoid the pitfalls of their predecessors. They did so by cultivating virtues of boldness, sagacity and open-mindedness.[84]

Obituaries provided examples of how prejudice could be prevented. Modesty and courage were central virtues in overcoming personal feelings of superiority, as the obituary of the renowned physician Thomas Watson (1792-1884) illustrates. Watson, who held strong opinions on many subjects, was above all praised for 'his freedom from prejudice' and his 'judicial impartiality.' On finding himself in controversy because of his views, and being in the wrong, Watson would habitually 'declare himself convinced in a sense contrary to his former opinion, and to set forth with the utmost clearness and graceful simplicity the new conclusions to which he had been led.'[85] On many other occasions, it was this openness to criticism that safeguarded against prejudice.

Some obituaries also show what happened when scholars continued to adhere to preconceived ideas, as in the case of a foreign member of the

83 'George Poulett Scrope', *Proceedings of the Royal Society of London* 25 (1877) i-iv, ii-iii; see also: 'Sir Charles Lyell', *Proceedings of the Royal Society of London* 25 (1877) xi-xiii.

84 For open-mindedness as an epistemic virtue, see: Wayne Riggs, 'Open-mindedness', *Metaphilosophy* 41 (2010) 172-188.

85 G.J., 'Thomas Watson', *Proceedings of the Royal Society of London* 38 (1885) v-ix, ix.

Royal Society, the famous German chemist Justus Liebig (1803-1873). Liebig was said to have an increasing tendency to be dogmatic and that he in 'this high flight had often maintained more than he had proved, that the proof was in many points still wanting.'[86] The habit of adhering to an idea once taken up was also prevalent in the case of Edward James Stone (1831-1897), astronomer at the Royal Observatory, who made erroneous observations that fitted his theories: 'It was in vain that Airy, Adams, and Cayley endeavoured privately to convince Stone of the error of his conclusion', something which 'completely blinded Stone's eyes to the true state of the case.'[87] Personal feelings blinded one to the truth and had to be disciplined in order to pursue knowledge. Charges of prejudice, scientific orthodoxy and being old-fashioned were reserved for those letting personal feelings of superiority or inferiority interfere with a truthful pursuit of knowledge.[88] Obituaries pointed to the importance of modesty and selflessness, especially in scientific controversies. Deceased scholars were often praised for these virtues, because they had checked personal feelings of superiority.

Scholarship, a collective project that cherished communicability, ideally relied on the fruitful cooperation of learned men. Prejudice and personal attachment to theories could thwart that cooperation. Therefore, obituaries underlined the importance of self-discipline, especially in cases of controversy. To speak with the words of the Victorian historian George Grote: 'Men's feelings or emotions . . . corrupt their sense of truth.'[89] Obituaries, luckily, offered examples of how these feelings or emotions could be overcome.

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86 'Justus Liebig', *Proceedings of the Royal Society of London* 24 (1876) xxvii-xxxvii, xxx-xxxi, xxxiv. For a discussion of how biased Liebig actually was, see: Alan J. Rocke, 'Pride and Prejudice in Chemistry. Chauvinism and the Pursuit of Science', *Bulletin for the History of Chemistry* 13/14 (1993) 29-40

87 D.G., 'Edward James Stone', *Proceedings of the Royal Society of London* 62 (1898) x-xxiii, xxi.

88 Richard Owen, an anti-Darwinian naturalist was criticised for being orthodox, which led to his isolation and embitterment in later years: W.H.F., 'Richard Owen', *Proceedings of the Royal Society of London* 55 (1894) i-xiv, xii-xiii.

89 'George Grote', *Proceedings of the Royal Society of London* 20 (1872) vii.

The three dangers of uselessness, enthusiasm and prejudice recur in a broad range of obituaries throughout the period that this book aims to study. In general, vices associated with these dangers seemed to stem from the practice of scholarship itself. Enthusiasm, like thoroughness or the public defence of scientific theories, were part and parcel of scholarly practice in the years around 1900. Only when the balance went askew and threatened standards of communicability, only then was it seen as problematic. However, Victorians and Edwardians were not only concerned about problems arising from the practice of scholarship itself, they also saw their pursuits threatened by more mundane dangers: money, fame and distraction.

Money

Propensities for moneymaking, seeking fame or acting in society might seem to be obvious dangers to scholars around 1900, but money, fame and gentlemanly society were at the same time an integral part of what it meant to be a scholar around 1900. As for money: in industrialised and capitalist Britain, money was essential to a scholarly life, as membership of learned societies and gentlemanly life in general was rather costly.[90] In addition, learned societies like the Royal Society relied heavily on personal financial support to encourage the pursuit of knowledge, in the form of medals for distinguished fellows or by appointing honorary fellows or officials.[91] Although wealth played a major role in scientific culture, the pursuit of knowledge was often seen as incompatible with the pursuit of business,

90 In 1900, for example, one had to pay ten pounds to be admitted to the Royal Society and four pounds annually, respectively the equivalent of 750 pounds and 300 pounds nowadays. In addition, members had many social meetings that put a further burden on their finances, which was of course added to the daily costs of living in the metropolis and taking care of a family, which was a heavy financial burden as well. See: 'Statutes of the Royal Society', *Year-Book of the Royal Society* (London, 1900) 40-58, 44. For the costs of raising a family and providing them with education, see: John Burnett, *A History of the Cost of Living* (Harmondsworth: Penguin Books, 1969) 335-344.

91 Marie Boas Hall, *All Scientists Now,* 143.

complicating the ways in which scholars could make their living.[92] Dealing with money was both dangerous and necessary. Sheldon Rothblatt, for example, has argued that business keepers were often convinced that a 'college life ruins a man for a business career.'[93] On the other hand, college men were also disdainful of business and commerce: 'a man of character could not remain a man of character unless he avoided business and the pursuit of wealth.'[94]

In his monograph on Joseph Hooker, Jim Endersby sketches how this tension between the need for money and the need for a gentlemanly status was experienced as a problem. The naturalist's dilemma was 'to show that one could work for a living and still claim genteel status; for with such status came a claim to the public's support and trust, and thus to the government's money.'[95] Not only naturalists, but almost all scholars who were not endowed with a fortune by birth experienced these problems, and engaged in many seemingly ungentlemanly practices to gain the status of learned gentleman. Even historians like Edward Augustus Freeman, who were disdainful of popular history writers for the public, of the likes of James Anthony Froude (1818-1894), wrote 'simple' history textbooks for children in order to support their income, because highly sophisticated and thorough works of history did not provide the money necessary to even be a professional historian.[96] Learned societies also recognised the effect of

92 For an excellent discussion of how money and knowledge were (morally) entangled in nineteenth century America, where the infrastructure for science was far less developed, see: Paul Lucier, *Scientists and Swindlers: Consulting on Coal and Oil in America (1820-1890)* (Baltimore: Johns Hopkins University Press, 2008).

93 Sheldon Rothblatt, *The Revolution of the Dons: Cambridge and Society in Victorian England* (Cambridge: Cambridge University Press, 1968) 250-252, 268.

94 Ibid. 258

95 Endersby, *Imperial Nature*, 7.

96 For Freeman, Froude and the tension between professional history and writing for the public, see: Ian Hesketh, 'Writing History in Macaulay's Shadow: J.R. Seeley, E.A. Freeman, and the Audience for Scientific History in Late Victorian Britain', Journal of the Canadian Historical Association/Revue de la Societé historique du Canada 22:2 (2011) 30-56. For Freeman's embroilment with Froude, see: Hesketh, 'Diagnosing Froude's Disease'.

goods such as recognition and money on men's desires, and used rewards, such as prizes, medals, honorary fellowships, offices and stipends to direct scholars towards what was recognised as good science.[97] In other words, making money was part of the balancing act of being a scholar around 1900: a mundane desire for money was seen as legitimate as long as it was controlled by a love of science.[98]

Money was thus central to scientific lives and scientific pursuits, but only in moderation. Excessive moneymaking and living a life of luxury were considered incompatible with a love of science.[99] Although several entrepreneurial scholars, like the self-made man Walter Weldon (1832-1885), who invented a very cheap and profitable way to produce chlorine, and Daniel Hanbury, a leisured botanist and holder of a wealthy pharmaceutical practice, amassed fortunes with their scientific work, their obituaries stressed that all this moneymaking was a mere by-product of their disinterested search for truth. Weldon was, according to his biographer, without 'a trace of the sordid attributes of the mere business man' and his undiminished labour, even when he became very rich, was considered a sign of his veracity and his character.[100] Hanbury, in addition, was a man who frequently travelled to the continent, but as his biographer emphasised 'not for commercial objects, but in pursuit of pharmaceutical information.'[101] Decimus Burton (1800-1881), a renowned architect, had a profitable practice and amassed great wealth, but was never 'suspected of sacrificing the interest of a client for his own glorification, or for the

97 Archibald Smith, for example, was giving 2000 pounds for a 'labour of love', not as payment, but rather as recognition: 'Archibald Smith', *Proceedings of the Royal Society of London* 22 (1874) i-xix, xvii.

98 For an analysis of the struggle between romantic love and money in Victorian fiction, see: Elsie B. Michie, *The Vulgar Question of Money: Heiresses, Materialism, and the Novel of Manners from Jane Austen to Henry James* (Baltimore: Johns Hopkins University Press, 2011).

99 Endersby, *Imperial Nature*, 269.

100 F.W.R. 'Walter Weldon', *Proceedings of the Royal Society of London* 46 (1890) xxiv-xix, xxi.

101 'Daniel Hanbury', *Proceedings of the Royal Society of London* 24 (1876) ii-iii, ii.

indulgence of his own individual fancies.'[102] In addition, medical men like William Gull (1816-1890) were praised for 'practicing a lucrative profession with less eagerness to grasp at its pecuniary rewards.'[103]

Money and wealth, as the above examples suggest, were not a problem, as long as they were not the sole aim of the scholar. But what happened when the love of money trumped the love of science? One example is offered in Francis Galton's autobiography, in which Galton (1822-1911) discusses the scientific life of the classicist and inventor Matthew P. Watt Boulton (1824-1894), who was perhaps too wealthy:

> His large fortune also removed the stimulus which necessity gives for getting through work and having done with it, instead of lingering indefinitely. He consequently grew amateurish, wasting thought on ingenious paradoxes and literary trifles, and failed to check a natural tendency towards reclusiveness and some other oddities of disposition.[104]

In Boulton's case, too much wealth proved detrimental for his scientific work, because it took away the stimulus for being useful. His wealth led to amateurish habits and forced him to surrender to his inborn reclusiveness. This suggests that the pursuit of at least a certain amount of wealth, in the eyes of Galton, was an antidote to reclusiveness and amateurishness. Scholars needed to operate in society in order to be useful. The need to make money thus was a disciplining factor in science.

The scale could also tilt to the other side, loving money over science. This was a very real threat, not only to scholars, but also to the nation as a whole, as the example of Sir Frederick John Owen Evans (1815-1885), scientific hydrographer and officer of the Royal Navy, suggests. Evans, being

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102 J.F., 'Decimus Burton', *Proceedings of the Royal Society of London* 34 (1883) viii-x, ix.

103 P.H.P.S., 'Sir William Gull', *Proceedings of the Royal Society of London* 48 (1891) viii-xii, ix.

104 Francis Galton, *Memories of My Life* (London: Methuen & Co, 1908) 19.

extremely accurate, painstaking and patient according to his biographer, at times even over-fastidious, was very much occupied with problems of the compass in ironclad ships.[105] However, the entire Admiralty, struggling with these problems, was a frequent victim to shady 'individuals who come with quasi inventions, sometimes backed by officers of rank, well meaning but necessarily ignorant of the subject, professing to relieve all the troubles of compass management on board ship.'[106] These con men, with their attack on the national purse, were 'defeated by the wise and persistent course of action adopted by Captain Evans.'[107] These semi-scientific compass 'experts' who tried to make money out of the Admiralty's needs offer a striking contrast to true scientific men like Weldon and Hanbury, because in the case of the latter two it was the pursuit of truth that won over the pursuit of money. The juxtaposition of virtuous Evans with vicious con men shows how virtuous science benefited the nation.

In the last two decades of the nineteenth century, the prospect of a lifelong university career became a realistic option to many scholars, although the rewards were often less high than they were in business or in government service.[108] Pursuing an academic career could be a conscious choice to make less money for the sake of pursuing scholarly interests. This was the case for William Stanley Jevons (1835-1882), who sacrificed the prospect of earning a small fortune at the Australian Royal Mint for the continuance of his studies at University College London. Jevons' reflection on this choice was cited in his obituary: 'I ask, is everything to be swamped with gold? . . . am I to sacrifice everything that I really desire, and that

105 G.H.R., 'Frederick J.O. Evans', *Proceedings of the Royal Society of London* 40 (1886) i-vii, ii, iv, vi.

106 G.H.R., 'Evans', vi.

107 Ibid.

108 Learned men in universities or clerical positions often had to take on extra jobs to make money, one example is Miles Joseph Berkeley: Joseph Dalton Hooker, 'Miles Joseph Berkeley', *Proceedings of the Royal Society of London* 47 (1890) ix-xii, ix, xii. For the prospect of academic careers in the late nineteenth century, see: Engel, *From Clergyman to Don*; and: Rothblatt, *The Revolution of the Dons*; and Stuart Jones' discussion of these themes in: Jones, *Intellect and Character in Victorian England*, 2-4.

will I think prove a really useful way of spending life?'[109] Men in university positions, like Jevons, were on several occasions tempted to leave the university for lucrative practices or positions outside academia. Obituaries praised those who did not. The example of the mathematician Arthur Cayley shows how scholars should deal with this temptation. Himself a talented barrister, Cayley resisted the temptation to pursue a larger practice, although many offers were presented to him:

> Had he remained at the Bar and devoted himself to its business, he could have made a great legal reputation and a substantial fortune . . . but the spirit of research possessed him; it was not merely will but an irresistible impulse that made the pursuit of mathematics, not the practice of law, his chief desire. . . . He regarded his legal occupations mainly as the means of providing a livelihood.[110]

In fact, Cayley resisted every temptation that might stand between him and the pursuit of knowledge. His biographer even likened him to 'the patriarch Isaac who, when the Philistines claimed a well which he had dug, went on and dug another, and when they claimed that, too, went on and dug a third.'[111] Cayley's love of science trumped all other urges and kept him from vice.

Also within the humanities, the sagacious attitude of Cayley was seen as a model. Likewise, moneymaking was seen as a temptation to be resisted. The historian Samuel Rawson Gardiner was said to have 'desired neither wealth nor fame', and economical theorist Viscount Goschen (1831-1907) was praised in the following manner: 'with all his inherited aptitude for business, and his interest in financial questions, I think few men cared

109 R.H., 'William Stanley Jevons', *Proceedings of the Royal Society of London* 35 (1883) i-xii, iii.
110 A.R.F., 'Arthur Cayley', *Proceedings of the Royal Society of London* 58 (1895) i-xliii, vii.
111 Ibid. xxi.

less about money-making for its own sake.'[112] Goschen's case is interesting: as director of the Bank of England and Cabinet Minister, Goschen had amassed a considerable fortune. It was the goal towards Goschen's efforts were oriented that mattered to the writer of his obituary, not the extent of his fortune (although this fortune could explain why did not care for moneymaking in the first place). In short: moneymaking, although an integral part of a scholarly life around 1900, needed to be checked by a stronger love of science. The cultivation of a love of truth and balancing one's desires were antidotes to avarice and amateurishness.

Fame

The dangers of fame, recognition and honour were treated similarly to the dangers of money: pursuing fame for its own sake was considered vicious. Again, a sagacious attitude like Cayley's was prescribed for dealing with these temptations. On the other hand, a certain amount of recognition was of vital importance to the status of the scholar in Britain: a balance had yet again to be struck. One example of this balancing act is provided in the obituary of Thomas Henry Huxley:

> Titular honours had no attractions for Huxley, and it is no secret that he at a comparatively early date declined the offer of knighthood. . . . Not that he was insensible to the value of a public recognition of his worth, for when, in 1892, Her Majesty was graciously pleased that he should become a member of the Privy Council, he accepted with pleasure so unwonted a signal of the recognition of scientific worth.[113]

Recognition of service and honours were not goods that should be pursued for their own sake. Rather, recognition was bestowed in recognition of

112 Firth, 'Gardiner', 276-277; Milner, 'George Joachim. First Viscount Goschen. 1831-1907', *Proceedings of the British Academy* 1907-1908 (London 1908) 359-364, 361

113 M.F., 'Thomas Henry Huxley', *Proceedings of the Royal Society of London* 59 (1896) xlvi-lxvi, lxv.

one's scientific worth.[114] The obituaries of learned societies were riddled with allusions to these honours and how scholars ought to deal with them. Jealousy, for example, was envisioned to be a cardinal vice, and was often contrasted with modesty in the context of honours and recognition.[115]

Honours, fame and recognition were seen to be reserved for eminent and established scholars, rather than the young and ambitious. Writers of obituaries often felt the need to underline that their subjects never fell into the temptation of fame. About James David Forbes (1809-1868), a glaciologist who became succesful at a relatively young age, was said: 'the excitement of young and successful authorship seems never for a moment to have turned his head, or to have made him bate one jot the patient industry.'[116] But even at a later stage of someone's life, actively searching fame, honour or popular acclaim was seen as giving into temptation. The example of Robert Knox (1791-1862), a controversial and very popular Scottish public anatomist, was employed in the obituary of a less popular anatomist, Allen Thomson (1809-1884), to serve as an example of how scholars should *not* behave.[117] Knox was accused of being egotistical and sarcastic in order to discredit Thomson and his colleague Sharpey. In contrast, the good Thomson was praised for being cautious and having a pure and steadfast career. Because Thomson did not strive to become famous or popular like Knox, he was regarded as a virtuous man.[118]

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114 For an example similar to Huxley's declination of knighthood, see: C.S.T., 'Sir John Tomes', *Proceedings of the Royal Society of London* 59 (1896) xiii-xiv, xiv.

115 See for example this passage from James Cockle's obituary: 'his modesty was remarkable; rarely speaking of his own work, he was ever ready to recognise and do full justice to the work of others. There was in him none of the petty jealousies which haunt meaner minds', in: R.H., 'Sir James Cockle', *Proceedings of the Royal Society of London* 59 (1896) xxx-xxxix, xxxviii.

116 'James David Forbes', *Proceedings of the Royal Society of London* 19 (1871) i-ix, iii.

117 Knox allegedly procured bodies for his anatomical experiments by cooperating with the murderers William Burke and William Hare. See: A.W. Bates, *The Anatomy of Robert Knox: Murder, Mad Science and Medical Regulation in Nineteenth-Century Edinburgh* (Brighton: Sussex Academic Press, 2010).

118 W.A., 'Allen Thomson', *Proceedings of the Royal Society of London* 42 (1887) xi-xxviii, xv, xxi.

Like Knox, the Irishman Samuel Haughton (1821-1897), a broad scientific writer, was accused of working solely for reputation and sensation. In an anonymously published article in *Nature*, Peter Guthrie Tait, an energy physicist and harsh critic of several of his colleagues, even spoke of a

> morbid craving for excitement . . . [that] has led to the introduction of Sensation (as it is commonly called), not merely into our newspapers and novels, but even into our pulpits. It could not be expected that our popular scientific lectures would long escape the contamination.[119]

Responsible for the contamination of science by sensation was, according to Tait, the Irishman Haughton. Tait accused Haughton not of writing sensational pieces of journalism, but for doing so while claiming to be scientific: 'proof that we are dealing with Sensation where we looked for Science.'[120] Tait offered numerous instances in which Haughton, who in a lecture applied the principle of least action to all kinds of arenas, fails to be scientific. By writing for popular acclaim and from a craving for excitement, Haughton abused science and introduced nothing but sensation. By contrasting Haughton's writings to accurate scientific findings, Tait aimed to show that Haughton was just a sensational pretender, who 'plunges headlong in a wild sea of speculation'.[121] Instead of sensation, Tait offered science and drew up moral boundaries between Haughton and himself. As we shall see in the next chapter, Tait's critique of Haughton was aimed at a particular brand of science, which he associated more with the group of metropolitan physicists associated with John Tyndall. Tait, as I will argue more extensively in chapter 3, militated against the use of the imagination in science and saw Haughton's 'sensation' as yet another example of the vices of his opponents.

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119 Peter Guthrie Tait, 'Sensation and Science', *Nature* (6 July, 1871) 177-178, 177.

120 Ibid.

121 Ibid. 177.

As we have seen earlier, obituaries offered clues to deal with the danger of fame. Models for virtuously coping with fame or honours were for example presented in the obituaries of Sir James Clark (1788-1870), for some time physician to the queen, and Sir George Burrows (1801-1887), also a physician, who actively refused all distinctions offered to them. The life writer of Clark even seems somewhat frustrated by this fact, as it complicated his job of writing an obituary: 'Clark never sought any honour: he was, indeed, singularly indifferent to the recognition of his services, and, provided the end was gained, did not desire that his share in it should be known . . . much of what he did is scarcely known . . . he was so little self-obtrusive that few men knew the extent of his acquirements.'[122] In a similar vein, of Burrows was written that he could have become more popular as a teacher or researcher, but that being of 'general utility' was deemed much more important by him.[123] The dangers of fame and uselessness also overlapped.

Another example of the role fame and recognition could play in the pursuit of knowledge points again to the ambiguity of both money and fame in learned lives. On the one hand, wealth and recognition should not be sought after, but on the other hand, both were of tremendous importance in gentlemanly society at large and learned circles specifically. The obituary of the Norwegian Sophus Lie (1842-1899), a foreign member of the Royal Society, offers a dramatic example of the tension between ideals of selflessness and the reality of a scientific life. Lie, a talented mathematician working on group theory, grew increasingly depressed as the merits of work were not recognised by mathematicians. He was 'voyaging through his sea of thought alone, at the end finding himself weary, isolated, unacknowledged, perhaps therefore discouraged.'[124] Finally, the chair of Mathematics at the

122 'Sir James Clark', *Proceedings of the Royal Society of London* 19 (1871) xiii-xix, xiv, xix.
123 J.P., 'Sir George Burrows', *Proceedings of the Royal Society of London* 43 (1888) vi-viii, vi.
124 A.R.F., 'Sophus Lie. 1842-1899', *Proceedings of the Royal Society of London* 75 (1905) 60-68, 64.

University of Leipzig was offered to him, granting him access to a larger group of pupils and recognition of his work. Some honours were conferred, but as his obituary tells us, 'recognition appears to have been, not merely slow in coming, but almost too late when it came. . . . He suffered from sleeplessness, and developed nervous symptoms: the result was a complete breakdown in 1889.'[125] Lie's example is illustrative of the important role played by recognition in the Victorian and Edwardian perception of scholarship. A scholarly life without reward or recognition was unfulfilling. Knowledge for knowledge's sake was the ideal, and modesty and self-restraint were important virtues that were oriented towards this ideal, but mechanisms of recognition and reward were important stimulants for men to pursue epistemic goods.

Established scholars were to play an important role in these mechanisms of reward and recognition. What was often stressed in obituaries was the advice provided by older and eminent men to the young. Men like Cayley were praised specifically for their role in generously guiding and valuing the young:

> whose work he was always willing to recognise. He ignored the fact that he was a great mathematician- probably it never occurred to him to think of his doings: but it may be doubted whether this unconsciousness of his greatness ever proved at once more fascination or more bewildering than when he was discussing scientific results with young men.[126]

Again, virtues like modesty and selflessness were of extreme importance in safeguarding the boundaries of what was recognised as good scientific conduct. Not falling into temptation could, in this way, also be collectively achieved. Like wealth, recognition was as central to scientific pursuits as it was dangerous.

125 Ibid. 67.
126 A.R.F., 'Cayley', xx.

Distraction

As the above examples already suggest, living a scientific life in Victorian and Edwardian Britain was a constant effort to live up to the standards of the scientific community and to keep dangerous vices at bay. Moreover, like the concerns with wealth and recognition show, learned men in Britain around 1900 did not solely live a scientific life in the sense of the ascetic scholar. They were at the same time part of British civilised society, were members of various societies, both learned and lay, had time-consuming correspondences and societal duties, and had to take care of large families and make a living as well. A scholar was never solely a scholar. A final theme that worried Victorian and Edwardian obituary writers, then, had to do with the balance to be struck between demands of civilised society on the one hand and scientific ideals on the other. It was regarded a cardinal vice to detach oneself from society and the duties one had towards it, but on the other hand, men should not give themselves entirely to society either. Scholars had to manage their relationship to society as well. Again, there is some overlap between these concerns and the other dangers I identified earlier. The crux of the matter in this cluster of concerns is not the content of one's research or styles of writing, but the balancing of various societal roles and duties.

Detachment was perceived to be one of the vices that grew from an all too great attachment to one's research, placing it at odds with the demands of society. An anecdote tells us of the mathematician Sylvester's detachment, when he, during work in the library, 'suddenly looked up from a paper in the hall of study and demanded of the corporal on duty, "What year is it?"'[127] Of the Irish mathematician Sir William Rowan Hamilton (1805-1865) it was said that although he was 'a master of pure time . . . , he was not a master of sublunary time.'[128] These accusations were frequently uttered against mathematicians, but scholars in other fields of research

127 P.A.M., 'Sylvester', xviii.
128 McFarlane, *Ten British Mathematicians*, 29.

were also prone to detachment or otherworldliness. Anthony Mervyn Reeve Story-Maskelyne (1791-1879), a classical scholar, also grew detached from society and was criticised for it as he retreated into the great minds of Greece and Rome.[129] Something similar was said of the classical scholar Robinson Ellis (1834-1913): 'he was very absent-minded, and innumerable stories are told of strange responses, which were probably quite innocent, though some found in them a vein of ironic humour. He had much that was childlike in his character.'[130]

The concern of biographers with detachment comes to the fore quite frequently in the sources, as they often stressed the fact that although a scholar worked hard and devoted much time to his work, they were by no means detached from society or a recluse.[131] Francis Galton, when discussing the ideal 'man of science' in his *English Men of Science*, even argued that a person who is deficient in business habits corresponded to 'the old-fashioned caricature of scientific men, who are absorbed in some petty investigation . . . and noted for absence of mind.'[132] The ideal man of science, according to Galton, had to know his way around civil society as well.

Interestingly, studies of absent-mindedness in early modern science or in other national contexts depict absent-mindedness as something positive rather than negative. Gadi Algazi, writing on the cultivation of the learned habit of absent-mindedness in early modern Europe stresses that

129 'Mr. Anthony Mervyn Reeve Story-Maskelyne', *Proceedings of the Royal Society of London* 29 (1879) xx-xxi, xxi.

130 Albert C. Clark, 'Robinson Ellis. 1834-1913', *Proceedings of the British Academy* 1913-1914 (London, 1914) 517-524, 522.

131 Henry John Stephen Smith (1826-1883) for example, although unmarried, frequented banquets, picnics and croquet parties: McFarlane, *Ten British Mathematicians*, 62.

132 Francis Galton, *English Men of Science. Their Nature and Nurture* (London: Macmillan and Co, 1874) 132.

emotional detachment served as a marker of devotion.[133] Heinz Schlaffer has written similarly of nineteenth-century German scholars, arguing that detachment from society was seen as love of truth.[134] Also in Dutch academia, absent-mindedness and retreat from societal duties were seen as markers of devotion.[135] In the obituaries that I cited above, however, absent-mindedness was deplored. The British case, then, seems to be different. Absent-mindedness was associated with genius, and, as Richard Yeo has observed, genius became suspect in the course of the nineteenth century.[136] The historical trajectory of absent-mindedness in Britain thus differed somewhat from its counterparts on the European continent: absent-

133 Gadi Algazi has done wonderful work on the subject of learned absentmindedness and detachment. He has argued that when celibacy restrictions were loosened for scholars in the fifteenth century, scholars developed new ways of devoting themselves to their higher goals within family households. Habits of detachment were cultivated to 'withstand temptations and distractions and devote themselves to higher things'. Moreover, Algazi rightly states that celibacy at the British universities remained obligatory for college fellows well into the nineteenth century, making his case interesting for this study as well: Gadi Algazi, 'Scholars in Households: Refiguring the Learned Habitus, 1480-1550', *Science in Context* 16 (2003), 9-42, 12, 14. See also: Gadi Algazi, '"Geistesabwesenheit": Gelehrte zu Hause um 1500', *Historische Anthropologie* 13 (2005) 325–342; Gadi Algazi, 'Food for Thought: Hieronymus Wolf Grapples with the Scholarly Habitus', in: Rudolf Dekker (ed.*), Egodocuments in History: Autobiographical Writing in its Social Context since the Middle Ages* (Hilversum: Uitgeverij Verloren, 2002) 21–44; Gadi Algazi, 'Gelehrte Zerstreutheit und gelernte Vergeßlichkeit: Bemerkungen zu ihrer Rolle in der Herausbildung des Gelehrtenhabitus', in: Peter von Moos (ed.), *Der Fehltritt. Vergehen und Versehen in der Vormoderne* (Cologne: Böhlau Verlag, 2001) 235–250.

134 Heinz Schlaffer, *Poesie und Wissen: die Entstehung des ästhetischen Bewusstseins und der philologischen Erkenntnis* (Frankfurt am Main: Suhrkamp, 1990).

135 Herman Paul, '"Werken zoo lang het dag is": Sjablonen van een negentiende-eeuws geleerdenleven', in: L.J. Dorsman and P.J. Knegtmans (eds.), *De menselijke maat in de wetenschap: De geleerden(auto)biografie als bron voor de wetenschaps- en universiteitsgeschiedenis* (Hilversum: Uitgeverij Verloren, 2013) 53-73.

136 In earlier biographies, Newton's alleged absent-mindedness was indeed portrayed as virtuous, but in nineteenth-century biographies, anecdotes of aberrant social behaviour were presented as much more problematic: Yeo, 'Genius, Method and Morality', 273-274.

mindedness was not a marker of devotion, but a marker of distraction or, worse, insanity.

But why would men distance themselves from society in the first place? One reason could be an overly active imagination or an enthusiastic desire to occupy oneself solely with research, as we have seen earlier. It could also be a by-product of a desire for completeness or full accuracy. Another reason was the, often described as arduous or irksome, work of professional duties. Examinations at the universities, for example, were often seen as too time-consuming. In the case of the mathematician Isaac Todhunter (1820-1884), this work was described as 'a task requiring so much labour and involving so much interference with his work as an author that he never accepted it again.'[137] However, some men even embraced the distraction from original work by duties, from a desire to do good. This was recognised not as virtuous, but rather as giving in to the temptations of society, like in the case of Professor Rolleston, who was said to lack 'that intense concentration which is requisite for carrying out any continuous line of research. He was often blamed for undertaking so much and such diverse kinds of labour, so distracting to his scientific pursuits.'[138]

Nonetheless, universities and institutions could not function without men taking up these duties and it was generally accepted as a noble distraction from original work. In fact, in several cases, professional duties seemed even more important than original work, especially for senior figures, on whom the management and day-to-day business of important institutions depended. Frederick Evans, the engineer working on compass problems for the Admiralty, gradually grew in his role as administrator and, through tight time-management struck a balance between his love of science and his duty to society:

137 McFarlane, *Ten British Mathematicians*, 89; in the humanities, duties were often also seen as a burden: W.A.J. Archbold, 'Lord Acton as a Cambridge Professor', *Proceedings of the British Academy 1903-1904* (London 1904) 282-284, 283.

138 W.H.F., 'Rolleston', xxv.

> The multifarious calls of his new office, however, diverted him more and more from exclusive attention to his favourite science, though he still found time to draw up and read before the Royal Geographical Society in 1878, an able and instructive lecture on the Magnetism of the Earth.[139]

The physicist Rankine (1820-1872) and astronomer Stone, who both had administrative duties at scientific institutions, were also praised for balancing their research and societal duties.[140] Virtues of responsibility were even seen as checking the impulse to be absorbed in one's research.[141] A similar point was made concerning larger societal goals, as we have seen earlier, in the obituary of Fitzgerald, the brilliant mathematician who gave up his mathematical pursuits 'into lands too far removed from human traffic to be capable of utilisation and absorption for generations to come', and rather contributed to the betterment of general national education.[142]

A less noble distraction than duties or education was that of city life and high society.[143] John Ball (1818-1889), a broadly oriented amateur scientist, was negatively remembered for being 'as fond of society as society was of him, and he confided to a friend his belief that to this must be laid the blame of his not having done more scientific work.'[144] Like money and

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139 G.H.R. 'Evans', v

140 Rankine's 'great industry and success in the field of science were never allowed to interfere with the ordinary duties owing to society': 'William John Macquorn Rankine', Proceedings *of the Royal Society of London* 21 (1873) iv.

141 In Stone's case, responsibility prevented him from being absorbed by original work: 'One of Stone's most characteristic qualities was his great sense of responsibility and strict regard to official duty. However absorbing may have been the independent researches in which he was engaged, his official duties were at all times his first consideration.', see: D.G., 'Stone', xv.

142 See note 75 in this chapter.

143 Another, sadder source of temptation was intemperance. The mathematician Rowan Hamilton, who pioneered the study on quaternions, fell into the vicious habit to 'refresh himself with a quaff of the beverage for which Dublin is famous- porter labelled ': McFarlane, *Ten British Mathematicians,* 27.

144 Joseph Dalton Hooker, 'John Ball', *Proceedings of the Royal Society of London* 47 (1890) v-ix, ix.

fame, duties were seen as a legitimate aim of scholars –they all facilitated a friendly environment for the pursuit of knowledge– as long as a delicate balance was struck between the pursuit of knowledge and these external goods. Balancing between distraction and detachment was facilitated by feelings of responsibility, capacity to concentrate and the self-discipline to navigate the multifarious roles in a scientific life.

Remedy #1: balance

Above I have laid out the six dangers that Victorian and Edwardian obituarists regarded to be threats to the pursuit of knowledge. I argued that these dangers were clusters of concerns, not all similar in kind and in some cases overlapping. Nonetheless, distinguishing between these six dangers helps to demonstrate the complexity of Victorian and Edwardian perceptions of scholarly vice. They imagined the collective project of scholarship to be threatened from all sides, because the scholar was himself threatened from all sides: from within (e.g. desiring completeness over usefulness) and from without (e.g. being distracted). By publishing obituaries and maintaining a vivid culture of academic memory, scholars offered each other tools for dealing with the dangers of a scholarly life. In this section, I will discuss the first of two remedies: balance. Balancing virtues, desires, and duties was an antidote to vices and temptations.

Balance was so important, simply because imbalance was so often identified as a source of vice. Imbalance came in many forms. Firstly, Victorians and Edwardians feared excesses. These could be excesses in virtue: Acton's adherence to excessively high standards of accuracy and completeness or Roy's excessive ingenuity. Victorians also identified excesses that were more material: an excess of money, to follow Galton's analysis of Boulton, was dangerous because it could lead to amateurishness. Secondly, and equally problematic, were deficiencies. James Thomson was lamented for his 'want of rapidity of action', while John Percy was criticised for not guiding his readers enough. Insufficient modesty, George Romanes' case attests, was also seen as problematic. Material deficiencies were

also identified as dangerous: insufficient recognition led to Sophus Lie's depression.

Admittedly, excess and deficiency are two sides of the same coin. Acton's excessive accuracy led to insufficient usefulness, while Romanes' immodesty was due to excessive ambition. This is why I stated earlier that living a scholarly life was a delicate balancing act. Balancing virtues, commitments, and even material concerns such as money, fame, and duties towards society.[145] If danger indeed lay in imbalance, then the remedy was balance. Balance could be attained by cultivating virtues to contrast these excesses or deficiencies. The many cases that I have studied attest to this balancing act as a crucial remedy. There are many examples in the previous sections of scholars avoiding dangers by cultivating contrasting virtues, commitments or practices. The historian Gardiner, who balanced his interest for novelties with the value of existing scholarship, the mathematician Merrifield, who balanced his love of abstractions with a dedication to useful mathematics, the geologists Lyell and Scrope, who countered prejudice with boldness, sagacity and open-mindedness, and there are many more.

This balancing act was not easy: it took a great deal of self-discipline. As the case of Merrifield shows, danger could be avoided by pursuing objects of research that had less attraction but were more useful. A similar act of self-discipline was exhibited by Captain Evans (who worked on the Admiralty's compasses), who, when performing all kinds of professional duties, still found time to pursue his research. Scholars not only identified the sources of danger in academic memory culture, but also offered ways

145 For balancing virtues and commitments in German academia, see: Christiaan Engberts, 'Conflicting Virtues of Scholarship. Moral Economies in Late Nineteenth-Century German Academia' (PhD-dissertation, Leiden University, 2019) esp. chapter 5. For love of science in German academia, see: Rainer Kolk, 'Wahrheit – Methode – Charakter: Zur wissenschaftlichen Ethik der Germanistik im 19. Jahrhundert', *Internationales Archiv für Sozialgeschichte der deutschen Literatur* 14:1 (1989) 50-73.

of dealing with these dangers: balancing virtues through self-discipline.[146]

Remedy #2: a love of science

The second remedy against vices lay in what authors preferably referred to as a 'love of science'. Where the remedy of balance had more to do with countering excesses and deficiencies, the 'love of science' was envisioned to be more of a guiding principle, a compass to guide a scholar throughout his life. It was meant to keep scholars on the right track. As such, it was envisioned to be different in kind from the cultivation of specific constellations of virtues. The orientation of these constellations towards science, truth or knowledge was at stake.

I have mentioned examples in the above paragraphs, but I will add some more here, to illustrate how commonly phrases such as 'love of science' were applied. The Scottish chemist Thomas Graham, for example, was remembered for his 'intense desire' to understand the structure of matter[147], the Irish physicist George FitzGerald (1851-1901) was praised for being 'actuated solely by a love of truth'[148], the now largely forgotten English naturalist and minister Thomas Hincks was championed for his 'love of natural history'[149], while the well-known physicist David Brewster (1781-1858) was championed for his 'overpowering love of scientific pursuits'[150]

146 The importance of balance in the fight against vice was also supported by contemporary scientific evidence. In his famous *English Men of Science*, Francis Galton showcased his research into the 'character of a successful scientific man'. Crucially, Galton argued that character traits should be 'fairly balanced', and that excesses in one's character 'are dangerous gifts'. Galton's research shows that the ideals that were communicated in academic memory culture were not restricted to the genre of the obituary, but also played a role in broader scholarly discourse. Galton, *English Men of Science*, citations respectively on pages 230, 234 and 231.

147 R.A.S., 'Thomas Graham', xviii.

148 O.J.L. 'Fitzgerald', 158-159.

149 L.C.M., 'Rev. Thomas Hincks. 1818-1899', *Proceedings of the Royal Society of London* 75 (1905) 39-40, 39.

150 J.H.G., 'David Brewster', lxix.

and the famous historian Edward August Freeman for his 'love of truth'.[151]

In many obituaries, the 'love of science' or other closely related terms ('taste for science'[152], 'devotion to science'[153], 'love of truth'[154], and so on[155]) was put front and centre.[156] Think only of Sir Clement Le Neve Foster, who loved science over his own family, when he was suffocating in the mine and wrote letters to his colleagues, meticulously describing his own death. Or think of Arthur Cayley, who could have been a successful (and wealthy) barrister, but choose science instead. Cayley's obituary merits a closer look. It praised him for being:

> more than a mathematician. With a singleness of aim, which Wordsworth could have chosen for his 'Happy Warrior', he

151 James Bryce, 'Edward August Freeman', *English Historical Review* 8:27 (1892) 497-509, 503. The famous phrase 'history is past politics, and politics present history' is Freeman's. See: Ian Hesketh, ''History is Past Politics, and Politics Present History': Who Said It?', *Notes and Queries* 61:1 (2014) 105-108; and Herman Paul, ''History is Past Politics, and Politics Present History': When Did E. A. Freeman Coin this Phrase?', *Notes and Queries* 62:3 (2015) 436-438.

152 Francis Galton often used this synonym, see the coda to this chapter. In obituaries, 'taste for' was also used often, like in the obituary of Lord Armstrong, who had a 'taste for learning': A.N., 'Lord Armstrong', *Proceedings of the Royal Society of London* 75 (1905) 217-227, 217. More specific 'tastes' were also mentioned, like in the obituary of Alfred Richard Cecil Selwyn, who had a 'taste for geology': W.W., 'Alfred Richard Cecil Selwyn', *Proceedings of the Royal Society of London* 58 (1895) 325-328, 325.

153 See for example: 'John Allan Broun', *Proceedings of the Royal Society of London* 30 (1880) iii-vi, iii; and: W.T.T.D., 'Henry Trimen', *Proceedings of the Royal Society of London* 75 (1905) 161-165, 165.

154 See the obituary of George Francis Fitzgerald, mentioned earlier in the context of distraction, for an example: O.J.L., 'Fitzgerald', 159.

155 There were many ways to phrase this. William Stanley Jevons, for example, was remembered for having 'a pure and simple-hearted love for scientific labour': 'Jevons', ii.

156 This discourse also travelled beyond academic memory culture. In his autobiography, Charles Darwin himself reflected upon his growing 'love for science', that eventually 'preponderated over every other taste'. See: Charles Darwin, 'Autobiography', in: Francis Darwin (ed.), *The Life and Letters of Charles Darwin. Including an Autobiographical Chapter* (New York and London: D. Appleton and Company, 1911) 25-86, 53, other references to a love of science on pages 83, 85 and 86.

> persevered to the last in his nobly lived ideal. His life had a significant influence on those who knew him: they admired his character as much as they respected his genius: and they felt that, at his death, a great man had passed from the world.[157]

Note especially Cayley's 'singleness of aim' and the reference to William Wordsworth's (1770-1850) 'Happy Warrior'. In his poem 'Character of the Happy Warrior', Wordsworth describes this warrior-like figure as follows:

> And in himself possess his own desire;
>
> Who comprehends his trust, and to the same
>
> Keeps faithful with a singleness of aim;
>
> And therefore does not stoop, nor lie in wait
>
> For wealth, or honours, or for worldly state[158]

Although there is some irony in quoting Wordsworth to champion a scholar, referring to the 'Happy Warrior' underlined the noble (and masculine) character of a man like Cayley, whose high-minded desire for science was contrasted to worldly goods such as wealth, honours or a high position.[159]

What problem was the love of science meant to solve? Academic memory culture was rife with examples: Liebig loving his theories more than he loved science, Haughton craving sensation more than he craved science, and John Ball enjoying society more than he enjoyed the pursuit of knowledge. The love of science was meant to keep its practitioners on the straight and narrow path to truth.

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157 A.R.F., 'Cayley', xliii.

158 William Wordsworth, 'Character of the Happy Warrior', in: Charles W. Eliot (ed.) *English Poetry II: From Collins to Fitzgerald.* (New York, P.F. Collier & Son, 1909–1914).

159 On Wordsworth and his ambiguous relation to the project of science, see: Lloyd N. Jeffrey, 'Wordsworth and Science', *The South Central Bulletin* 27:4 (1967) 16-22.

Where balance was a remedy against excesses or deficiencies in virtue, love of science was a remedy to a wrongful orientation of these virtues. It guaranteed commitment to the scientific cause and served as a guiding principle.

Conclusion: six dangers, two remedies

In this chapter, I have presented the first analysis of British scholarly obituaries published between 1870 and 1910. In this corpus of obituaries, I found that Victorians and Edwardians distinguished between six dangers (uselessness, enthusiasm, prejudice, money, fame, and distraction) and two remedies (balance and a love of truth). I have also argued that the obituary should be seen as a genre of instruction, at least in the period and place that I have been studying. It helped Victorians and Edwardians to identify the dangers that beset the pursuit of knowledge, while at the same time it offered descriptions of how those ills could be remedied. The power of obituaries was that they offered context-rich accounts of scholars in action: showing which problems they encountered and how they bested them. In historiography, obituaries are attributed many different functions: representing science to society, community building, engaging with models of virtue, and serving as battlegrounds for competing views of science. My analysis thus suggests an additional function: instruction. Academic memory culture, in other words, taught the learned how they should deal with the dangers that threatened them from within and without.

Let me return briefly to the introduction to this dissertation, where I asked why vices were so important to Victorians and Edwardians. This chapter offers one answer: the language of vice was so important because scholars saw their pursuits as being constantly threatened by all kinds of dangers. This chapter has shown both how Victorians and Edwardians envisioned these dangers, and which remedies they identified. If we think of obituaries as instructions for dealing with these dangers, it comes as no surprise that the category of vice figures prominently in these sources: scholars needed to be actively warned about them, and be presented with

the remedies, if the collective project of scholarship was to succeed.

At the same time, this chapter suggests that although it was agreed that good scholarship was threatened by all kinds of dangers, there was scarce agreement about the aims, goals and methods of good scholarship. We have encountered some examples of disagreement about the goals of science in this chapter (think of Oman and Acton, or Tait and Haughton), but I will reserve a more thorough discussion of these themes for chapters 3 and 4.

A theme that must now be addressed, however, borders on the instructional value of obituaries. Where did Victorians and Edwardians learn that scholarship was a matter of balancing virtues and loving science in an effort to keep vices at bay at all costs? In other words: how were aspiring scholars socialised into the moral universe of late nineteenth-century British scholarship? Or, to put it yet another way: how was this moral universe built on broader Victorian and Edwardian conceptions of virtue and vice, and how could one transition from the one to the other? The following chapter will take up these questions.

2

Edward Frankland and moral instruction

A young chemist in the metropolis of vice

January 5th, 1848. Late in the evening, a 23-year old man arrived at the docks of London after a trip to the continent. He was well dressed and had many suitcases with him, each of them filled with chemical substances and intricate experimental apparatus. The man had been in London before, had even lived there for a short while, but the experience of standing at the busy docks of the bustling metropolis evoked a moment of reflection. When he arrived at his room to finally get some sleep, he took a moment to write down the result of his reflections. He wrote:

> It was dark when I arrived at the great metropolis of the world; what a scene does this city exhibit to a contemplative mind, its busy thoroughfares tell us of its teeming population, the numerous and splendid equipages remind us of its wealth, and the long line of shops dazzling the eye with the brilliancy and costliness of their contents exhibit to us a striking illustration of its trade, but all wears the aspect of intense selfishness, Money! Money! Wealth! Wealth! is to be got at all hazards, the God Mammon is to be bowed down to and worshipped.[1]

The young man described a city that was overly crowded, luxurious, always busy, and, more importantly, he described it as a place where intense

1 Frankland's Diary [JBP, JRL, 1/3, page 4].

selfishness and egotism reigned supreme. He conjured an image of a city that would be able to fully consume a man with a 'contemplative mind' like himself and as a place where vices of avarice and greed preyed on the weak-willed. London, in other words, was a dangerous place for those that were unable to withstand the threat of vice. His reflection on these matters in his diary suggests that the young man himself was on his guard against 'the God Mammon' and the vices of avarice and selfishness. It was only mindful reflection that made him alert to the dangers of his situation.

The name of the young man was Edward Frankland and in 1848 he was well on his way to becoming a well-known chemist. He had studied with the famous chemist Robert Bunsen in Marburg (and he would return there within a year to pursue his PhD), worked as an assistant to rising star Dr. Lyon Playfair (1818-1898) (who had studied under the renowned Justus von Liebig and was one of his adepts in London), and was at the time of writing a teacher of science at Queenwood College in Hampshire, a Quaker college that offered scientific training to young people. Frankland taught chemistry at Queenwood, and his good friend John Tyndall (whose acquaintance we have made in the previous chapter) taught physics and mathematics. The many suitcases filled with chemicals and apparatus that accompanied Frankland at the docks of London were intended for his classes in Queenwood.

In January 1848, when Frankland reflected on the metropolis in such gloomy terms, describing the city as a den of vice, he had already seen quite a bit of both Britain and the Continent. He had grown up in Lancaster, worked in London and Hampshire, and had travelled abroad to France and Germany. Apparently though, London still presented a scene worth reflecting on in his diary. In fact, many of his other diary entries are quite straightforward, not nearly as poetic and melancholic as his description of the metropolis, and often dealing with the more technical details of his teaching and scientific work. Why would Frankland reserve time and effort for a description of London? And why would he describe

the metropolis in such dark terms, presenting it as a home to vices such as avarice and selfishness? I would argue that Frankland recognised the dangers of London, and wrote in his diary mainly in an effort to remind himself of them and to withstand the perils posed by the city.

Frankland's gloomy words were hardly original. His description of London was reflective of broader Victorian attitudes on the metropolis. In describing the city as a place of greed, egotism, overpopulation, sensation and distraction, Frankland was reiterating contemporary attitudes towards urban life in general, and London in particular. Mike Huggins, in his study on Victorian attitudes towards vice, shows that London had long been envisioned as an archetypical den of vice in the English imagination, an image cultivated by novelists, moral reformers and political and religious commentators alike.[2] Cities were imagined as:

> Places of moral danger, especially to the young. They could be represented as hedonistic and privatized areas of vice, adventure and pleasure, far from the prying eyes of staid church congregations and stern employers or the moral constraints of parents, relations and neighbours.[3]

As this suggests, the overcrowdedness of the city, its many distractions, and the lack of social control were envisioned to be sources of vicious and demoralising behaviour.[4] London in particular was a source of vice, as it was imagined to be the archetypical and ultimate city.[5]

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2 Huggins, *Vice and the Victorian*s, 4, 33-34, 41; already in early modern times, London was seen as a source of vice, see: Amanda Bailey and Roze Hentschell (eds.), *Masculinity and the Metropolis of Vice, 1550–1650* (New York: Palgrave Macmillan, 2010).

3 Huggins, *Vice and the Victorians,* 41.

4 See also: Houghton, *The Victorian Frame of Mind,* 79, 365-367; for a more general account of all the distractions London had to offer, see: Richard Altick, *The Shows of London* (Cambridge, Mass.: Belknap Press of Harvard University Press, 1978).

5 Huggins, *Vice and the Victorians*, 34.

And there he stood, the young Frankland, in the midst of this 'citadel of vice'.[6] Luckily, he was armed with a 'contemplative mind' and his diary-entry shows that Frankland was mindful of vice, and sought to avoid it. To understand how real the danger must have felt for the young Frankland, and why he portrayed London in such a way, we need to go back to his own moral education. Where did Frankland learn that London was such a dangerous place? And where was he impressed with the idea that avarice, selfishness and egotism were moral dangers for a young chemist like himself?

Let me briefly leave Frankland in London, dangerous as that may be, and return to the main theme of this dissertation. In my introduction, I have suggested that Victorians and Edwardians had two reasons for being so preoccupied with the category of vice. In chapter 1, I have argued that the first reason is that there was a broad consensus among scholars about that their pursuits were threatened by vices: the language of vice offered a common tongue to learned men with which they could speak about matters of scientific selfhood.[7] Victorian and Edwardian writers of scholarly obituaries identified six dangers (uselessness, enthusiasm, prejudice, money, fame, distraction) and offered two remedies (balance and a love of science). I have also argued that memory culture was meant to instruct readers by offering thick descriptions of scholarly lives. But instruction did not start or stop with academic memory culture. In this chapter, I will continue this argument by focusing on the process of moral instruction and academic socialisation. Where and how did Victorians and Edwardians learn that their pursuits were constantly threatened by vices? And how did they learn how to deal with these threats?

Frankland's case shows that even at a relatively young age (he

6 Ibid.

7 I touched upon the second reason for the importance of the category of vice in British scholarship – disagreement about the definition of 'good' science – in the previous chapter, but will expand on that point in chapters 3 and 4 in more detail.

was 23 when he wrote about the dangers of London) the Victorians were imbued with the importance of virtue and habits of reflection for dealing with dangers of vice and temptation. This suggests that the moral instruction of prospective scholars was in fact a very generic process that started during an individual's youth, and was not necessarily reserved for those who specifically sought a scientific career. It is to this relatively generic process of moral instruction that I will turn now. How precisely was Frankland warned about the dangers and vices of London, and how did he learn how to cope with them? What other themes were present in his early moral instruction? And what was the relation between Frankland's general upbringing and his specific academic socialisation?

London and distraction

Already in his early childhood, Frankland was imbued with the image of London as the locus of vice. Major actors in his early moral instruction were of course his parents. Margaret Frankland and William Helm were primarily responsible for his early education at home and for the choice of the schools to which Frankland was sent.[8] During the late 1820s and early 1830s, the family was quite mobile and relocated to and from several villages and towns in Lancashire and around Manchester, but finally settled in Lancaster itself.[9] For this reason, Frankland was educated at many different schools. He preferred James Willasey's scientifically oriented 'Cable Street' school in Lancaster (more about Willasey later), but his parents were bent on sending him to the Lancaster Free Grammar School, where he could learn Latin, a language he came to despise deeply.[10] His parents, moreover, made sure that there were several instructive children's books available and Frankland would later reminisce kindly about his mother's effort to answer

8 Frankland was an illegitimate son from an affair between Margaret Frankland and Edward Gorst: Edward Frankland to Francis Galton, 12 April 1874, copyletter [EFP, JRL, 11/958].

9 Colin Russell, *Lancastrian Chemist: The Early Years of Sir Edward Frankland* (Milton Keynes and Philadelphia: Open University Press, 1986) 37-55.

10 M.N. West and S.J. Colenso (eds.), *Sketches from the Life of Sir Edward Frankland* (London: Spottiswoode & Co., 1902) 11-13.

all of his youthful questions, while his stepfather taught him more practical skills such as woodworking and tool handling.[11]

Especially relevant was a children's book written by Thomas Day (1748-1789), *The History of Sandford and Merton*. The book was first published in 1783, but went through numerous editions during the nineteenth century.[12] In his autobiographical sketches (later compiled by his two daughters), Frankland reminisced fondly about the book, claiming that reading it as a child gave him his first 'impetus towards observation as distinguished from hearsay'.[13] Moreover, Frankland owned not one, but three copies of the book, all three bound in calf leather (which was quite an expensive indulgence), and we also know that Frankland read extensively from the book to his own daughters Maggie and Sophie, signifying the importance he attached to it as a tool for moral instruction.[14]

In *Sandford and Merton*, Thomas Day tells the story of Tommy Merton, a young boy (with whom the youthful readers were meant to identify) on his way to adulthood. This civilisation process was guided by a good mentor, Mr. Barlow, and a virtuous friend, Harry Sandford. It is essentially a moral tale, interspersed with short moral stories filled with commonplaces and speeches by older and wiser mentors. It is therefore a very rich source from which to distil some of the features of the early Victorian moral universe as they would have appeared to young Frankland.[15]

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11 Frankland referred to his mother as having 'a very retentive memory and vigourous mind': Edward Frankland to Francis Galton, 12 April 1874, copyletter [EFP, JRL, 11/958]. She was also quite given to beating him with a birch rod: West and Colenso, *Sketches*, 5.

12 Thomas Day, *The History of Sandford and Merton* (Chiswick: C. and C. Whittingham, 1828). I refer to the 1828 edition of the book. The 1828 edition has only minor revisions and is one of the many versions of the book that circulated in nineteenth-century Britain.

13 West and Colenso, *Sketches*, 1-4.

14 Russell, *Lancastrian Chemist,* 63-64.

15 A study analysing *Sandford and Merton* in more detail is: Phyllis Gila Reinstein, 'Alice in Context: A Study of Children's Literature and the Dominant Culture in the Eighteenth-Century and Nineteenth-Century' (PhD-dissertation Yale University, ProQuest Dissertations Publishing, 1972).

To return to the topos of London in Frankland's moral instruction, *Sandford and Merton* imagined cities, and the metropolis in particular, to be places from which vices and temptations emanated. Throughout the book, bustling cities were portrayed as places of 'violence and treachery', where 'city-prejudices' were acquired, and contrasted to the more peaceful countryside, where virtue was allowed to grow and companionship and kinship held vices at bay.[16] The Scots, in a lengthy aside, were praised for their 'warmth of . . . affection', and their minds were imagined to be 'untainted by the example of their more luxurious neighbours'.[17] As a boy, Frankland had already learned that cities like London were places of vice that should be distrusted, while the rural landscape of Lancaster, a place he would leave behind for good, was considered virtuous. Would Frankland have thought of his favourite book when he stood in London at night, and reflected so gloomfully on the nature of the city?

Victorian moral instruction relied heavily on the kind of *indirect* moral instruction exemplified by *Sandford and Merton*. Practitioners of this form of moral instruction stressed the importance of role models and moral exemplars.[18] Samuel Smiles' biographical work on self-made scientific men and their exemplary character is a clear example, and so is the whole array of Victorian's children's literature providing images of heroes and villains, the former clearly designed for emulation.[19] This indirect moral instruction was commonly deemed more effective, because Victorians believed that

16 Thomas Day, *The History of Sandford and Merton*, 102, 36.
17 Ibid. 148, 118.
18 Roberts, 'Character in the mind', 193-196. Paul Elliott & Stephen Daniels, 'Pestalozzianism, natural history and scientific education in nineteenth-century England: the Pestalozzian Institution at Worksop, Nottinghamshire', *History of Education* 34:3 (2005) 295-313.
19 Peter Merchant, '"Fresh Instruction o'er the Mind": Exploit and Example in Victorian Fiction', *Children's Literature in Education* 20:1 (1989) 9-24; Jeffrey Richards, 'Spreading the Gospel of Self-Help: G.A. Henty and Samuel Smiles', *Journal of Popular Culture* 16:2 (1982) 52-65; J.F.C. Harrison, 'The Victorian Gospel of Success', *Victorian Studies* 1:2 (1957) 155-164; Anne Secord, '"Be what you would seem to be": Samuel Smiles, Thomas Edward, and the Making of a Working-Class Scientific Hero', *Science in Context* 16 (2003) 147-173.

pupils were naturally more interested in moral tales than in direct lessons, and, more importantly, that indirect instruction was more prone to shape the character of a pupil.[20] The image of London in Victorian culture was an image of danger, vice, and moral degradation, and *Sandford and Merton* was probably one of the many indirect sources that conveyed this image to the young Frankland.

Nonetheless, there were also more *direct* forms of instruction. These included corporal punishment, discipline, the awarding of prizes to exemplary pupils, and the imparting of direct moral lessons.[21] Especially Frankland's early teachers often used such direct forms of moral instruction, mostly in the form of short pieces of advice, aphorisms and other shorthands. The image of London as a place of vice was a recurring topos in their teachings.

James Willasey, the schoolmaster of a school at Cable Street in Lancaster that Frankland attended for a few years, was a key player in Frankland's moral education. Frankland even credited him with awakening his own interest in nature and remained in touch with him until Willasey's death in 1875.[22] One important function of Willasey in Frankland's instruction was his impartment of moral lessons. Like *Sandford and Merton*, Willasey warned Frankland about the big city. In his *Hints on Education,* Willasey reflected briefly on the dangers of the city to the education of Britain's youth. He argued that without educational reform, Britain's youth would fall prey to the 'slavery of ignorance and vice'.[23] Without a combined effort by clergy and schoolmaster, urban children would be 'parading the

20 Roberts, 'Character in the Mind', 193.

21 For corporal punishment (and its ineffectiveness), see: Jacob Middleton, 'The Experience of Corporal Punishment in Schools 1890–1940', *History of Education* 37:2 (2008) 253-275.

22 Willasey even left his belongings to Frankland, which included an engraved seal for a watch, which Frankland would wear on his own watch ever since, to keep Willasey close to his heart: West and Colenso, *Sketches*, 10.

23 James Willasey, *Hints on Education* (London: Simpkin, Marshall and Co., 1852) 24.

streets, and strolling idly about the suburbs', and becoming prey to vice.[24] In other passages, the city was also explicitly linked to vice, idleness, ignorance and moral degradation, and cities were associated quite directly with 'vagrant or mendicant children'.[25] The city, in Willasey's reading of it, was a place of barbarism, where vices reigned if civilisation and education did not prevail.

Willasey reserved an important role for teachers in bringing civilisation to the British youth:

> Society would undoubtedly retrograde, and gradually fall back into barbarism without them; by their patient endurance in teaching the young, repressing the buoyancy of their spirits, which would lead them astray, and instilling betimes into their minds useful maxims for self governance in the world, they effectually prevent retrogression, and ensure progressive advance in civilization.[26]

Teachers, Willasey reflected on his own role, were to be a counterweight to the forces of vice and moral retrogression, and they needed to instil the youth with the right 'maxims for self governance' in order to stop the tide of barbarism. As we shall see later on, Willasey imparted those maxims of self-help to Frankland as well.

Also influential in the shaping of young Frankland's attitudes was the Johnson family. The Johnsons (Christopher Sr., Christopher Jr. and James) were physicians and provided all kinds of scientific services in Frankland's Lancaster of the 1830s and 40s, with a view to improving the circumstances, and the moral and intellectual level of the working classes in Lancaster.[27] They, for instance, established a small cottage laboratory in

24 Ibid. 23.
25 Ibid. 16.
26 Ibid. 17.
27 Although the perceived audience for such efforts of popular education was working men, they often drew a distinctively middle class audience: Jonathan Topham, 'Science and popular education in the 1830s: the role of the *Bridgewater Treatises*', *British Journal for the History of Science* 25:4 (1992) 397-430, 398-399.

Lancaster, in which (very crude and basic) chemical experiments could be performed, and they offered demonstrations of simple experiments and lent out instruments.[28] Moreover, they organised and performed lectures in the Lancaster Mechanics' Institute.[29] Finally, the Johnsons offered Frankland a way out of Lancaster and a way into a chemical career: they used their contacts in London to land Frankland a job as lecture assistant to the renowned chemist Lyon Playfair at the Putney College for Civil Engineering.[30] Frankland left for London in 1845.

Interestingly, the same person arranging Frankland's job in London and helping him on his path to becoming a chemist, Christopher Johnson Sr., also cautioned him about the metropolis. In a letter to Frankland just months after Frankland had left for the metropolis, Johnson issued a warning to the ambitious young chemist. He wrote:

> You must work away steadily in the Laboratory and make constant notes of every thing you do and see. In a great place like London there will always be occurring sights to see and take you from your studies unless you are very resolute and conscientious. Your future prosperity will be very materially influenced by the way you employ your time.[31]

The letter is very telling. Firstly, it identified London as a place of distraction, which presented a clear danger to Frankland's ambitions as a chemist and his future chances of a career. Secondly, Johnson offered clear-cut advice

28 Colin Russell, *Edward Frankland: Chemistry, Controversy and Conspiracy in Victorian England* (Cambridge: Cambridge University Press, 2003) 12-13.

29 For an interpretation of mechanics' institutes in nineteenth-century Britain as centres of social control over the lower classes, see: Steven Shapin and Barry Barnes, 'Science, Nature and Control: Interpreting Mechanics' Institutes', *Social Studies of Science* 7 (1977) 31-74; another view, stressing the idiosyncrasy of local mechanics' institutes, and their goals of scientific instruction rather than social control, see: Topham, 'Science and popular education', 405-419.

30 They wrote to some of their influential contacts in London: Russell, *Edward Frankland*, 12, 21.

31 Christopher Johnson to Edward Frankland, 17 October 1845 [EFP, JRL, 38/3469].

on how to deal with the seductions of London: the cultivation of virtues such as resoluteness and conscientiousness, and the habits of hard work and constant note taking.

Although it comes across as a commonplace, this was a piece of direct moral advice that was sure to appeal to Frankland's own dispositions at the time, having been raised in an environment where such commonplaces had been repeated over and over again, directly and indirectly, in the teaching at the schools he attended and in the children's literature he had read. The centrality of habits and virtues to overcome vices and temptations, moreover, indicates that the theories of self-help and self-improvement that would cause such a furore over the course of the century were already well entrenched in early Victorian practices of education, as has been suggested by various scholars.[32] Moreover, those visions of London as a place of vice and moral degradation, where one could easily be tempted and distracted from things that mattered, were confirmed in reality by the fate of some Lancashire men that Frankland knew personally through his internship to a local druggist, Stephen Ross. One died, 'very young, soon after he came to London, from illness brought on by indulgence in London dissipations', while another 'committed some act of peculation in London'.[33]

Both indirect sources of moral instruction, such as novels, children's books, and sermons, and direct experiences such as letters from mentors and anecdotes of unfortunate men who fell for the vices of London, impressed Frankland with the strong conviction that cities, as opposed to the rural and virtuous countryside, were places of vice, and that London, as the archetypical and ultimate city, was the most dangerous of all. Luckily, he knew just what to do. His moral instruction had not only helped him to identify the dangers of the city, it had also taught him how to deal with these dangers. He had to employ the appropriate habits of hard

32 Travers, 'Samuel Smiles'; R.J. Morris, 'Samuel Smiles and the Genesis of *Self-Help*; The Retreat to a Petit Bourgeois Utopia', *Historical Journal* 24:1 (1981) 89-109.

33 West and Colenso, *Sketches*, 23.

work and conscientious note taking, practice virtues of laboriousness and resoluteness, and focus himself on things that mattered, like science.

Let us return then, to the 23-year-old Frankland, who was writing in his diary after arriving in London late at night. What might seem to simply be another commonplace description of dark and dangerous London was in reality an exercise in self-control and a performance of virtuousness.[34] In describing London as a locus of vice, distraction, avarice and intense selfishness, and by presenting himself as a 'contemplative mind', detached from these sources of moral degradation, Frankland in effect avoided these temptations. Moreover, writing in his diary was exactly the kind of habit that Johnson wanted him to acquire when he advised him to 'take constant notes of every thing you do and see'. Through writing, then, Frankland reminded himself of the virtuous lessons of his Lancashire upbringing.

What does this episode from Frankland's moral instruction tell us? First of all, this episode reminds of the themes I have discussed in the previous chapter on academic memory culture. Obituary writers distinguished between six types of dangers and offered two remedies. In Frankland's moral instruction we can already recognise these themes, in a somewhat different form. Frankland was warned specifically for the vices of avarice, prejudice (or 'city-prejudice') and distraction, and, interestingly, was also offered the two remedies that academic memory culture offered: balance and a love of truth. Ross' note is a case in point: he warned for the dangers of city-life and immediately prescribed two virtues that would counter these wicked influences. Likewise, Willasey's reflections on education show that he was afraid that young people would be 'led astray'

34 Diary writing has been fruitfully analysed by historians as a process of self-fashioning, self-disciplining, and even self-creation. See for an overview of perspectives on diary writing and the self: Peter Heehs, *Writing the Self. Diaries, Memoirs, and the History of the Self* (New York: Bloomsbury Academic, 2013) 6-9. In fact, Frankland's dearest friend John Tyndall kept a journal himself, which was a practice in self-denial and self-development, according to Ian Hesketh's convincing analysis: Ian Hesketh, 'Technologies of the Scientific Self: John Tyndall and His Journal', *Isis* 110:3 (2019) 460-482.

by the 'buoyancy' of their own desires, signifying that their desires had to be disciplined. Nonetheless, the instruction that Frankland received was less specific than the instruction offered in academic memory culture: it was aimed at becoming a good person, rather than a good scholar.

As historiography shows and Frankland's case illustrates, Victorian educators imagined life to be a constant struggle against vice.[35] A lot was at stake: the only alternative to civilisation was barbarism and moral degradation, and, therefore, it was paramount that Victorians learned as early as possible how to behave virtuously. Frankland's case shows that scholars learned how to withstand temptations and vices well before they were socialised into an academic environment. During a more generic process of moral instruction that started back in their early childhood, Victorians were inculcated with a fundamental set of moral virtues, upon which later university teachers, academic memory culture, and other sources of learned instruction could build.

Historiography: moral instruction and academic socialisation

This last claim is quite a bold one, with considerable consequences for how we understand the moral economy of Victorian scholarship and the processes of socialisation into this economy.[36] I have argued in the previous chapter that virtues and vices were central to how Victorians imagined the pursuit of knowledge and their role in it: scholarship was essentially a matter of withstanding the threats that beset the scientific self through the practice of virtues and the disciplining of desires. However, Frankland's case shows us that being socialised into this moral economy was not essentially a scholarly process, but rather a broader cultural process of moral instruction that started well before prospective students even entered the institutions associated with scholarship. Specific academic instruction built on that

35 I will discuss this historiography in the next section.

36 For an exploration of the concept of moral economy in science, see: Daston, 'The Moral Economy of Science', 24

process.

There is a huge number of studies focusing on processes of academic socialisation, university education, teacher-student relationships, and ideals of university education, but the majority of those studies focus on the period in which prospective academics were formally educated and socialised into academic circles.[37] A somewhat smaller group of studies focuses on socialisation into the norms, attitudes and ideals of academic selfhood.[38] Both Kasper Eskildsen and Jo Tollebeek have argued, for example, that a university education was often a very intimate affair, designed not only to teach pupils a scientific method, but also to shape their character and to initiate them into the moral economy of science.[39] However, there is no account, other than biographical studies of individual scientists, that probes the period preceding such formal socialisations into

37 Good examples for the British context are: Rothblatt, *The Revolution of the Dons*; Reba Soffer, *Discipline and Power;* Engel, *From Clergyman to Don*; Charles Newman, *The Evolution of Medical Education in the Nineteenth Century* (Oxford: Oxford University Press, 1957); Robert Bud and Gerrylynn Roberts, *Science versus Practice: Chemistry in Victorian Britain* (Manchester: Manchester University Press, 1984); Slee, *Learning and a Liberal Education.*

38 Warwick, *Masters of Theory;* Thomas Bonner, *Becoming a Physician. Medical Education in Britain, France, Germany, and the United States, 1750-1945* (Oxford: Oxford University Press, 1995), especially chapters 7-10 and 12; for the German context, see: Kathryn Olesko, *Physics as a Calling: Discipline and Practice in the Königsberg Seminar for Physics* (Ithaca, NY: Cornell University Press, 1991); and Frederick L. Holmes, 'The Complementarity of Teaching and Research in Liebig's Laboratory', in Kathryn Olesko (ed.) *Science in Germany: The Intersection of Institutional and Intellectual Issues*, Osiris 5 (1989) 121-164. For more theoretical and methodological accounts, see: David Kaiser (ed.), *Pedagogy and the Practice of Science. Historical and Contemporary Perspectives* (London: MIT Press, 2005), esp. the introduction, chapter 4, and the conclusion; Kathryn Olesko, 'Science Pedagogy as a Category of Historical Analysis: Past, Present, and Future', *Science & Education* 15:7 (2006) 863-880; and Kathryn Olesko, 'Tacit Knowledge and School Formation', *Osiris* 8 (1993) 16-29.

39 Eskildsen, 'Private Übungen und verkörpertes Wissen', 160-161; Jo Tollebeek, *Fredericq & Zonen: Een antropologie van de moderne geschiedwetenschap* (Amsterdam: Bert Bakker, 2008), 74–78.

academic norms, attitudes and ideals.[40]

This is all the more remarkable, since some of the studies focusing on academic socialisation explicitly call for a 'culturally- and contextually oriented history of science pedagogy', that takes into account the 'importance of silent and steady traditions' to 'understand reproducible action' as well as 'reasons for its reproducibility'.[41] David Kaiser and Andrew Warwick, for example, call for studies that place 'science and scientific education in a broader cultural context', while at the same time analysing 'the cultural values of science itself' and their transmission.[42] They argue that a study of scientific education cannot do without attention to broader cultural contexts. It is therefore curious that most studies of science pedagogy neglect the period of broader cultural socialisation, taking place well before youngsters entered the university. This also raises the question what exactly was learned during practices of academic socialisation, given the fact that a broader moral instruction had already taken place. I will argue later that socialisation into the moral economy of science was built on these more generic processes of socialisation into ambient Victorian culture.[43]

The broader process of Victorian moral instruction is amply

40 A thought-provoking study focusing on the period *after* formal socialisation is: Katharina Manteufel, 'A Three-Story House: Adolf von Harnack and Practices of Academic Mentoring around 1900', *History of the Humanities* 1:2 (2016) 355-370. There are numerous biographies of Victorian scholars, but touching upon issues of selfhood and the moral dimensions of scientific practices are: Endersby, *Imperial Nature*; Roland Jackson, *The Ascent of John Tyndall. Victorian Scientist, Mountaineer, and Public Intellectual* (Oxford: Oxford University Press, 2018); Jones, *Intellect and Character in Victorian England.*

41 Olesko, 'Science Pedagogy', 877.

42 David Kaiser and Andrew Warwick, 'Conclusion. Kuhn, Foucault, and the Power of Pedagogy', in: Kaiser (ed.), *Pedagogy and the Practice of Science*, 393-409, 405-406.

43 Lorraine Daston, in her article on moral economies in science, also reflects on the relationship between moral economies of science and ambient culture at large. She argues that 'moral economies of science derive both their forms and their emotional force from the culture in which they are embedded', which underlines the point I make here. See: Daston, 'The Moral Economy of Science', 24.

covered in literature. I have drawn attention to this literature on moral instruction in the introduction to this dissertation, but I will repeat some of the points here, with an emphasis on instruction, because moral instruction cannot be discussed without expanding on the work of Stefan Collini on the notion of character. 'Character', Collini argues, was a notion that 'enjoyed a prominence in the political thought of the Victorian period that it had certainly not known before.'[44] Collini shows that the importance of a good character, taken as 'the sum of the mental and moral qualities' of a person, was envisioned to be paramount to the flourishing of the British Empire, the British people, and their ideals of freedom and future progress.[45] Traits such as 'self-restraint, perseverance, strenuous effort, courage in the face of adversity' were deemed central to a good character, as mentioned earlier in the introduction.[46] Instilling these traits –shaping character– was, however, not straightforward. With reference to John Stuart Mill, Collini shows that the notion of character was problematic: on the one hand, individuals were expected to be authors of their own fate, shaping their own circumstances, which in turn shaped their character, while on the other hand, there were constant references to circumstances that effectively denied individual agency in these matters. Nonetheless, the notion of 'character', as Collini states, 'represented a prize worth fighting for' and was central to the efforts of many public educators and political thinkers.[47]

Crucially, and this is where I go beyond the matters I have already touched upon in the introduction, Collini argues that good character consisted of good habits that were preferably cultivated during an individual's youth; forming and cultivating the appropriate habits in youngsters was therefore fundamental to their later moral conduct in life.[48]

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44 Collini, 'The Idea of 'Character'', 31.

45 Ibid. 33, 41.

46 Ibid. 36; these traits were distinctively masculine, and an ideal catalogue of virtues for women would list very different traits. See also: Collini, *Public Moralists.*

47 Ibid.

48 Ibid. 34-36. This point is also made in: Roberts, 'Character in the mind'.

On the other hand, if bad habits were developed during one's youth, the consequences would be dire: bad habits led irrevocably to the corruption of the will, falling for temptation, and a vicious character.[49] Collini does not go as far as to say that an individual's childhood formed a fixed character for life, but does emphasise the fact that Victorians considered 'a good training' of character and the will in early years crucial to the formation of good habits.[50] Nathan Roberts adds the following:

> To educate for character was, in the eyes of late Victorians and Edwardians, not merely the priming of young gentlemen for imperial duty, but the process by which the young were instilled with those qualities of citizenship that would guarantee the vitality and efficiency of the social organism.[51]

This shaping of the characters of young gentlemen, Roberts shows, became even more pressing when anxieties about decline and international competition started to play a bigger role in the latter half of the nineteenth century.[52]

Although the shaping of character was not exclusively a childhood affair, Victorian thinkers, the above suggests, did consider this period as crucial to moral development. Moral progress depended on the virtuous habits of the populace and good habits, Victorians were convinced, were most successfully inculcated during someone's youth. Moral instruction, in this view, was a civilisation process that lifted a young boy or girl from their depravation into civilised society.[53] This view is underlined when the

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49 Collini writes that only a strong will could best 'various forms of temptation', while Roberts shows that the Victorians believed that a lack of will or sound habits could lead to vices of untrustworthiness, ineffectiveness and narrowness of mind. Collini, 'Character', 47; Roberts, 'Character in the mind', 189.

50 Collini, 'Character', 36.

51 Roberts, 'Character in the mind', 178

52 Ibid. 197.

53 The perceived end goals of this civilisation process, however, were divided along gendered lines. See: Joan Burstyn, *Victorian Education and the Ideal of Womanhood* (London: Croom Helm, 1980).

views of one of the great Victorian moral educators are taken into account; the views of Samuel Smiles (1812-1904).[54] Smiles was the prolific author of *Self-Help* (1859), a best-selling book in which he presented his readers with all kinds of moral exemplars, ranging from successful businessmen to hardworking scholars, with a view to teaching his audience that the virtues of self-discipline, conscientiousness and perseverance were crucial both for the successes of the individual and the well-being of the state.[55] Smiles further unpacked (and repeated) his views on character in a later book, aptly named *Character* (1871), but the central tenets of *Self-Help* remain intact.[56]

Smiles' views on character, morality, and education, however, were reflective of broader cultural trends: 'he did no more than restate in attractive form a doctrine that had already begun to appear elsewhere' and was building on a 'complex set of ideals and values that had already been worked out in, and expressed by, small groups of improvers for at least two generations.'[57] So although Smiles published his *Self-Help* late in the 1850s, the ideas he popularised were already widespread in the 1830s and 1840s, at least among the middle classes and especially in the *petite bourgeoisie*.[58] Edward Frankland himself grew up as a member of this 'petty bourgeoisie' in Lancaster and was thus very much exposed to the efforts of moral reformers; some of Frankland's teachers even identified themselves as 'moral reformers' and were engaged in shaping the ideas and practices that Smiles would later codify. As such, much of the moral instruction that

54 See note 19 in this chapter.

55 One of the best general introductions to Smiles' *Self-Help* is Peter W. Sinnema's introduction to the *Oxford World Classic* version of the book: Samuel Smiles, *Self-Help. With Illustrations of Character, Conduct, and Perseverance* (Oxford: Oxford University Press, 2002).

56 Samuel Smiles, *Character. A Book of Noble Characteristics* (London: John Murray, 1871).

57 Harrison, 'The Victorian Gospel of Success', 156; Anne Baldz Rodrick, 'The Importance of Being an Earnest Improver: Class, Caste, and Self-Help in Mid-Victorian England', *Victorian Literature and Culture* 29:1 (2001) 39-50, 39.

58 Morris, 'Samuel Smiles and the Genesis of Self-Help'.

I will discuss here had distinctive lower middle-class features.[59]

Especially interesting for my purpose here is Smiles' educational timetable (loosely based on Rousseau's timetable), in which childhood was presented as the essential period in which moral education needed to take place, and adulthood was designated as the appropriate time for intellectual self-education.[60] These stages, moreover, were hierarchical: there was no intellectual self-education possible if moral instruction was lacking. Morality, in other words, preceded knowledge.

The enormous importance that Smiles attached to moral childhood instruction in his developmental scheme was embedded in the broader Victorian belief that a child coming of age 'worked through a progression from savagery to civilisation analogous to that of the white European races.'[61] Moral instruction and the acquisition of good habits, in this view, were essentially civilisation processes, which had to be guided by teachers: 'the young were led from external control to the self-guidance and self-scrutiny that marked the fully developed citizen.'[62]

So although the many studies on character, habit, and virtue in Victorian intellectual and political thought teach us that a crucial role was reserved for the moral instruction of the young, it is surprising that historians of science and the humanities have taken up the concepts of character, virtue and habit, but have not incorporated the developmental model in which these notions were embedded. It was precisely one's childhood that prepared the individual for a productive and virtuous adulthood. Academic socialisation was built upon a more fundamental process of moral instruction.

59 Self-education and self-discipline worked differently for members of the working class, as Anne Secord has shown: Secord, '"Be what you would seem to be"'.

60 Travers, 'Samuel Smiles', 166-167.

61 Roberts, 'Character in the Mind', 191.

62 Ibid. Roberts also shows how this developmental model was naturalised over the course of the century, as evolutionism provided new concepts for discussing these matters.

But how exactly were these virtuous habits cultivated? What upkeep did it need, and how did Victorians ensure that they did not forget their youthful moral instruction in later years? Frankland's case has already shown that both direct and indirect forms of instruction were employed, and that his moral instruction relied on the creation of powerful images (London as the metropolis of vice, the city as a source of temptation, or the countryside as virtuous) during his childhood. An exploration of two other recurring themes in Frankland's moral instruction, avarice and selfishness, might shed some more light on the mechanisms of moral instruction in Victorian Britain and the relationship between generic processes of moral instruction and more specific scientific processes of academic socialisation. The vices of avarice and selfishness were imagined to be even more dangerous than the temptations of London, because they could strike anywhere and at any time. To withstand those vices, constant vigilance was needed.

Avarice

Let me start with avarice.[63] The greedy pursuit of money for money's sake and the devious exploits of the 'God Mammon' to which Frankland referred in his diary make up the first recurring theme in Frankland's moral instruction. Again, the dangers of moneymaking were instilled in him even at a very young age. His favourite book, *Sandford and Merton*, is full of references to the vices of greed and the temptations of wealth. As usual, the author relied on fables or metaphors to drive his point home.[64] One fable, telling the story of two brothers –Pizarro and Alonzo–, was meant to instil virtues of prudence and habits of frugality in its young readers.

When stranded on a desert island, the two brothers Pizarro and Alonzo each went their separate ways with their respective crews. Pizarro

63 I have shown in the previous chapter that moneymaking for money's sake was also a major theme in academic memory culture – scholars should love science over money.

64 Reinstein, *Alice in Context,* 35.

headed for the mountains of the island and started digging for gold, finding enormous amounts of it, but losing half his crew in the process due to hunger and thirst. Alonzo, on the other hand, had his men grow crops, which led to a bountiful harvest. When the famined Pizarro came back from the mountain and saw Alonzo's harvest, he asked for food. Alonzo refused him, arguing that Pizarro would have to pay, which the latter declined. Alonzo, giving in, then proceeded to lecture Pizarro (and the readers of the book): 'I saw the rash, impetuous desire you had of riches . . . you despised my prudence and industry, and imagined that nothing could be wanting to him that had once acquired wealth; but you have now learned that without that foresight and industry, all the gold you have brought with you would not have prevented you from perishing miserably.'[65] The moral of this fable is clear: those who desire money at the expense of everything else will eventually lose everything, whereas those who possessed virtues of prudence and industry will have all they need.

Besides the indirect moral influence that Thomas Day's book might have yielded, Frankland was also more directly instructed to eschew moneymaking. James Willasey's teaching was a case in point. Willasey, who sought to provide the youth with 'maxims for self governance in the world', explicitly offered such maxims to deal with the temptation of moneymaking. Frankland, in his personal archive, kept a sheet of paper (in an envelope on which was written: 'Mr. Willasey on Conduct') on which Willasey had written some of such maxims, in the form of aphorisms:

> It is not what we eat, but what we digest that makes us strong. It is not what we earn, but what we save that makes us rich. It is not what we read, but what we remember, that makes us learned. It is not what we profess, but what we practice, that makes us righteous.[66]

Especially the second aphorism, 'it is not what we earn, but what we save that makes us rich', is of interest here. At the very least, this aphorism can

65 Day, *Sandford and Merton,* 58.

66 Quotation by Willasey, date on envelope 12 July 1866 [EFP, JRL, 35/2917].

be interpreted as an advice to Frankland to behave frugally and to practice prudence; a virtuous habit that was also advised in Thomas Day's *Sandford and Merton*.

However, the most interesting thing about Willasey's aphorisms is that they were very mobile, in the sense that they could be applied to many situations besides the actual saving of money. As such, the aphorisms are akin to many other moral shorthands and proverbs. All are short, mnemonically robust, metaphorical and contextually mobile figures of speech; characteristics which make such shorthands an ideal *heuristic*, in the sense that they offer possibilities to deal with all kinds of problems of scientific selfhood.[67] Willasey's saying about saving and earning could easily apply to other situations and had a similar meaning to the other aphorisms: good character is shown through good conduct. In other words, Willasey provided Frankland with a mobile *habit* of thought (or a 'maxim of self governance', to use his own words), a way of dealing with complex situations in which matters of character were at stake.

Willasey's aphorisms were a clear example of generic and broad moral instruction. Willasey wanted to stimulate the performance of virtuous habits of thought in the young Frankland, and his aphorisms were not specifically meant to socialise Frankland into scientific circles, but rather into becoming a good citizen in general. They stressed the importance of virtues like prudence, laboriousness and truthfulness, the cultivation of which was also a major part of Willasey's curriculum at the school at Cable Street. Although science played a big role in his curriculum, this was because he envisioned scientific training to benefit a good character.[68] As such, Willasey's aphorisms were not only mobile and mnemonically powerful heuristics; they were also the carriers of more general ideas about self-help, and moral and national progress.

Frankland himself also regarded Willasey's aphorisms as pieces

67 Steven Shapin, 'Proverbial Economies', 735-743.
68 West and Colenso, *Sketches*, 6-10.

of general moral instruction and passed Willasey's lessons on to his own children and grandchildren. In 1896, Frankland received a letter from his daughter Sophie (who was then 41 years old and had four teenaged children), in which she asked for a copy of 'Mr. Willasey's excellent saying' for her scrapbook. The saying referred to was the quote of Willasey on conduct.[69] Willasey had been dead for 26 years, but his 'maxims of self governance' lived on in the next generation. Likewise, Frankland used to read from *Sandford and Merton* to his daughters in order to pass on the same moral habits he learned to cultivate in his youth.[70] His daughters did not pursue a scientific career, which supports the view that these lessons were part of generic moral instruction.

The temptation of money and the vice of avarice, however, also play a major role in discussions about scientific selfhood specifically. As I have argued in the previous chapter, Victorian academic memory culture was very much preoccupied with the danger of money: it constructed an image of moneymaking as a danger to knowledge production, because a desire for money would come at the expense of the love of truth. Frankland's moral education suggests that he learned how to deal with avarice already at a young age: he learned that prudence, habits of hard work and self-discipline were weapons against temptation. But some of his other teachers, who morally instructed Frankland when he was already on the track of a chemical career, gave more substance to this vice: they did not teach him that avarice was dangerous (he had already learned that), but they did tell him what the sources of avarice where in scientific situations. Moral instruction did not stop after childhood, but became more specific.

Let me explain by referencing the teaching of Christopher Johnson again. We have already seen that he cautioned Frankland for the dangers of the metropolis, and advised him to work hard, be conscientious and resolute, and not be distracted. In 1847, when Frankland had been in

69 Sophie Colenso *née* Frankland to Edward Frankland, 12 November 1896 [EFP, JRL, 14b/1408].

70 See note 12 in this chapter.

London for two years and had recently accepted a Professorship at the Royal Agricultural College in Cirencester, Johnson wrote again to congratulate his former pupil and, more importantly, to caution him for his chosen path.[71] He wrote:

> Let me earnestly caution you against too ready a credence to the assertions and presumptions of the Modern School of Agricultural Chemistry, and against the suicidal practice of hewing out large promises of profit or money, which Chemistry never will or can realise to the farmer.[72]

Johnson cautioned Frankland not to adhere too much to what he called the 'Modern School of Agricultural Chemistry', because of its 'suicidal practice' of promising money to farmers by means of chemical innovations. According to Johnson, this was a promise chemistry could not deliver. To understand what was at stake here, these allegations need to be contextualised.

The fear of modern agricultural chemistry and the false promise of profit echoed a larger anxiety concerning the promises of modern agricultural chemistry, especially since this chemical school was associated with the figure of Justus von Liebig, who was both admired and abhorred in Britain.[73] Liebig had pioneered the study of modern agricultural chemistry and had sought to relate the science of chemistry to the practice of farming.[74] Through Playfair, who had studied under Liebig, Frankland came under the influence of the latter.

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71 Frankland would decline the professorship eventually to make time for a longer stay at the labs of Bunsen in Marburg: Russell, *Edward Frankland*, 29.

72 Christopher Johnson to Edward Frankland, 9 April 1847 [EFP, JRL, 30/2431].

73 For the admiration of Liebig in chemical circles, see: Robert Hugh Kargon, *Science in Victorian Manchester: Enterprise and Expertise* (Baltimore: Johns Hopkins University Press, 1977) 101-108.

74 William H. Brock, *Justus von Liebig. The Chemical Gatekeeper* (Cambridge: Cambridge University Press, 1997), especially chapter six on 'Liebig and the Farmers' is of interest for the debate on agricultural chemistry.

There were two main reasons for the distrust of Liebig that Johnson's letter betrayed. First of all, Liebig was German and matters of chauvinism and national prejudice played a major role in the acceptance of German chemical theories.[75] Secondly, Liebig's new agricultural chemistry had made Liebig himself quite a wealthy man, a fact which to some commentators was at odds with his propagation of pure fundamental science.[76] Liebig's agricultural chemistry was therefore distrusted, as its practitioners were suspected to work for money rather than truth. Especially among British farmers, this view of Liebig persisted well into the latter half of the century.[77] Matters of virtue and vice were therefore also at stake: how should aspiring chemists reconcile their goals of fundamental science and disinterestedness with the very real possibilities of a lucrative career?[78] The subtext of Johnson's letter implied that Frankland should resist the temptation of modern agricultural chemistry, because of its association with avarice.

This is an interesting observation. Victorian moral instruction (which advised to not pursue money for its own sake, and instead practice prudence and self-discipline) provided a moral basis upon which later processes of academic socialisation could build. Johnson could build on generic moral instruction by identifying the sources of the temptation of money in chemical pursuits specifically. The role of academic socialisation, as distinct from more generic moral instruction, then, was to lend shape to the moral universe of youngsters. They had already learned that vices such as avarice and temptations of money-making were to be resisted and that they could indeed be resisted by cultivating virtuous habits such as hard work and prudence, but academic socialisation taught the specific nature of

75 Rocke, 'Pride and Prejudice in Chemistry'.

76 The negative reception of Liebig's theories is covered less well in literature, but an example is: W.H. Brock, 'Liebigiana: Old and New Perspectives', *History of Science* 19:3 (1981) 201-218.

77 Lesley Kinsley, 'Guano, Science, and Victorian High Farming. An agro-ecological perspective', in: Wendy Parkins (ed.), *Victorian Sustainability in Literature and Culture* (New York: Routledge, 2018) chapter 7.

78 For the aspirations of the chemical community in Victorian Britain, see: Bud and Roberts, *Science versus Practice*.

such vices and temptations as far as scholars were concerned. For chemists, Johnson's example shows, Liebig's brand of modern agricultural chemistry was a source of temptation.

One of Frankland's later mentors, the famous chemist Robert Bunsen, engaged in the same kind of shaping of the moral universe of the young Frankland. He did so not through direct instruction, but by becoming a model of scientific selfhood, one that Frankland could emulate.[79] In academic memory culture, 'Bunsen' came to stand for a particular brand of chemistry that was said to be 'unalloyed by any attempt to make capital out of any application of his discoveries'.[80] As this last qualification suggests, the model that Bunsen was to become prescribed its followers to eschew moneymaking and applied chemistry, and to be dedicated to fundamental research.

Other sources unpack this view of Bunsen further:

> It was a fine trait in his character that he had no monetary ambition. He not only disliked anything savouring of money-making out of pure science, but he could not understand how a man professing to follow science could allow his attention to be thus diverted form pure research.[81]

Bunsen taught that pure science was the antidote against selfish moneymaking. The memory culture surrounding Bunsen continually stressed this antithesis between moneymaking through applied chemistry on the one hand, and pure science on the other. Bunsen was represented as someone with a 'constant and unselfish devotion'[82] to science, and as being

79 The role of such role-models or *personae* in academic socialisation has been explored in: Katharina Manteufel, 'A Three-Story House'.

80 Obituary of Robert Bunsen in Nature, written by Henry Enfield Roscoe, 31 August 1899 [HRP, JRL, 963, page 12]. For an account of how shorthands (like 'Bunsen') came to stand for specific ways of being a scholar, see: Paul, 'The Virtues of a Good Historian in Early Imperial Germany', 20-23.

81 Ibid.

82 Address to Professor Bunsen, 1892 [EFP, JRL, 13/1099].

a beacon of 'devotion and zeal' to his students.[83] As such, this model of being a chemist invited emulation, as one commentator reminisced: 'This literature is to scientific men like the lives of the saints to the pious. One reads with edification but with a feeling how difficult it is to tread in their footsteps or rise to their level.'[84]

Like Johnson, Bunsen was a role model in shaping the moral universe of the young Frankland by identifying a specific source of vice in science: applied chemistry that focused on making money out of one's fundamental discoveries. It bears repeating that Frankland had already been taught during his childhood that avarice was to be avoided and moneymaking for its own sake was a moral danger; Bunsen built upon this earlier instruction by identifying specific temptations for chemists. Moreover, since 'Bunsen' was a model constructed in academic memory culture, these concerns with applied chemistry actually echoed contemporary concerns and attitudes of academic chemists, who, in the period of Frankland's ascent to prominence, sought to establish dominance over practicing applied chemists in debates over the nature of chemistry and the form of the discipline.[85]

Interestingly, both Frankland's early moral instruction and the more scientific teachings of later mentors pointed to the same solutions for the dangers of avarice and moneymaking: the performance and cultivation of virtuous habits, such as hard work, prudence and self-discipline. Seen in this light, there was no radical divide between Bunsen's advice to steer clear of applied chemistry and Thomas Day's parable of the two brothers; the one brother selfishly threw everything away in the pursuit of wealth, while the other was prudent, industrious and conscientious, and was therefore not plagued by greed.

There are two points that I can make on the basis of this exploration

83 Obituary of Robert Bunsen in the *Yearbook of the Royal Society*, written by Henry Enfield Roscoe, 1900 [HRP, JRL, 963, page 19].
84 William Turner Thiselton-Dyer to Henry Enfield Roscoe, 13 May 1900 [HRP, JRL, 963, page 23].
85 Bud and Roberts, *Science versus Practice*, chapters 5 and 6.

of the theme of avarice in Frankland's moral instruction. First of all, the instruction Frankland received illustrates the various mechanisms by which moral instructors sought to instil lasting virtuous habits in youngsters. Indirect moral instruction, like that provided by Thomas Day, conjured powerful images of good and evil in the world: avarice and moneymaking for its own sake are wrong but tempting, while unselfish devotion and prudence are right. Also, more direct forms of moral instruction, like Willasey's culturally mobile 'maxims of self governance', provided heuristic habits of thought for dealing with the self-threatening dangers that were so powerfully identified in Victorian moral instruction. Such virtuous habits needed to be cultivated from an early age in order for moral instruction to be effective, and should ideally be performed throughout one's lifetime.

Secondly, this exploration of avarice as a theme in Frankland's moral instruction has shed some light on the relationship between broad Victorian moral instruction and processes of academic socialisation. I have argued that the latter built upon moral attitudes cultivated in the former. Frankland learned how to deal with avarice and the temptation of moneymaking during early moral instruction, and subsequent teachers identified the sources of vice and temptation in a chemical life specifically.

Selfishness and the civilisation process

Underlying both the moral instruction in dealing with avarice and the distractive dangers of London was a powerful discourse stressing the dangers of selfishness to Victorian morality. Selfishness played a pivotal role in Frankland's moral instruction as a danger to individual morality and national progress. Many of his mentors and exemplars refer to selfishness and egotism as vices and warn Frankland of the dangers of being too preoccupied with himself. As such, an exploration of selfishness as a trope in Frankland's moral instruction might yield insight into hierarchies of vice and temptation in the Victorian moral imagination, as well as into

Victorian thinking on the nature of the self.[86]

Authors such as Samuel Smiles and Thomas Day believed that human nature was not necessarily corrupted, but that it was prone to all kinds of vicious influences and therefore needed guidance. A decent moral education in a virtuous environment was the only route through which such bad influences could be negated and the fragile progress of civilisation could be effected.[87] Selfishness, in this view, was an acquired vice, and an unselfish devotion to a higher cause, such as nation, faith or science (or all three at once) could likewise be cultivated if the moral environment was virtuous. It is not farfetched to see the 'love of science' that academic memory culture prescribed as remedy against vices as a variation on this theme of devotion.

Day's *Sandford and Merton* offers insight into how fragile this civilisation process could be, how influential the moral environment was, and how selfishness was imagined to be at the root of a plethora of other vices. When the main character of the book, the boy Tommy, took leave of the influence of his mentor Mr. Barlow and was left to his own devices in the midst of other wealthy and fashionable children, the reader could witness his moral degradation first hand. Influenced by the wrong people, Tommy betrayed all the virtues and habits he had been taught: 'all the common virtues of life, such as industry, economy, punctuality in discharging our obligations, or keeping our word' were all betrayed.[88] Instead, Tommy could 'indulge all his caprices; give way to all his passions; be humoursome,

86 For a discussion of how different traditions of thinking about nature impacted the Victorian discourse on character, see: Nathan Roberts, 'Character in the mind', 180-185.

87 Smiles drew upon older eighteenth-century traditions that stressed harmonious human nature and the power of the environment to shape human sensibilities, and therefore he stressed the importance of removing barriers to the development of the self: Travers, 'Samuel Smiles', 174-175. Likewise, Day was partially influenced by Rousseau's theories about the importance of an educational environment: Reinstein, *Alice in Context*, 20-23.

88 Day, *Sandford and Merton,* 49.

haughty, unjust, and selfish to the extreme.'[89]

The book, which described the moral instruction of young Tommy and the disciplining of his virtues and habits, thus shows what could happen if this education was abandoned too early: very soon, pride and selfishness would return as the governing passions, spurred on by bad examples.[90] On other occasions, pride is described as a passion 'most fatal in effect and apt to desolate the world'[91], and responsible for 'ridiculous prejudices' and 'foolish distinctions'.[92] Throughout *Sandford and Merton*, the vices of pride, egotism and selfishness were discussed repeatedly. They were responsible for a whole array of other vices, such as avarice, and were primarily the result of a lack of discipline and wrong influences. This shows that Day attached great importance to the continuous cultivation of virtuous habits; if the civilisation process was interrupted and such habits were forgotten, the result could be moral degradation.

Luckily, Tommy returned under the influence of his mentor Mr. Barlow and his virtuous friend Harry. To stress once more that the moral environment of a youngster was crucial to the development of virtuous habits, Day concluded his *Sandford and Merton* with a telling conversation, in which Tommy said to his mentor and friend: 'you have taught me how much better it is to be useful than rich or fine: how much more amiable to be good than to be great. Should I ever be tempted to relapse, even an instant, into any of my former habits, I will return hither for instruction.'[93] The goals of moral instruction, in Day's view, were not selfishness, greatness or accumulation of wealth, but goodness and usefulness; goals that benefited not the individual but the collective.

89 Ibid. 50.

90 Day was very much inspired by Rousseau's *Emile*, and likewise presented fashionable and wealthy youngsters as wrong influences: Reinstein, *Alice in Context*, 19-21.

91 Day, *Sandford and Merton,* 13.

92 Ibid. 206.

93 Ibid. 212.

Similar attitudes towards egotism, selfishness and pride are found in other pieces of moral instruction that Frankland received. It was present, first of all, in Johnson's letter, warning him of the distractions and dangers of London and modern agricultural chemistry and pushing him to cultivate habits of self-control. Likewise, Bunsen's example emphasised his unselfishness, as opposed to the vices of moneymaking. Both Johnson and Bunsen claimed that the pursuit of higher goals, such as fundamental chemistry, was an antidote to selfishness and egotism.

Another example of such higher goals in Frankland's moral instruction was a letter full of advice from the druggist Stephen Ross to whom Frankland was apprenticed during his teenage years in Lancaster, who wrote to Frankland in 1846:

> But in the pursuit of that knowledge which pertains only to this life and its concerns never forget nor neglect that knowledge which may be profitable unto life clerical – and the more your heart is influenced by this last the more quiet and unencumbered will your mind be and more equal to the exertion and selfdenial requested in looking to attain the former.[94]

This quote needs some unpacking. First of all, Ross introduced a second form of knowledge that he found more important than scientific knowledge: religious truth. For Ross, the pursuit of science should not lead to neglect or forgetfulness of religious duty and piety. Ross himself was an evangelical and was very active in the religious scene in Lancaster; his words of advice were very common in the Lancaster of Frankland's youth.[95]

Secondly, pursuing religious truth as one's priority would be beneficial to the pursuit of scientific knowledge, by cultivating the virtues needed for scientific discovery: exertion and self-denial. The role of religious piety, in Ross' reading of it, was to enable Frankland to pursue his

94 Stephen Ross to Edward Frankland, 10 January 1846 [EFP, JRL, 38/3473].
95 Russell, *Lancastrian Chemist*, 101. For evangelical attitudes towards science, see: Topham, 'Science and Popular Education', 429.

chemical career in the first place. The self-denial that was needed to pursue knowledge would only be guaranteed by surrendering to a higher truth. Again, selfishness and egotism were seen as both enemies of this higher religious truth, and as enemies of a safe pursuit of knowledge.

The pursuit of higher goals in Frankland's moral instruction, whether they were usefulness and goodness (in Day's view), the pursuit of scientific truth (in Johnson's and Bunsen's teaching), or religious piety (Ross's ideal), all depended on the selflessness of Frankland himself. Frankland needed to shed pride and egotism, and was encouraged to practice self-abnegation. As such, Frankland's moral instruction reflects broader Victorian ideals regarding 'heroism' and goodness. Mid-Victorian writing about heroism and goodness stressed a 'new' kind of heroism that stressed 'self-abnegation', 'self-effacement' and 'chivalry of spirit', rather than the former heroic ideals of militarism and physical courage.[96] Men, especially, could become 'heroic in the approved modern way, "the way of self-sacrifice"' in the service of a higher goal.[97] Selfishness and egotism were the natural villains of this new heroism.[98] Frankland's moral instruction here clearly parallels one of the remedies against vices that I brought up in the previous chapter: a love of science. Victorian academic memory culture gave examples of how rigorous self-discipline and the cultivation of a strong and continuous love of science could safeguard against vice.

Frankland's case also shows that moral instruction was perceived to be a competition between civilizational influences and degrading influences. As individuals, according to Smiles and Day, were very susceptible to their early educational environment, it was paramount that stable and enduring habits were cultivated in youngsters, and that the higher goals of instruction were kept in mind. If this process failed, as it almost did in Day's description

96 Merchant, '"Fresh Instruction"', 11, 17, 19. See also: Richard Bellon, *A Sincere and Teachable Heart. Self-Denying Virtue in British Intellectual Life, 1736-1859* (Leiden: Brill, 2015).

97 Ibid. 21.

98 Interestingly, self-abnegation and self-sacrifice became powerful topoi in epistemological discussions as well. See: Levine, *Dying to Know.*

of Tommy's relapse, selfishness and egotism would soon thwart the pursuit of higher goals.

Conclusion: mechanisms of moral instruction

At the beginning of this chapter, I queried where and how Victorian scholars learned to identify the vices that threatened their pursuits and where and how they learned to deal with them. The rich case of Frankland's moral instruction has provided insightful answers, with some consequences for how historians should perceive and approach the history of academic socialisation.

First of all, Frankland's moral instruction provided an answer to the first part of the question: *where* did Victorians and Edwardian learn the nature of the vices that threatened their scholarly selves, and where did they learn how to avoid those dangers? I have argued that at least in Frankland's case, he learned how to identify and deal with vices already during his childhood and teenage years. His parents, the books he read, his teachers Willasey, Ross and Johnson, all endeavoured to shape their son, reader or pupil into a good moral being. They saw it as their duty to inculcate good moral habits in the young Frankland, so that he learned to avoid temptation and vice. Such early moral education would enable Frankland to self-govern and self-help in adulthood. If the question is 'where did scholars learn how to deal with temptation and vice', then Frankland's case shows that they learned to do so in childhood homes, primary schools, and in institutions such as the Mechanics' Institute or occasional laboratories like that of the Johnson's in Lancaster.

The goal of shaping the attitudes and moral dispositions of youngsters with a view to preparing them for adult life was not unique to Frankland's case. Educationalists such as Willasey, Day and Smiles envisioned an early education to be the essential stage for moral instruction. If this childhood instruction was successful, the individual would be ready to stand the moral test of adult life. If this instruction would fail, however,

moral degradation, vice, and barbarism would be the inevitable result. This view of education was linked to a view of human nature that designated the period of childhood as the principal period of moral development in a person, and regarded human nature to be easily corrupted by evil influences. Being the right influence at the right moment in a child's development, therefore, was crucial. Education, then, was envisioned to be a civilising process, intended to counter vicious influences and, ultimately, to check the tide of barbarism and safeguard moral and national progress.

The second question I have posed was the issue of *how* Victorians such as Frankland learned to identify and deal with vices and temptations. In addition to the instructional role of academic memory culture, this chapter has identified three primary pedagogical mechanisms: the construction of powerful images of good and evil, the cultivation of stable and virtuous habits, and the education of desire. I will elaborate on all three separately, although moral educators employed them simultaneously.

To start with images of good and evil: Victorian educators sought to instil their pupils at an early age with very powerful images of virtue and vice. That is, at least, what Frankland's own teachers did. They did so indirectly, through children's literature or training in observation, but also directly, through moral advice and punishment of wrongdoing. In Frankland's case, a clear example of such an image was that of London as the metropolis of vice. All his educators and childhood influences communicated an image of London as the cesspool of temptation, where selfishness reigned. Another example was moneymaking for its own sake; this was continuously imagined to pose a threat to more elevated goals such as religion, science and national progress. Thomas Day's *Sandford and Merton*, Willasey's aphorisms, Johnson's warning of modern agricultural chemistry, all helped construct the view of moneymaking as a danger to virtuous pursuits. These images of virtue and vice drew their power from being embedded in broader Victorian currents of thought about character, self-help, and the nation, which also envisioned the individual and the

moral fabric of society to be under constant threat from vicious influences. At the same time, more specific forms of academic socialisation used the same mechanism to promote good scholarship: the exemplary lives and the vicious examples communicated in obituaries are a case in point.

Such images helped to identify vices and temptations, as well as the situations in which these dangers could threaten the self, but they did not teach how to avoid and withstand them. This role was reserved for a second mechanism: the transmission of virtuous habits of thought and action. *Sandford and Merton*, for example, not only presented a powerful image of avarice as a moral danger, it also provided the moral tools to avoid selfish greed: habits of prudence and hard work. Likewise, Frankland learned from Johnson that London was a danger, but also that laborious habits of constant note-taking and conscientious hard work could help him avoid the vices of the city. The transmission of such habits was meant to structure Frankland's actions, so that he could avoid temptations such as distraction, avarice and selfishness.

Frankland's teachers also sought to transmit moral habits of thought. Good examples are Willasey's aphorisms on conduct and Ross' advice to practice self-denial through habits of religious observation. Especially Willasey's 'maxims of self governance', as he would call them himself, are interesting units of moral instruction. The aphorisms he transmitted (and which Frankland transmitted to his own children) were fairly short, and therefore mnemonically robust: they were easily internalised and repeated. Moreover, they were culturally mobile and suited for many occasions; they were ideal *heuristics* for dealing with the complex problems of vice and temptation. As this suggests, they were powerful tools in Frankland's lifelong fight against vice. Whenever he recognised a dangerous situation, the internalised moral maxims of Willasey functioned as a *reminder* of his virtuous Lancaster education and the habits that he learned there. The peculiar persistence of such commonplaces, in Frankland's life and even in the next generation, shows how powerful these maxims were thought to be

and how easily they were cultivated and transmitted.

A final mechanism of moral instruction was the instilment of more elevated desires, which were to counter bad influences of others, selfishness and temptation. This becomes clear in the letter in which Ross warned Frankland not to forget the 'life clerical'. Ross cautioned Frankland not to forget his religious orientation, just as Johnson cautioned him to pursue scientific knowledge, and not to be distracted or led away by avarice, or like Bunsen, who taught Frankland that fundamental chemistry was the only goal worth pursuing.[99] Habits of thought and action were envisioned to be the tools that helped discipline those desires and much thus relied on the cultivation of the individual will. Again, the comparison with academic memory culture is striking, as one of the main remedies offered by writers of obituaries was the instilment of a love of science: a specification of such an elevated desire.

In his study of will in Victorian England, John Reed has shown that although there was a whole spectrum of opinions on the question of free will, 'recommended conduct was surprisingly uniform'.[100] From secular materialists to fatalists and Christian traditionalists, the recommended conduct was 'self-restraint in the service of some high cause', whether that was religious truth, science, or some conception of fate.[101] Frankland's case shows that Victorian moral educators sought to instil the importance of a higher cause already during childhood. Interestingly, also, this ties in with the points I have made in the previous chapter: at stake in Victorian and Edwardian thinking about character was not just virtues or vices, but also

99 For Frankland, the primacy of fundamental chemistry over applied chemistry was never in doubt. Although he did engage in the latter, he never forgot Bunsen's lessons that he should devote himself to the former and reminded himself and others of it repeatedly. See for example his inaugural address at Owens College, where he praised chemistry for 'its intrinsic excellence': Owens College, *Introductory lectures on the opening of Owens College, Manchester* (London: Longman, Brown, Green, and Longmans, 1852) 121.

100 John R. Reed, *Victorian Will* (Athens, OH: Ohio University Press, 1989) 402.

101 Ibid.

the intrinsic motivation to pursue science.

For moral instruction to fulfil its goal –the moulding of the morality of a child in order that it could withstand vices throughout adult life– the three mechanisms I have identified needed to be very effective and the effects needed to be long lasting; the images of virtue and vice, the virtuous habits, and the higher desires were to be ingrained into a child so comprehensively that it would be reminded of them throughout adult life. I would suggest that this also explains the commonplace *form* of these moral lessons. They were often phrased as what might seem obvious shorthands (work hard! Do not be distracted!) or short banal slogans (it is not what we eat, but what we digest that makes us strong), but their very brevity and cultural mobility is what made them easy to remember in situations of personal crisis.[102] It was precisely because of their pithiness and banality, that commonplaces served as constant reminders of the period of moral instruction during childhood and the civilisation process that children went through. If those lessons were forgotten during adulthood, the danger was very real that temptations and vices could again take over.

I would like to end my discussion of Edward Frankland's moral instruction by pointing out some of the consequences of these findings for other historians of the sciences and humanities. First of all, let me reiterate a point I have made throughout this chapter: processes of academic socialisation and more specific moral instruction at universities were built upon a more generic process of moral instruction taking place in childhood. It was during childhood that Victorians learned what vice and temptation were, how to recognise them and how to avoid them. This view was embedded in their conception of human nature and the various developmental stages they went through. Many of the attitudes traced by studies of academic socialisation (self-abnegation, patience, laboriousness, self-discipline) were already inculcated during a more generic process

102 For an analysis of proverbs in these terms, see: Shapin, 'Proverbial Economies'.

of childhood moral instruction. They reflected contemporary attitudes about the self, human nature, and moral progress. As such, historians of science and the humanities cannot ignore this process of socialisation into the governing values of ambient culture. University teachers and learned mentors capitalised on this ambient moral currency and built on the moral attitudes that their students had learned before they came under their influence.

This does not imply that universities and academic educators did not take their job of moral instruction seriously: they absolutely did. Virtuous habits, images of virtue and vice and the love of science required continuous upkeep. A learned life required constant vigilance and learned culture invested in the maintenance of morality, either through processes of socialisation, or through instructional genres like the obituary. Like Tommy from *Sandford and Merton* relapsed when his circumstances changed, so could scholars relapse when their circumstances changed. My point, then, is not that moral instruction exclusively took place before academic socialisation, but that academic socialisation could not be effective without this earlier process of moral instruction.

Secondly, historians of science and the humanities would do well to keep an open mind for the seemingly obvious banalities and moral commonplaces that structured the Victorian moral universe. Those moral slogans, I would argue, were performative in the sense that they were often repeated in various contexts, and, more importantly, shaped ideas, choices and actions. They were never mere platitudes, but rather always reflective of moral attitudes and lessons learned in the past. Moreover, as Steven Shapin has shown so admirably, commonplaces, aphorisms and proverbs play a powerful role in scientific practice up to this day.[103] Investigating the use of such moral shorthands in scientific practice, including an account of where and how a practitioner learned them and what they signified might enrich existing accounts of scientific practice and the values that govern it.

103 Ibid.

Finally, this chapter has shed some light on the very crucial question of what distinguishes scholarship from ambient society in general. Lorraine Daston, as mentioned earlier, describes the relationship between moral economies of science and general culture as follows: 'moral economies of science derive both their forms and their emotional force from the culture in which they are embedded'.[104] However, she adds, once moral economies of science have incorporated such broader cultural elements, 'they become naturalized to that milieu' and tend to reassert the boundary between science and 'ambient society'.[105] The findings that I have presented in this chapter support Daston's general observation that moral economies of science derive their power from ambient culture. The Victorian moral economy of science that pitted the morality of individual scholars against vice and required them to practice virtuous habits thus derived its force from the ambient Victorian language of virtue, vice and temptation. Nonetheless, as I have shown, Victorian scholars appropriated this language to suit their own concerns, contest scholarly debates and discipline the morality of their colleagues. By building on the ambient discourse of virtue and vice, teachers like Bunsen or Johnson identified dangers to scholarly pursuits specifically; they pitted applied chemistry against fundamental chemistry by referencing avarice and selfishness as dangers belonging to the former. At the same time, by emphasising their unique status as disinterested and virtuous seekers of truth, Victorian scholars distanced themselves from the very society that provided the language and structures to describe themselves as such in the first place.

The first two chapters of this dissertation have dealt with what I have called 'common ground': a broad agreement about the moral nature of scientific pursuits and the idea that the scholarly self was constantly threatened by vice. In chapter 1, I sketched the outlines of this common ground and argued that six dangers were threatening Victorian and Edwardian science, and that two remedies were advised. I also stated that

104 Daston, 'The Moral Economy of Science', 24.
105 Ibid.

obituary writers instructed in these matters: they communicated powerful images of vice and its remedies. This second chapter has shown how this common ground was constructed on the basis of broader traditions of moral instruction. Ambient culture provided the language and cultural mechanisms for scholarly culture to use and appropriate. Also, this chapter has shown how individuals negotiated ideals of scientific selfhood and how they learned to inhabit these in the first place.

The following two chapters of this dissertation will focus not on common ideals about what it took to be a scholar, but on conflict. Where there was a general agreement about the moral nature of science and the constant threat of vice, there was no agreement about what good science actually was. If we shift our vision away from remembrance and instruction, and focus instead on controversy and cooperation, we can see that the common tongue that the language of vice provided was also a powerful weapon in heated discussions about scholarship. Just because the category of vice was perceived to be so dangerous by all, it became paramount to fight the vices in others.

3

Peter Guthrie Tait and the Victorian imagination

Introduction

In 1871, the Scottish energy physicist Peter Guthrie Tait accused the London-based scientific naturalist John Tyndall of thwarting the progress of science by attributing too great a role to the creative imagination: 'Are we to live, scientifically, in the same way as alchemists and astrologers did in the Middle Ages? And are we to ignore all that Bacon and Newton have done for us? . . . Let us use the imaginative faculty by all means; but in doing so, let us take our stand on the firm ground of the known before we venture ourselves into the unknown.'[1]

In this attack on Tyndall's use of the imagination, Tait was reacting to Tyndall's 1870 lecture 'On the Scientific Use of the Imagination', in which the latter presented science as revolving around the creative faculty of scientific men.[2] Tyndall thought that some problems in science, especially those relating to the exact make-up of matter, the scope of evolution, and the origin of matter and energy, could only be resolved with an appeal to the faculty of the imagination. In order for the creative imagination to be effective, men of science should employ virtues of 'courage', 'manful willingness', and 'tolerance' for those who could make these great 'leaps of

1 Tait, 'Imagination in Science', *Nature* 3 (72), 395.

2 John Tyndall, 'On the Scientific Use of the Imagination', in: John Tyndall, *Essays on the Use and Limit of the Imagination in Science* (London: Longmans, Green, &Co., 1870) 13-51. Note that both Tait and Tyndall referred to themselves as 'men of science'.

imagination'.[3] For Tyndall, the imagination was one of the most important tools in the Victorian scientific toolbox and should be given a free rein. Products of the imagination should only *subsequently* be checked by the faculty of reason.[4] The imagination, in other words, held primacy in scientific methodology. Therefore, men of science were to practice virtues that enabled the imagination to flourish.

Tait, however, associated such a free rein for the imagination with the Middle Ages and claimed that the revolutionary work of Newton and Bacon had been undone by Tyndall, whose view of science reminded him of the occult and backward pursuits of alchemists and astrologers. Tait clearly held a different view of the imagination in science to that of Tyndall. Where Tyndall advocated freedom, tolerance, courage and willingness, Tait called for restraint and caution, and appealed to the successes of scientific methodology as exemplified by Francis Bacon (1561-1626) and Isaac Newton (1643-1727).[5]

The clash between Tyndall and Tait over the imagination, the ideal character of scientific men and the relation of these two to the progress of science was one of many: throughout the 1860s and 1870s, Tait and Tyndall frequently exchanged unpleasant words in print and in many of those exchanges, they accused each other of vices. Tyndall's lack of restraint in using the imagination, Tait felt, was clearly an example of vicious behaviour, whereas Tyndall accused Tait of being overly cautious and conservative. Beside Tyndall, the Scotsman Peter Guthrie Tait clashed with others too. In fact, Tait pitted himself against creative metaphysicians such as Clement Mansfield Ingleby and Herbert Spencer as well, who, in Tait's eyes, failed to discipline their intuitions and imaginations with virtues of restraint, caution, accuracy and patience.

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3 Tyndall, 'On the Scientific Use of the Imagination', 44, 40.

4 Ibid. 45.

5 I have discussed the clash between Tait and Tyndall in more detail in Saarloos, 'Virtues of Courage and Virtues of Restraint'.

The previous two chapters have told a story of consensus. Victorian and Edwardian scholars generally agreed that to pursue knowledge was to walk a narrow path of virtue and to keep vices at bay at all costs. This chapter will deal with controversy and disagreement. The above example of Tait versus Tyndall shows that a consensus about the moral nature of scholarship indeed existed (why else would they both use the language of virtue and vice), but, more importantly, it also shows how deeply scholars disagreed about the goals and methods of scholarship, and the ideal character of te scholar. This deep disagreement gave rise to vice charges. If all indeed agreed that vices threatened the scholarly self, then vices had to be actively identified and neutralised. Not only in oneself, but in others too. This disagreement, I will argue, is the second reason for the importance of the category of vice in Victorian and Edwardian scholarship.

Therefore, this chapter will focus specifically on the language of vice that was employed in Victorian debates over the role of the imagination in science. Interestingly, central to these debates on the imagination was not the faculty of the imagination in itself. In fact, all parties agreed that a certain degree of creativity or imagination was needed in science. What they did not agree on, however, were the epistemic virtues needed to safely and productively guide these human faculties to good scientific knowledge, because there was no consensus about what good science was in the first place. What was a virtue to one party could be a vice to the other. Peter Guthrie Tait's quarrels with others on this subject offer an intriguing insight, not in the least because Tait was both a respected mathematical physicist and a feared polemicist. Unlike other Victorian physicists –Maxwell, Tyndall, Thomson–, Tait has not received much attention in the form of biographies, so an account of his controversies and conceptions of science might also add a new perspective on other debates on Victorian physics.[6]

Let me briefly state the premise and aim of this chapter. Central to this third chapter will be the faculty of the imagination, the catalogues

6 I discuss the historiography on Peter Guthrie Tait in a later section.

of virtues that scholars prescribed in dealing with this creative faculty, and the vice charges that were employed in debates over the imagination. I will approach these questions through a detailed study of four controversies of Peter Guthrie Tait with other eminent Victorians on this subject. This allows me to go beyond the broad description of ideals I have offered in the previous two chapters with a view to offering a more dynamic account of how these ideals were formulated and contested in scholarly debate.

I will analyse four major controversies around the imagination in which accusations of vice were uttered frequently. I shall begin by discussing the clash between Tait and Tyndall regarding the place held by James Prescott Joule (1818-1889) in the history of energy and the role of intuition and imagination in that history. Secondly, I will discuss the quarrel about Tyndall's lecture on the imagination in more detail, with a focus on the models of Newton and Faraday in this controversy. Thirdly, I will elaborate on the discussion between Peter Guthrie Tait and Clement Ingleby pertaining to the relative merits of metaphysics and mathematics; a discussion in which images of Newton and Leibniz also play a major role. And finally, this chapter will engage the vicious conflict between Peter Guthrie Tait and Herbert Spencer over *a priori* reasoning and the importance of observation versus the role of intuition and hypothesis in science. In all these quarrels, Tait was engaged in a negotiation of the Newtonian model of scientific selfhood, and was performing boundary work to protect *his* version of this model. Let me start, therefore, by discussing a few important historiographical themes that play a major role in my analysis of Tait's controversies: the imagination, genius and method, and personae. Thereafter, I will discuss Tait's own scientific ideals, before analysing how he pitted these against the views of his opponents.

Imagination

In the first chapter of this dissertation, I already discussed how academic memory culture defined the danger of enthusiasm, which was closely related to the use of imagination. Some points bear repeating, because they lend

context to Tait's controversies. I have argued that enthusiastically following one's imagination was often felt to be at odds with ideals of communicability and objectivity: individual epistemic pursuits were not easily reconciled with collective standards and shared methods. The cases of Charles Wheatstone and Charles Smart Roy illustrate this: both Wheatstone and Roy were remembered for letting their enthusiasm in following their ingenuity interfere with the shared goals of the scientific community.[7] Moreover, when scholars relied too much on their imagination, this was repeatedly attributed to an inappropriate desire for fame or recognition.[8] In order for the imagination not to result in vice, it should be balanced by personal virtues such as accuracy, thoroughness and restraint. On the other hand, precisely these virtues of thoroughness and restraint might be seen as vices if they were practiced in excess: scholars such as Lord Acton and Thomas Graham erred too far in the other direction by cherishing thoroughness and completeness over productivity and creativity. The imagination, then, was a faculty that stood at the centre of multiple discussions about what a good scholar should be.

Tait's conflicts with other men of science about the imagination tie in neatly with a theme in historiography that I did not touch upon in earlier chapters: the opposition of genius and method in British science. Was science a collective project with shared methodologies and standards of quality, or was scientific progress the result of extraordinary contributions by unique individuals? Was science, in other words, a question of method, or genius? The answers to these questions had ramifications for the ideal character of the scholar as well: were virtues such as objectivity, impartiality, accuracy and perseverance the marks of a true 'man of science', or were creativity, courage and open-mindedness more important? Tait would unambiguously choose the first answer, while Tyndall would opt for the second.

7 See the section on 'Enthusiasm' in chapter 1.

8 The case of George John Romanes, who was accused of self-seeking when he sought to offer an innovative alternative to Charles Darwin's doctrine of evolution is a good example. See the section on 'Fame' in chapter 1.

In general, historians of science have described the tension between genius and method in the late nineteenth century in terms of a conflict between imaginative subjectivity and methodological objectivity. Lorraine Daston, for example, has argued that the 'soaring imagination' of geniuses was increasingly seen as problematic and excessively artistic, because it threatened the standard of communicability.[9] As the nineteenth century progressed, the imagination became more and more associated with the *persona* of the artist, and dissociated from that of the scientist.[10] Nonetheless, as the imagination did remain a potent force in scientific discovery, it could not be neglected, but should instead be disciplined by virtues of restraint, caution, and patience, virtues more commonly associated with scientific method. A union of both genius and method was needed, in which the imagination was balanced by other personal traits. The exact make-up of this union was not agreed upon, as the controversies of Tait will illustrate.

In the debates on whether imaginative genius or dutiful method was more important, the Victorians drew heavily on their own scientific past. More specifically, as was already showcased in the quote with which this chapter began, Isaac Newton and Francis Bacon made a comeback in the nineteenth century as models for what it took to be a good scholar. In biographical texts, the images of Newton and Bacon were appropriated for several scientific causes and differing outlooks on the question of genius and method. Early and mid-century biographers such as David Brewster (1781-1868) and Augustus De Morgan (1806-1871) each presented a

9 I have argued in chapter 1 that communicability was not only threatened by the imagination, but by uselessness and distraction as well. Daston, 'Fear and Loathing', 81.
10 Ibid. 86-89.

different image of Newton and Bacon to suit their own agendas.[11] 'Newton' and 'Bacon' came to signify much more than scientific heroes of the past; they became models of scientific selfhood, shorthand for a specific way of doing science and being a scientific man. Such shorthands are often referred to as personae in historiography.[12]

Although there was no tangible or precise consensus about what 'Newton' or 'Bacon' stood for, the fact that these models of scholarly selfhood were linked to images of real, historical figures delineated the range of options for interpretation. 'Newton' stood for a combination of imaginative genius and inductive virtues of patience, caution and impartiality, although the exact balance of these attributed qualities varied per representation. 'Bacon', on the other hand, was associated with the inductive method and a rigid disciplining of genius and imagination, but was no longer unanimously regarded positively in nineteenth-century Britain.[13] Tait's invocation of Newton and Bacon in his critique on Tyndall, therefore, should be seen in the larger context of these discussions of the vices of genius and the virtues of method. Other images and models circulated as well: think of the experimental Faraday, or the continental and metaphysical Hegel or

11 Richard Yeo has shown how Newton's biographers all positioned Newton somewhere on the spectrum between genius and method, and how and why the notion of genius became distrusted as the nineteenth century progressed, while Rebekah Higgitt has elaborated on the intersection between Newtonian biography and new standards of history writing in nineteenth-century Britain. Richard Yeo, 'Genius, Method and Morality'; Higgitt, *Recreating Newton.* For other work on Newton's image, genius and biographies, see: Fara, *Newton: The Making of Genius*; and: Paul Theerman, 'Unaccustomed Role: The Scientist as Historical Biographer – Two Nineteenth-Century Portrayals of Newton', *Biography* 8 (1985) 145-162.

12 For personae as models of scientific selfhood, see: Daston and Sibum, 'Introduction: Scientific Personae and Their Histories'; Herman Paul, 'What is a scholarly persona?'; Gadi Algazi, 'At the Study: Notes on the Production of the Scholarly Self', in: David Warren Sabean and Malina Stefanovska (eds.), *Space and Self in Early Modern European Cultures* (Toronto: University of Toronto Press, 2012) 17-5; and the entire 4th issue of the 131th volume of the BMGN on personae, but especially Gadi Algazi's contribution, in which the concept is explained on three different levels: Algazi, 'Exemplum and Wundertier'.

13 Yeo, 'An Idol of the Marketplace'.

Goethe.[14]

One of the historiographical insights that is quite relevant for my purposes here is the observation that these models were often, as in the case of 'Newton' or 'Bacon', linked to specific names of scientists or scholars. Herman Paul, for example, discussing German historical scholarship, has shown that names of historians such as 'Waitz', 'Janssen' or 'Ranke' stood for a specific way of being a historian, and, as such, were coordinates on an imaginary map of the historical discipline.[15] Again, for some the label of 'Waitz' or 'Ranke' was a sign of virtue, while for others, this was seen as a vicious way of being a historian. Paul also draws attention to the polemical context of these models: 'scholarly personae did not integrate the field; they represented points of contention'.[16] When Tait mentioned Bacon and Newton in his review of Tyndall, we should, therefore, not overlook this: 'Bacon' and 'Newton' were also coordinates on a map of Victorian science, and like the models Paul writes about, 'Bacon' and 'Newton' also represented points of contention and disagreement.

Before I will turn to Tait's controversies and the language of vice in them, I will introduce Tait himself. This introduction is twofold: I will turn to Tait himself and his image of Newton first, and discuss his position in historiography afterwards.

Peter Guthrie Tait and the image of Newton

Peter Guthrie Tait was born to John and Mary Tait on the 28th of April 1831 in Dalkeith, a small village just south of Edinburgh. When Peter Tait was six years old, his father died, and his mother took him and his two sisters to live with her brother in Edinburgh. If we are to believe Tait's biographer and former student Cargill Gilston Knott (1856-1922), Tait was privately

14 Geoffrey Cantor, 'The scientist as hero: public images of Faraday'.
15 Paul, 'The Virtues of a Good Historian in Early Imperial Germany', 700-701.
16 Ibid. 705.

educated in science by his uncle John.[17] After this informal education, a solid basis for Tait's mathematical acumen was laid at Edinburgh Academy, where he learned basic mathematics in the classroom of James Gloag, 'a teacher of strenuous character and quaint originality', who instilled in Tait the conviction that 'mathematics was a mental and moral discipline'.[18] Already very early in his life, Tait learned that the disciplining of character was a necessary part of a proper scientific education.

Owing to the fact that they were both under Gloag's guidance, Tait also met his lifelong friend James Clerk Maxwell (1831-1879) at the Edinburgh Academy. Both performed very well at the Academy and went on to study at the University of Edinburgh, where they came under the influence of the physicist and glaciologist James David Forbes (1809-1868) and the mathematician Philip Kelland (1808-1879). Tait, however, left Edinburgh after one session to compete in the mathematical Tripos at Cambridge University, from which he emerged victoriously both as Senior Wrangler and winner of the Smith's prize for original mathematical research in 1851.[19] After his graduation, Tait took up a fellowship at Peterhouse College and soon established himself as a coach for aspiring Wranglers. Although he always felt the job of a coach to be rather tedious and unchallenging –at one point he even remarked that he could coach 'a coal scuttle to be Senior Wrangler'[20]–, he did use his time at Cambridge to

17 Cargill Gilston Knott, *Life and Scientific Work of Peter Guthrie Tait* (Cambridge: Cambridge University Press, 1911) 3. Knott compiled Tait's *Life* on the basis of Tait's own letters, reminisces by friends and former students, and the testimony of Margaret Tait.

18 Knott, *Life and Scientific Work*, 4.

19 Ibid. 9. Maxwell would follow Tait a few years later, on the latter's advice. The term 'Wrangler' refers to anyone that gained first-class honours in the Cambridge Mathematical Tripos. The 'Senior Wrangler' refers to the student that scored highest. For these terms and the 'making' of Wranglers through tutoring, see: Warwick, *Masters of Theory*, chapter 4 and 5.

20 Ibid. 11.

delve deeper in the study of mathematics.[21]

Tait's work in mathematics was crowned in 1854 by his appointment as Professor of Mathematics in Ireland, at Queen's College in Belfast. His move to Belfast was significant in two respects. First of all, Tait met Thomas Andrews (1813-1885), who was at that time Professor of Chemistry at Queen's College, and secondly, Tait started an extensive correspondence with the mathematician William Rowan Hamilton. Both men greatly influenced Tait's conception of science. Andrews acquainted him with experimental work and, according to Tait's biographer and mathematician George Chrystal, 'stimulated his love for well-directed physical research'.[22] Knott added that Andrews not only honed Tait's experimental skills, but that Tait also saw 'the extreme care and patience with which Andrews carried out all his researches' as a great example, and 'one of the most important determining factors' in his life.[23]

If Andrews was responsible for the development of Tait's skills and 'love' of experiment research, William Rowan Hamilton fulfilled this role for Tait's mathematical side. Hamilton, Professor of Astronomy at Trinity College in Dublin, was the illustrious originator of the mathematical concept of quaternions: an algebra to describe points in four-dimensional space. Quaternions were interesting to Hamilton because they transcended Cartesian systems of coordinates and provided a new way to describe points, and relations between these points in space. The composition of quaternions out of three numbers that formed the vector part and one number that functioned as the scalar part was of great influence to later theories of vector analysis, forwarded by Josiah Willard Gibbs (1839-1903) and Oliver

21 Tait would militate against the practice of cramming throughout his career, for example: Peter Guthrie Tait, 'Prof. Tait on "Cram"', *Nature* 9 (30 April 1874) 501-502.

22 G. Chrystal, 'Professor Tait', Nature 64 (25 July 1901) 305-307.

23 Knott, *Life and Scientific Work*, 13

Heaviside (1850-1925).[24] Tait himself grew interested in the quaternion method of analysis not because he was interested in purely mathematical theories of complex numbers, but because of 'the promise of usefulness in physical applications'.[25] Nonetheless, Tait became a 'zealous and competent disciple'[26] of Hamilton; they maintained an extensive correspondence until Hamilton's death in 1865, and Tait published extensively on the application of quaternions to physical science.[27]

In 1860, Tait left his professorship of mathematics at Belfast to return to the University of Edinburgh as Professor of Natural Philosophy. His former tutor Forbes had retired from the chair, and Tait was deemed a fitting replacement, although the competition for the chair had been fierce.[28] Despite the competition, Tait remained in Forbes' chair at the University of Edinburgh for more than forty years, until his failing health and the blow of the death of his son Freddie in the Anglo-Boer War forced him to retire in 1901. Tait saw lecturing as his primary duty, and primarily lectured on the general principles of science rather than on his own research.[29] Advanced students, however, would not be the passive recipient of Tait's general principles, but had to work actively in Tait's practical class, in which they were set to work on 'some real experimental problem'.[30] Tait's method of teaching was reminiscent of that of his own tutor, Gloag: he warned his students that the study of science was 'beset with difficulties', and he held

24 For a lengthier discussion of the quaternion concept and its relation to vectorial systems, see: Michael J. Crowe, *History of Vector Analysis: The Evolution of the Idea of a Vectorial System* (Notre Dame, IN: University of Notre Dame Press, 1967).

25 Knott, *Life and Scientific Work*, 13.

26 Alexander Macfarlane, 'Peter Guthrie Tait', *Physical Review* 15 (1902) 51-64, 52.

27 Knott states that Tait worked on quaternions until the day he died, handing over his final notes to his son, with the instruction to handle them with care. Knott, *Life and Scientific Work*, 40.

28 Ibid. 17.

29 Macfarlane, 'Peter Guthrie Tait', 53.

30 Alexander Macfarlane, 'Peter Guthrie Tait, his life and works', *Bibliotheca Mathematica* 3rd series, 4 (1903) 185-200, 187.

'as Aristotle did of moral philosophy that a certain maturity of mind is necessary to overcome them successfully.'[31]

Tait's work in the various fields of mathematical physics is best illustrated by a contemporary impression.[32] In 1901, the year of Tait's death, former students of Tait had commissioned an illuminated address to celebrate Tait's retirement as Professor of Natural Philosophy at Edinburgh University. Tait died before the address could be presented, but his widow Margaret received it in his stead. Instead of celebration, the address became an object of contemplation. As such, it shows admirably how Tait was remembered and what kind of scientific man he was considered to be.

The illuminated address was an initiative of Tait's former students. No less than 63 of his most eminent students had signed the address. In the capable hands of Phoebe Anna Traquair (1852-1936), the first woman ever elected to the Royal Scottish Academy, the illuminated address became a work of art. Not only was it intended to praise Tait's merits as 'a teacher, an investigator, a writer and a moral force'[33], it also served as an emblem of Tait's 'scientific victories'.[34]

Traquair had taken great pains to portray Tait as a scientific hero: the address was decorated with interlinked knots –a reference to Tait's work on the typology of knots–, curves and diagrams from Tait's scientific papers on heat and dynamics, and images of various instruments designed by Tait himself, such as the deep sea thermometer, a gun used in pressure experiments, a radiometer, and a pendulum used by Tait in his studies

31 N.N., 'Death of Professor Tait', *The Times,* N.D.

32 For a shorter impression, see Tait's full bibliography either in: Knott, *Life and Scientific Work*, 351-365; or in: Chris Pritchard and David O Forfar, 'Bibliography of Peter Guthrie Tait', http://www.clerkmaxwellfoundation.org/References_to_Tait.pdf (23-05-2017).

33 Macfarlane, 'Peter Guthrie Tait', 62.

34 Ibid.

of ballistics.[35] Moreover, these symbols of Tait's 'scientific victories' were interspersed with the names of his closest scientific collaborators: James Dewar (1842-1923), Balfour Stewart (1828-1887), and William Thomson (1824-1907), who was made Lord Kelvin in 1892.[36] At the top of the address, two large scrolls prominently recounted Tait's most important work in mathematics and physics: the first scroll depicted a quaternionic formula, the other showed a thermodynamic diagram.[37] Dominating the address, however, was a large depiction of Sir Isaac Newton, who hovered over all Tait's scientific achievements, both experimental and mathematical. The image of Newton gave a sense of unity to the depicted individual elements of Tait's work. It signified above all that the person honoured in this illuminated address was, unmistakably, a man of science.

The image of Newton at the top of the address is very telling. It was intended, first of all, to underline Tait's dedication to the physical sciences and the great British tradition in general, but also, and more specifically, Newton's image referred to Tait's and William Thomson's collaboratively written *Treatise of Natural Philosophy* (1876), often referred to as *T&T'*, with Thomson as *T* and Tait as *T'*. As observed by historian of science Crosbie Smith in his *The Science of Energy*, *T&T'* was one of the written embodiments of the new science of energy and quickly became a standard text.[38] The treatise was designed to be used at the Mathematical Tripos and was aimed at a large reading audience.[39] In it, the authors redefined concepts like 'force', 'work' and 'energy', and so sought to base their theory

35 For Tait's work on projectile dynamics, see: Chris Denley and Chris Pritchard, 'The golf ball aerodynamics of Peter Guthrie Tait', *The Mathematical Gazette* 77 (1993) 298-313.

36 Tait and Balfour Stewart collaborated on two books on physics and metaphysics: Balfour Stewart and Peter Guthrie Tait, *The Unseen Universe: or Physical Speculations on a Future State* (London: Macmillan 1875); Balfour Stewart and Peter Guthrie Tait, *Paradoxical Philosophy: A Sequel to the Unseen Universe* (London: Macmillan, 1878).

37 Ibid. 62-63; Knott, *Life and Scientific Work*, 39-40.

38 Smith, *The Science of Energy,* 201-202.

39 For the importance of inclusion in the Tripos for the acceptance of new theories, see: Warwick, *Masters of Theory.*

on a solid, accurate and measurable footing.[40]

The science of energy originated in the North of Britain, and was conceived by a group of natural philosophers and experimentalists, including Thomson, Tait, Maxwell, Rankine and Henry Charles Fleeming Jenkin (1833-1885). Central to the pursuits of this North British group were commitments to the laws of conservation and dissipation of energy, and a belief that the universe should be understood 'as a universe of continuous matter possessed of kinetic energy', which stood in contrast to the beliefs of scientific naturalists, such as John Tyndall and Herbert Spencer.[41] Moreover, the proponents of the science of energy opposed deterministic views of the universe, and maintained commitments to free will and the possibilities of divine agency and divine design, echoing an older tradition of natural theology.[42] Tait himself was a prominent member of the North British group.

Tait and Thomson's *Treatise* should be seen as a condensation of the views of the energy physicists, and as a way of canonising them. The book claimed 'a Newtonian pedigree' for the new science, and offered a re-reading of Newton.[43] It was explicitly modelled on Newton's *Principia*, and its authors ambitiously claimed to 'expose the errors of previous scholars and restore to the text its 'original' meaning'.[44] Contemporaries recognised the Newtonian pedigree as well. Tait's former pupil Alexander Macfarlane, in one of his obituaries of Tait, described *T&T'* as 'the *Principia* of the nineteenth century'[45], while Cargill Gilston Knott quoted from multiple reviews of *T&T'*, all reflecting on the Newtonian character of the *Treatise*.[46]

As I have argued earlier, invoking the image of Newton in late

40 Smith, *The Science of Energy*, 201-202.
41 Ibid. 196-202.
42 P.M. Harman, *Energy, Force, and matter. The Conceptual Development of Nineteenth-Century Physics* (Cambridge: Cambridge University Press, 1982) 69.
43 Smith, *Science of Energy,* 196
44 Ibid. 193.
45 Macfarlane, 'Peter Guthrie Tait, his life and works', 195.
46 Knott, *Life and Scientific Work,* 186-190.

Victorian Britain, either on the illuminated address or in reviews of *T&T*', had more meaning than simply alluding to the seventeenth century writer of the *Principia*. 'Newton' had become a shorthand for a virtuous way of conducting science in late nineteenth century Britain. One of the possible interpretations of 'Newton', according to Richard Bellon, emphasised the importance of the inductive, Baconian method in science and its guiding virtues of patience, courage, humility, and self-discipline.[47] Although other interpretations (like the ones offered by Tyndall or Spencer) tended to lean towards the genius side of Newton's character, the reviews of *T&T*' and Tait's illuminated address underline a perception of 'Newton' as the paragon of inductive, humble, patient and cautious science, in which the imagination played a secondary role.[48]

This perception of Newton is also prevalent in the memory culture surrounding Tait's death. Not only did Tait's biographers praise *T&T*' for being 'the *Principia* of the nineteenth century'[49], they also praised Tait for precisely those virtues that were associated with a methodical, laborious and humble Newton. In an obituary notice of Tait, Alexander Macfarlane described Tait as a man of genius, but then defined this genius as: working 'laboriously', 'zealously' and 'accurately' on experimental and mathematical problems.[50] Genius, in Macfarlane's conception, consisted of nothing more than a dedication to scientific method.[51] In a more in-depth obituary notice, Macfarlane stated that Tait was such a virtuous and productive man of science, because he 'was not easily induced to break in upon his routine', alluding again to the importance of disciplined laboriousness.[52]

47 Bellon, 'There is grandeur in this view of Newton', 222-224.
48 In 1855, for example, David Brewster had still stressed the genius of Newton, and his 'theoretical speculation' over his adherence to Baconian precepts: Higgitt, *Recreating Newton*, chapter 5, esp. page 138.
49 Macfarlane, 'Peter Guthrie Tait, his life and works', 195.
50 Alexander MacFarlane, 'Peter Guthrie Tait', 51, 52, 55, 58.
51 This was, in fact, an older view of genius, much in line with Joseph Priestley's conception of Newton's genius as perfectly following Baconian precepts: Yeo, 'Images of Newton', 264-266.
52 Macfarlane, 'Peter Guthrie Tait, his life and works', 188.

William Thomson, Tait's close collaborator on *T&T'* also reflected on Tait's 'faithfulness', his 'devotion' and 'purity of purpose', sentiments reflecting the importance of a selfless love for science.[53] Knott held a similar view of Tait's character, praising him for his 'patient determination'[54], his 'devotion'[55], and his enthusiastic laboriousness.[56]

Finally, an obituary written by Scottish mathematician George Chrystal lauded Tait's 'simplicity'[57], 'merry geniality'[58], and 'his staunch, almost quixotic, devotion to an approved cause'.[59] Chrystal also pointed towards Tait's behaviour in controversies and argued that Tait was always 'ready to take a blow' and that 'he did not always spare his strength in giving one'.[60] Chrystal stated that Tait's conduct in controversy was not borne of bitterness, but was a consequence of Tait's devotion. Once people became better acquainted with him, Chrystal continued, they would feel 'the magic of his personality'; ten minutes with Tait would make 'a friend of his bitterest foe'.[61]

Tait's biographers, to sum up, styled him as a virtuous man of science, modelled after the Newtonian ideal of humility, perseverance, devotion, patience and courage, despite his controversial positions. Tait's character united the disparate elements of his scientific career: his work in pure mathematics, experimental physics, education, and even metaphysics. It was only fitting that the image of Newton would stand proudly at the top of Tait's retirement address. In historiography, however, Tait is deemed less important than his contemporaries would have expected.

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53 William Thomson, 'Obituary notice of Professor Tait', *Mathematical and Physical Papers* VI (Cambridge: Cambridge University Press, 1911) 363-369, 368, 369.
54 Knott, *Life and Scientific Work*, 262
55 Ibid. 49.
56 Ibid. 90.
57 Chrystal, 'Professor Tait', 307.
58 Ibid. 305.
59 Ibid.
60 Ibid. 307.
61 Ibid.

Tait in historiography

A thorough biography of Peter Guthrie Tait is still lacking, although Tait figures occasionally in biographies of other Victorian physicists and in broader histories of Victorian physics or mathematics. In their seminal biography of William Thomson, Crosbie Smith and M. Norton Wise discuss Tait at some length, but only actually reflect on Tait's role in the life of Kelvin, and especially on their collaborative writing of *T&T'*.[62] Tait is assigned a larger portion of the text in Smith's broader cultural history of the science of energy, though the focus here is primarily on Tait's contributions to thermodynamics, his friendship with Maxwell, the writing of *T&T'*, and his defence of the energy principle against John Tyndall's appropriation.[63] Tait's work on the mathematical system of quaternions is mentioned only once.[64] Although Smith covers much ground, his discussion of Tait naturally emphasises his relation to the science of energy. P.M. Harman also discusses Tait in his monograph on the concepts of energy, force, and matter, but again, the discussion deals mostly with Tait's thermodynamics and his defence of the North British science of energy against intrusions by Tyndall and Mayer.[65] In Harman's biography of Tait's friend James Clerk Maxwell, the focus is again on Tait's relation to the subject of the monograph, and although Tait's contributions to both the study of quaternions and the science of energy are discussed, the author is mostly concerned with how Tait's ideas may have influenced Maxwell.[66] A broader account of Tait's contributions to science is provided by Daniel Brown in his *The Poetry of*

62 Crosbie Smith and M. Norton Wise, *Energy and Empire. A Biographical Study of Lord Kelvin* (Cambridge: Cambridge University Press, 1989), esp. 348-390.

63 Smith, *Science of Energy*, esp. chapters 9 and 10.

64 On page 208, mostly in relation to Thomson's antipathy towards Hamilton's quaternions.

65 P. M. Harman, *Energy, Force, and Matter,* esp. chapters III and IV.

66 Harman mentions Tait often –the first sentence of the introduction is a case in point-, but Tait is mostly employed as a lens through which we can see Maxwell more clearly. P.M. Harman, *The Natural Philosophy of James Clerk Maxwell* (Cambridge: Cambridge University Press, 1998) 1.

Victorian Scientists, but as the title suggests, much of the book is concerned with the relation between poetry and scientific style. Tait is mostly discussed as Maxwell's friend and as a subject of the latter's verses.[67]

At the same time, other scholars –mostly historians of mathematics– have written primarily on Tait's advocacy of the quaternions in mathematics and his opposition to vector analysis, thus marginalising Tait's work in the field of energy physics. Michael J. Crowe, in his book on the development of vector analysis, discusses Tait's work with William Rowan Hamilton (1805-1865), his influence on Maxwell, and his quarrel with Heaviside and Gibbs, but does not dwell on thermodynamics.[68] Chris Pritchard has also written mainly on Tait's contributions to quaternions and the discussions with Heaviside, Gibbs, Thomson and Maxwell on the merits of the quaternion method.[69] In addition, Pritchard has written a brief yet insightful exploration of the breadth of Tait's mathematical work on knots, golf ball dynamics and quaternions[70], and he has, together with David O Farfar, compiled a provisional bibliography of the works published by Tait.[71]

It seems that although Peter Guthrie Tait is generally regarded as an important mathematical physicist in late Victorian Britain, the literature focuses either on Tait's energy physics in collaboration with Maxwell or Thomson, or on his quaternion work, often in relation to subsequent vector analysts. Aside from Chris Pritchard's brief exploration, no writers have tried to connect all the fields in which Tait has worked to form a

67 Daniel Brown, *The Poetry of Victorian Scientists. Style, Science and Nonsense* (Cambridge: Cambridge University Press, 2013), chapters 5 and 6.
68 Crowe, *A History of Vector Analysis*.
69 See: Chris Pritchard, 'Tendril of the Hop and Tendril of the Vine: Peter Guthrie Tait and the Promotion of Quaternions, Part I', *The Mathematical Gazette* 82: 493 (1998) 26-36; and: Chris Pritchard, 'Flaming Swords and Hermaphrodite Monsters: Peter Guthrie Tait and the Promotion of Quaternions, Part II', *The Mathematical Gazette* 82:494 (1998) 235-241.
70 Chris Pritchard, 'Aspects of the Life and Work of Peter Guthrie Tait, FRSE', http://www.clerkmaxwellfoundation.org/PritchardTaitBooklet.pdf (23-05-2017).
71 Pritchard and Forfar, 'Bibliography of Peter Guthrie Tait'.

balanced whole. While many of the better known scholars in Victorian Britain have been studied extensively in biographies –Maxwell, Thomson, Huxley, Hooker, Darwin, Galton, Frankland–, Tait has not received as much attention. Moreover, our knowledge of Tait is somewhat fragmented, with monographs positioning him either as someone zealously working on quaternions and as a Hamiltonian disciple, or as the co-writer of *T&T'* and the controversy-loving friend of Maxwell and Thomson. Finally, most approaches to Tait are rather internalistic: they deal mostly with the development of Tait's scientific ideas and contributions.

It is not my aim here to write a Tait biography, although it is long overdue. What this chapter can do, however, is to try and conjoin the fragmented picture we have of Peter Guthrie Tait, by focusing not on one aspect of his work, but by looking at Tait through the lens of his scientific character, or, to formulate it differently, his scientific *persona*.[72] Newton's prominent position in Tait's remembrance offers a clue to how Tait answered the question of what it took to be a scholar. The image of Newton, in Tait's case, referred to virtues of humility, perseverance, devotion, patience and courage; virtues commonly associated with the inductive method in Victorian Britain. Anyone not living up to Tait's standards of character was militantly mocked and charged with vices. It is to these vice charges that I will now turn.

72 A similar approach has been taken by Chaokang Tai and Jeroen van Dongen, who in their article on the Dutch astronomer Anton Pannekoek, sought to unite the Marxist and 'scientific' personae of Pannekoek through a study of epistemic virtues: Tai and Van Dongen, 'Anton Pannekoek's Epistemic Virtues in Astronomy and Socialism'.

Joule's experiments versus Mayer's genius

Peter Guthrie Tait and John Tyndall were each other's favourite adversaries.[73] They crossed swords repeatedly from the 1860s up until the late 1870s. Tait and Tyndall kicked off their years of animosity in the summer of 1862, when Tyndall delivered his lecture titled 'On Force' at the Royal Institution, in which he gave 'an *apparently* uncontroversial account of the principles of "force"'.[74] The lecture sounded uncontroversial –it discussed rather neutrally how force and mechanical effect were related and even occasionally used the term 'energy'–, but it held a surprise in store for the audience: at the end of the lecture, Tyndall ascribed the discovery of the principles of force, including the mechanical value of heat, to the German physicist Julius von Mayer (1814-1878).[75] This was utterly controversial, because British consensus had it that it was not Mayer, but James Prescott Joule who held priority in the discovery of the conservation principle. To make things worse, Tyndall went on to claim that even William Thomson 'had merely applied his admirable mathematical powers to the development of the theory.'[76] Tait and William Thomson, both intimately involved in the North British science of energy, and fierce defenders of Joule, could not help but respond to the attack on Joule's priority.

But more was at stake than simply Joule's priority. As Crosbie Smith shows, the clash between Tyndall, Thomson and Tait should be seen as a clash not between individuals, but between different ideals of science, and ways of practicing it. On the one hand, there was the North British group of energy scientists, with members like Tait, Thomson, and

73 There was some mutual respect between the two, although their printed debates would never show it. A letter sent to Edward Frankland in 1867 gossips about one of Tyndall's visits to Scotland: 'I am glad he [Tyndall] says that Thompson and Tait were friendly with him at Dundee or as he calls it like brothers!' See: Letter from Henry Bence Jones to Edward Frankland, 18 September 1867 [EFP, JRL, 12/1031].

74 Smith, *Science of Energy*, 180. Italics in original.

75 John Tyndall, 'On Force', *Philosophical Magazine* 24:158 (1862) 57-66, 64-65.

76 Smith, *Science of Energy*, 180.

Maxwell, who cherished the combination of thorough experimentation, rigid mathematical modelling, and a dedication to a tradition of natural theology. In doing so, they sought to claim an image of Newton as methodical, inductive, patient and laborious. On the other hand, there was the group of mostly London-based scientific naturalists –Huxley, Hooker, Tyndall, Frankland, and others–, closely associated with the X-Club, who had embraced Darwin's theory of evolution, militated against Christian doctrine, and sought to claim the principle of energy conservation for themselves.[77] Tyndall's denial of Joule's priority was a clear move, Smith observes, 'to shatter that North British monopoly' on the science of energy and to enforce the reputation of the metropolitan group.[78] Their conception of science hinged more upon imagination and creativity, and sought to sever the ties between natural theology and science prevalent in the North British approach. The contention about Mayer's priority, therefore, can be seen as a proxy for the competition between two different ideals of science: scientific naturalism versus the science of energy.

Tyndall's claim for Mayer's priority was based on the simple fact that Mayer had published a calculation of the mechanical equivalent of heat in 1842, one year before Joule had published his 'On the Mechanical Value of Heat'.[79] Joule, however, was generally recognised to hold priority, because he had *experimentally* ascertained the mechanical equivalent of heat, whereas Mayer had merely *hypothesised* that such a relation between work and heat existed. Interestingly, Tyndall couched his defence of Mayer in unmistakably moral terms, explicitly referring to Mayer's desire for science: 'a man of genius working in silence, animated solely by a love of his subject'[80], who came to his conclusions 'some time in advance of those whose lives were entirely devoted to Natural Philosophy.'[81] Mayer,

77 Ibid. 170-171.
78 Ibid. 182.
79 J.T. Lloyd, 'Background to the Joule-Mayer controversy', *Notes and Records of the Royal Society of London* 25:2 (1970) 211-225, 212.
80 Tyndall, 'On Force', 65.
81 Ibid.

Tyndall observed romantically, was a neglected genius and deserved greater attention for his 'beautiful and correct thoughts', and his 'profound imaginative insights'.[82] To Tyndall, then, Mayer's genius was to be valued higher than Joule's method.

Tyndall's lecture elicited a furious response from the North British group. Joule himself wrote angrily to Thomson that due to Tyndall being Professor of Natural Philosophy at the Royal Institution and successor to Michael Faraday, 'the walls of the Royal Institution might be almost expected to cry out against the neglect by the present Professor'[83], while Tait, in a private letter to Thomson, dubbed Tyndall 'the monster T'.[84] However, the outcry was not limited to private correspondences. In order to protect their science of energy and Joule's priority, the battle was made public.

Joule responded politely with a letter in his defence in the *Philosophical Magazine* a month later, in August 1862. He agreed that Mayer had played a role in the development of the dynamical theory of heat, but challenged Mayer's prominent position, by presenting a larger history of thinking about heat, and placing Mayer at the very end of that philosophical development. More importantly, Joule argued that Mayer's conclusions were essentially hypothetical: 'there were no known facts to warrant the hypothesis'.[85] Mayer's contribution, in other words, was just a lucky guess. Joule 'fearlessly' asserted his own priority in experimentally ascertaining the mechanical equivalent of heat.[86] Throughout the letter, he stressed his 'good conscience'[87] and the 'justness' of his claims.[88] Tyndall, in response, took up the gauntlet and repeated his previous claims. He

82 Ibid.
83 Lloyd, 'Background to the Joule-Mayer controversy', 215.
84 Ibid.
85 James Prescott Joule, 'Note on the History of the Dynamical Theory of Heat', *Philosophical Magazine* 24: 159 (1862) 121-123, 122
86 Joule, 'Note on the History of the Dynamical Theory of Heat', 122.
87 Ibid. 121.
88 Ibid. 122.

conceded to Joule's claim to the experimental validation of the mechanical equivalent of heat, but still retained his view that Mayer held priority, having conceived the hypothesis earlier than Joule did. This was not due to a 'haphazard guess'[89] on Mayer's behalf, but rather the result of careful deliberation by 'a man of rare ingenuity.'[90] By contrast, Tyndall described Joule as merely the 'experimental demonstrator of the equivalence between heat and work.'[91]

This implied first of all that Tyndall found the hypothesis of equivalence between heat and work to be far more important than its subsequent experimental demonstration, which was necessary, but was deemed neither original nor a mark of genius. Secondly, Tyndall's framing not only shows his prioritisation of hypothesis over observation, it also betrays his view of what qualities made a good man of science: Mayer was described time and again as an underappreciated genius of ingenuity, working solely for the love of his subject, while Joule was described as a 'demonstrator', characterised solely by persistence and hard labour.[92] There is a clear hierarchy in Tyndall's presentation: hypothesis above experiment, and the abstract genius above the methodical experimenter.

Although Joule was not content with Tyndall's response, he withdrew from public controversy. In his stead, Thomson and Tait took up arms by publishing an article on 'Energy' in the illustrated family magazine *Good Words* in October 1862. In this article Thomson and Tait reaffirmed their view of the history of the science of energy, Joule's rightful place therein, and (without explicitly mentioning Tyndall) downplayed the role of Mayer. Tyndall, however, was attacked implicitly, as Thomson and Tait wrote 'it especially startles us that the recent attempts to place Mayer in a position which he never claimed . . . should have support within the very

89 John Tyndall, 'Mayer, and the Mechanical Theory of Heat', *Philosophical Magazine* 24:160 (1862) 173-175.
90 Tyndall, 'Mayer', 174.
91 Ibid.
92 Ibid. 173.

walls wherein Davy propounded his transcendental theories.'[93] According to Thomson and Tait, it was a case of depreciation and suppression of the claims of Joule. They attacked Tyndall, by implying that his position in the Royal Institution, where the venerable Humphry Davy and Michael Faraday had worked, was not a place fit for a man like Tyndall, who was clearly and viciously preoccupied with hypothesising, genius and ingenuity.

It took a while for Tyndall to respond and this was partly due to Thomson and Tait's choice for *Good Words*. The choice for a magazine of a popular and evangelical character, however, was sure to inflame the agnostic sentiments of Tyndall as soon as he found out, in March 1863, that he had been attacked in its pages. Again writing in the *Philosophical Magazine*, Tyndall expressed his annoyance: 'When however, it is known that the other articles in the number to which I refer, bear such titles as 'The Childhood of Jesus', 'The Trial Sermon' . . . 'At Home in the Scriptures', & etc., I think I may be excused if the article on Energy . . . imbedded in such matter as those titles indicate, escaped my attention.'[94] Moreover, Tyndall was explicitly infuriated by the 'imputations on individual character' and attacks on 'scientific morality' in such a popular magazine, and thought such accusations of vice below the 'dignity of science'.[95] He then repeated his view that the genius of Mayer was underappreciated in British scientific circles, and that the 'profound intuition' and 'undoubting conviction' of Mayer were at least on par with the 'steadfastness' of Joule.[96]

Tait was quite offended by both Tyndall's disqualification of the Christian journal *Good Words* as an arena for proper scientific discussion, and Tyndall's claim that Thomson and Tait unfairly attacked his character. Tait wrote to Thomson: 'I think we ought to crush him at once . . . I will do

93 William Thomson and Peter Guthrie Tait, 'Energy', *Good Words* 3 (1862) 601-607.

94 John Tyndall, 'Remarks on an Article entitled "Energy" in 'Good Words", *Philosophical Magazine* 25:167 (1863) 220-224, 220.

95 Tyndall, 'Remarks', 221.

96 Ibid. 123; Tyndall added that 'the future historian of science will not, I think, place these men in antagonism.' I just proved him wrong.

it singly'[97] and wrote a letter to the *Philosophical Magazine*, addressed to the editor and not to Tyndall, in which he repudiated all the claims made by Tyndall. First of all, he wrote in defence of *Good Words*, turning Tyndall's argument against him, by stating that the latter had published an article in *Macmillan's Magazine*, 'which found publicity in the peculiar society of "Water Babies", "Sunken Rocks", and "Women of Italy".'[98] So, to start with, Tyndall was guilty of false accusations. Secondly, Tait launched a frontal attack on Tyndall's defence of Mayer's claims, and attributed this to a faulty character: 'Prof. Tyndall is most unfortunate in the possession of a mental bias', that prevented him from recognising the fact that Mayer's claims were already valued correctly, even before Tyndall's unnecessary intervention.[99] Finally, Tait completely shredded Mayer's claims by stating that Mayer had 'no claim to novelty or correctness', that he had simply stumbled upon the equivalent of heat and work 'by a lucky chance', and that he had proceeded from a 'utterly false analogy', and that even in these grave errors he was already anticipated by the French philosopher Séguin.[100] On the other hand, Joule had proceeded experimentally and inductively, which was the true mark of a man of science. Like Tyndall, Tait constructed a hierarchy of men of science, but in contrast to Tyndall's placement of the hypothesising genius above the laborious demonstrator, Tait reversed the positions: the great experimenter Joule stood well above the lucky and unoriginal Mayer.

Tyndall parried the hostilities immediately.[101] He addressed himself not to Tait, but to Tait's co-writer in *Good Words*, William Thomson. This was sure to absolutely boil Tait's blood, especially because Tyndall wrote as if Thomson was the adult responsible for Tait's childish behaviour in earlier letters:

97 Lloyd, 'Background to the Joule-Mayer controversy', 217.
98 Peter Guthrie Tait, 'Reply to Prof. Tyndall's Remarks on a paper on "Energy" in 'Good Words", *Philosophical Magazine* 25:168 (1863) 263-266, 264.
99 Tait, 'Reply', 264.
100 Ibid.
101 John Tyndall, 'Remarks on the Dynamical Theory of Heat', *Philosophical Magazine* 25:169 (1863) 368-378.

> You are the older and more famous man, and it is your behaviour in this controversy, and not that of your colleague, that will interest the scientific world. I trust, therefore, Prof. Tait will see that simple chivalry makes it my duty to decline entering into any contest with him at present; and seeing this, he will, I doubt not, have the grace and modesty to stand aside and allow you and me to settle this affair between ourselves.[102]

Tyndall continued to restate his earlier claims on the role of Mayer as the original investigator of the relation between heat and work, and Joule's position as mere experimental demonstrator, whose investigations still lacked 'the requirement of refined experimental inquiry', which signifies that Tyndall believed that even experimentalists should possess some of the ingenuity and creativity of Mayer.[103] Moreover, Tyndall went on to attack Thomson personally. Citing the article in *Good Words*, Tyndall stated that:

> There is not an idea of any originality in the whole of that paper that is not to be found in the memoirs of Mayer; and yet you do not give him an iota of credit in this article of yours in 'Good Words', the accuracy you have so trumpeted forth. . . . In the presence of such facts, it ill becomes you to talk to me of suppression and depreciation. . . . these utterances of you are not good words, but the reverse. Judged by the facts, and apart from your own misinformed convictions, they are not even words of truth.'[104]

These were grave accusations, even more so because they were aimed at Thomson's character, rather than his scientific work. He was accused of at least three vices: untruthfulness, inaccuracy and unoriginality. This could not continue.

Two responses came in the next edition of the *Philosophical Magazine*: one short notice by Thomson, and one letter by Tait. Both took

102 Tyndall, 'Remarks', 369.
103 Ibid. 376.
104 Ibid. 377.

the moral high ground following Tyndall's accusations of vice. Thomson signalled that Tyndall had gone too far this time: 'I consider it a great injury to myself . . . the tone adopted by Dr. Tyndall in addressing myself is of a character, I believe, unprecedented in scientific discussion. It is such that I decline to take part personally in any controversy with him.'[105] He added that Tyndall's choice to ignore Tait was completely unwarranted and injurious to both Thomson and Tait.[106] Tait's reply was longer and also rather polite, as he reiterated his earlier statements on the primacy of experiment over hypothesis: 'the general principle of the conservation of energy is founded on the experimental determination of relations of equivalence between the various forms of energy . . . and this was begun by Joule', while Mayer's paper 'contains in its fundamental statements an essentially false analogy . . . the method suggested by Mayer was a retrograde step, and tended only to introduce confusion.'[107] Tait refuted all claims made by Tyndall and suggested that the latter's partisanship had driven him to vices of inaccuracy and untruthfulness in his discussion of Joule. Tyndall answered neither Thomson nor Tait, which the latter took to be a 'tardy acquiescence' in the claims made by the two in favour of Joule's priority in discovering the mechanical equivalent of heat, by virtue of his experimental proof.[108] Tait presented this as a glorious victory, and Joule took the opportunity to thank the two in the same issue, for their 'ability and friendly zeal with which they have asserted my claims'.[109]

This meant that Tyndall's attack on the Northern science of energy had been successfully fended off. Joule remained one of the Northern heroes and stood firm as the man who had experimentally determined the relation

105 William Thomson, 'Note on Professor Tyndall's "Remarks on the Dynamical Theory of Heat"', *Philosophical Magazine* 25:170 (1863) 429.
106 Thomson, 'Note', 429.
107 Peter Guthrie Tait, 'On the Conservation of Energy', *Philosophical Magazine* 25:170 (1863) 429-431, 430.
108 Peter Guthrie Tait, 'On the Conservation of Energy', *Philosophical Magazine* 26:173 (1863) 144-145.
109 James Prescott Joule, 'On the Dynamical Theory of Heat', *Philosophical Magazine* 26:173 (1863) 145-147, 147.

between heat and mechanical work. Their discussion, however, sheds some light on more general themes as well. We can see clearly that the language of virtue and vice was employed regularly in these discussions. First of all, frequent accusations of vice were made in the exchanges between Tyndall, Tait, Thomson and Joule. Even when they claimed that it was wrong and even detrimental to the dignity of science to lambast someone personally, attacks on someone's lack of virtue were made overtly. Tyndall accused Thomson and Tait of vices of untruthfulness, unoriginality and inaccuracy, while in return, Tyndall was accused of exactly the same vices and even for having a 'mental bias' that kept him from seeing the truth of the matter. These accusations, however, were primarily aimed at the way in which each party to the argument conducted themselves and the goals each one had in mind throughout the controversy.[110]

Secondly, and more interesting for my point in this chapter, is how the question of who held priority in the discovery of the energy conservation principle was answered in terms of virtue and vice. Both Tyndall and Tait defended their claims in favour of respectively Joule and Mayer by promoting different specific constellations of virtues. Tyndall claimed fame for Mayer on the basis of Mayer's genial character, his imagination and his ingenuity, which were held responsible for his accurate approximation of the relation between heat and work. Joule, in Tyndall's view, merely affirmed Mayer's views through his laboriousness and devotion to his methodical experiments, but this was deemed less important than Mayer's leaps of imagination. Tait and Thomson, on the other hand, defended Joule's perception of science: careful, accurate experimentation was much more important than imaginative hypothesising, which depended ultimately on sheer luck, and in Mayer's case, was based on inaccurate and false assumptions. In their view, the laborious and accurate Joule stood well above the lucky and imaginative Mayer.

110 Vicious conduct in controversy will be discussed at length in the following chapter.

Both sides, however, did agree about what kind of science 'Joule' and 'Mayer' stood for, but they valued their orientations very differently. Joule, recognised by both sides to be an inductive experimenter, unimaginative yet patient and laborious, was praised by the North British energy scientists but scoffed at by Tyndall. Vice versa, Mayer was recognised by both to be an imaginative thinker, valued by Tyndall but deplored by Tait. If we take one step back and recall Herman Paul's observation that scientific *personae* were both points of contention and coordinates on a map of the discipline, we can see how both Joule and Mayer, at least in this debate, came to stand for specific ways of doing physical science in late Victorian Britain. Associating with one excluded association with the other and the boundaries between these *personae* were enforced through the accusation of vice.

Finally, central to both the configuration of 'Joule' and that of 'Mayer' was the role taken up by the imagination; Joule eschewed the imagination and came to his results through methodical virtues of patience, accuracy and laboriousness, while the genius Mayer disregarded precisely those virtues in favour of the imagination. This theme re-emerged a few years later during another discussion between Tyndall and Tait.

Tait versus Tyndall

The animosity between John Tyndall and Peter Guthrie Tait simmered on through the 1860s. Tait was busily working on *T&T'* with Thomson. The first edition appeared in 1867, and firmly entrenched the methodological and moral convictions of the Northern science of energy. The work, purposely written to be included in the Mathematical Tripos at Cambridge University, served not only as a way to carve into stone the essentials of the new science of energy, it was also intended to educate and shape the minds of young students at Cambridge. It was a showcase of what Thomson and Tait thought good 'Newtonian' science should look like, and taught young men how to be like 'Newton'. In a chapter on 'Experience', for example, Thomson and Tait juxtaposed the virtuous method of the experimenter to

the method of 'hasty philosophers' who rushed to grand conclusions.[111] As in the controversy with Tyndall, they cherished virtues of 'endless patience and perseverance in designing and trying different methods' and advised that success was only attainable if an experimenter was 'not allowing himself to be disheartened by the non-success of one form' and 'judiciously varies his methods'.[112] Nature should be 'suspiciously' interrogated through repeated experiments and 'careful observation' so that 'inaccuracies' could be avoided.[113] Furthermore, the step from experimental results to expression in mathematical formulae was discussed in such a way that precision and accuracy was maintained.[114] In the following chapter, 'Measures and Instruments', the practical use of instruments and the best way to obtain accurate measurements were discussed. Again, virtues of 'accuracy', 'carefulness' and 'delicacy' recur repeatedly and were seen to safeguard a correct use of scientific instruments.[115]

John Tyndall, on the other hand, was busily working on his experiments on radiant heat and the molecular dynamics of matter, performing his many duties at the Royal Institution, and working with the other members of the X-Club to further the cause of scientific naturalism in Britain.[116] Like Thomson and Tait, Tyndall had great influence on generations of students via his position as Professor of Natural Philosophy at the Royal Institution. Like Thomson and Tait, again, Tyndall exploited this position to shape the character of his students. Unlike Thomson and Tait, however, Tyndall's emphasis lay not on the inductive character of science and its

111 William Thomson and Peter Guthrie Tait, *Treatise of Natural Philosophy* (Oxford: Oxford University Press, 1867) 442.
112 Thomson and Tait, *Treatise*, 443.
113 Ibid. 443-447.
114 Ibid. 454-456.
115 Ibid. 462, 464, 470, 472.
116 For an introduction to Tyndall's thought, see: Ursula DeYoung, *A Vision of Modern Science. John Tyndall and the Role of the Scientist in Victorian Culture* (New York: Palgrave Macmillan, 2011). For the X-Club and scientific naturalism, see: Ruth Barton, "An Influential Set of Chaps': The X-Club and Royal Society Politics, 1864–85', *British Journal for the History of Science 23* (1990) 53–81; and: Dawson and Lightman (eds.), *Victorian Scientific Naturalism.*

virtues of patience, self-discipline, accuracy and carefulness. Instead, he propagated an integrated approach towards scientific methodology, one that combined feats of induction and deductive thinking. Confronted with the Newtonian image as presented by Thomson and Tait, Tyndall chose another great man of science to represent his school of thought: Michael Faraday, his predecessor at the Royal Institution. Although Faraday's mantle did not always fit Tyndall well –Faraday was humble and moderate, even a devout Christian, where Tyndall was more assuming in his manner and sided with the scientific naturalists–, he did his best to wear it with pride.[117]

Upon Faraday's death, Tyndall presented his view of him in two lectures, later published together as *Faraday as a Discoverer* in 1868, one year after publication of *T&T'*. The biography offers an intriguing insight into Tyndall's conception of the ideal scholar and his claim to know the true character of Faraday.[118] Where Thomson and Tait cherished inductive traits and a Newtonian character, Tyndall presented Faraday in quite a different way: 'Faraday has been called a purely inductive philosopher. A great deal of nonsense is, I fear, uttered in this land of England about induction and deduction. Some profess to befriend the one, some the other, while the real vocation of an investigator, like Faraday, consists in the incessant marriage of both.'[119] Moreover, Tyndall stressed Faraday's hidden 'fire and that excitability', which he could only control through self-discipline.[120] Echoing his praise of Mayer, Tyndall continually underlined Faraday's genius, using terms such as 'magician', even stating that Faraday 'smells the truth' and that he came to his conclusions through 'wondrous insight and utterances which seem less the product of reasoning than of revelation'.[121] Faraday was not just a simple experimentalist, Tyndall claimed: 'Faraday was more than

117 DeYoung, *A Vision of Modern Science*, 78-85.
118 For a lengthier discussion of Tyndall's Faraday, see Cantor, 'Public Images of Michael Faraday', 173-177.
119 John Tyndall, *Faraday as a Discoverer* (London: Longmans, Green, &Co., 1868), 23.
120 Tyndall, *Faraday*, 38.
121 Ibid. 29, 45, 73.

a philosopher; he was a prophet, and often wrought by an inspiration to be understood by sympathy alone.'[122]

The hierarchy implied in Tyndall's appraisal of Mayer and Joule clearly returned in his Carlylean characterisation of the heroic Faraday. Faraday was much more than an inductive philosopher: he combined his prophetic genius with the self-discipline of the experimenter. Though not necessarily true to the real Faraday, this marriage befitted Tyndall well, as he sought to embody this image of Faraday. In Tyndall's hands, 'Faraday' came to stand for a constellation in which genius and imagination held primacy over method, accuracy and self-discipline. This, however, was not the only way in which Faraday was represented in Victorian Britain. An opposing image, more inspired by the self-help ethos of Samuel Smiles than by the Carlylean romantic view, was the 'realistic' image of Faraday, which stressed 'perseverance', 'industry' and his 'spirit of inductive inquiry', which was much closer to the ideals of Thomson and Tait.[123] Smilesian writers even criticised Faraday's more imaginative work: 'his genius only created useless castles in the air'.[124]

The tensions between the Newtonian image conceived by Thomson and Tait and the Tyndallic Faraday came to the fore again in the early 1870s, as Tyndall stepped up his scientific naturalist assaults on traditional Christian science and its dogmas. His aim was, as he expressed it himself in the preface to a collection of essays on the imagination, to 'dissipate the repugnance, and indeed terror' associated with the claims of natural science and 'legitimate scientific speculation'.[125] His goal was to counter the vices of fearful caution and repugnance, and he pursued this goal through various lectures on the use of the imagination in science, precisely the quality he had praised in both Mayer and Faraday. The first lecture on the imagination,

122 Ibid. 81.
123 Cantor, 'Public images of Michael Faraday', 186.
124 Ibid. 186.
125 John Tyndall, *Essays on the Use and Limit of the Imagination in Science*, 'explanatory note'.

given at the British Association for the Advancement of Science meeting at Norwich in 1868, did not generate much attention, but the second lecture on the subject, during the BAAS meeting at Liverpool in 1870 gave rise to furious comments, both inside and out of scientific circles.

The argument in the Liverpool lecture, 'On the Scientific Use of the Imagination', can be summarised in two sentences: men of science can explain a great deal through an appeal to observation and experiment, but legitimate speculation is needed in order to truly understand the nature of reality. Therefore, the imagination of the man of science is the most important faculty and takes precedent over the faculty of reason. Putting this theory into practice, Tyndall showed how he, through the scientific use of his imagination, could even legitimately speculate about the origins of life; concluding that life was once 'latent in a fiery cloud.'[126] In his address, Tyndall combined insights from the science of energy with a scientific naturalist defence of Darwin, evolution and the material origins of life.[127] In anticipation of the criticisms that would surely be uttered, Tyndall called on his listeners to employ virtues of 'courage' and 'manful willingness', rather than to recede into easy 'dogmatism', or to let 'the fear of error' preponderate over 'the love of truth'.[128]

His lecture, as calculated, led to an outcry of dissent from clerical circles. Reviewers from Christian magazines primarily attacked Tyndall's materialistic conclusions, and linked these conclusions to his personal character. One reviewer wrote in the Church of England periodical *The Record*: 'Such a philosophy, the child of unbridled pride of intellect, may

126 John Tyndall, 'On the Scientific Use of the Imagination', 35.

127 For more information on Tyndall's views on the reality of his molecular speculations, see: Maria Yamalidou, 'John Tyndall, the Rhetorician of Molecularity. Part One. Crossing the Boundary towards the Invisible', *Notes and Records of the Royal Society of London* 53:2 (1999) 231–242; and Maria Yamalidou, 'John Tyndall, the Rhetorician of Molecularity. Part Two. Questions Put to Nature', *Notes and Records of the Royal Society of London* 53:3 (1999) 319–331.

128 Tyndall, 'On the Scientific Use of the Imagination', 15, 35, 43, 44.

appeal to the wildest imagination of corrupted human nature, but it has not sympathy with all the higher yearnings of the soul.'[129] There was also a scientific response, voiced primarily by Peter Guthrie Tait in 1871. I have already alluded to this response at the beginning of this chapter, but I will elaborate further in these paragraphs.

Tait chose to publish a review in *Nature*, which was by then one of the journals in which highly controversial points could be fought out before a large scientific audience.[130] Interestingly, Tait did not attack Tyndall's materialistic conclusions head-on, although he surely disagreed with them. Instead, Tait criticised Tyndall's vicious lack of restraint in using the imagination –the balance was off.[131] Seen in the light of the earlier discussion between Tyndall and Tait on the merits of Joule and Mayer and their subsequent conceptualisations of the ideal scholar, Tait's attack on Tyndall's imaginative disposition should also be seen in the light of their competing definitions of what it took to be a scholar in the late nineteenth century.

Tait wrote: 'Professor Tyndall will eventually have much to answer for. He has lent his authority to the admission of imagination in the pursuit of science, and there is every prospect that people whose imaginative faculty is stronger than their habit of observation will give us all plenty to do.'[132] For Tait, Tyndall's plea for the imagination over 'habits of observation' was not a step forward in the progress of science, but a step back to the dark pre-Newton days: 'are we to live, scientifically, in the same way as alchemists and astrologers did in the Middle Ages? and are we to ignore all that Bacon and Newton have done for us?'[133] He conceded that creativity and the imagination were needed for men of science to pursue their goals, but again reversed Tyndall's hierarchy of imagination first, reason second: 'Let

129 N.N., 'Review of Tyndall's Lecture 'On the Scientific Use of the Imagination'', *The Record* (23 September 1870).
130 Baldwin, *Making "Nature"*.
131 Tait, 'Imagination in Science', 395.
132 Ibid.
133 Ibid.

us use the imaginative faculty by all means; but, in doing so, let us take our stand on the firm ground of the known before we venture ourselves into the unknown.'[134]

It is interesting to see, that Tait immediately took up the names of Newton and Bacon to fight for his cause. Tait's 'Newton' and 'Bacon' were shorthand for the inductive method and virtues of patience, accuracy and the disciplining of the imagination. For Tait, the only reasons the 'Middle Ages' ended, were the revolutions of Bacon and Newton, which not only offered a new way of looking at the universe, but, more importantly, a new way of being a scholar. This new scholar was characterised by a disciplining of the self, the laborious and accurate application of method and the restraining of the imagination.[135] Tyndall, on the other hand, could not base himself on these images of scientific worth, and instead sought others to do his bidding for him. The German poet Goethe, for example, figured prominently in Tyndall's address, as did Charles Darwin. The former was praised for his 'genius'[136], while the latter became a brilliant example of how to use the imagination: 'In the case of Mr. Darwin, observation, imagination, and reason combined have run back with wonderful sagacity'.[137] As in his characterisations of Mayer, and indeed Faraday, Tyndall framed Darwin and Goethe as geniuses, who could combine great intuitive and ingenious insights with accurate observations. For both Tait and Tyndall, it was all about balance: should the imagination be given leeway, or should it be disciplined?

Tait's critique on Tyndall's lecture, however, went further beyond

134 Ibid.

135 This view of Newton and Bacon was more popular, Richard Yeo argues, in the first decades of the nineteenth century, but gradually gave way to a view that downplayed the Baconian precepts and stressed the imaginative character of Newton's discoveries. In other words, Tait embedded himself in an older, more common-sense tradition with regard to the meaning of Bacon and Newton, which was more easily reconciled with his adherence to natural theology. See: Yeo, 'An Idol of the Marketplace', 267-280.

136 Tyndall, 'On the Scientific Use of the Imagination', 3.

137 Ibid. 31.

the virtues, or vices, that each man claimed to be important in science. Both of them also reflected on matters of devotion. Tyndall, lashing out against his more conservative and dogmatic colleagues, whom he called 'Tories in science'[138], stated in his lecture that: 'they do not lack the positive element, namely the love of truth, but the negative element, the fear of error, preponderates.'[139] They were motivated by fear, and not by the all-important love of truth, and this impeded their judgment. Tait also claimed this moral high ground and argued with respect to Tyndall's 'speculations' that 'for people who feel that they must walk over the earth in search of truth, nutriment of this kind is by no means sufficient.'[140] He added that Tyndall's vices might have grown from his desire to take 'a road through the air' to knowledge.[141] Both Tait and Tyndall claimed the love of truth for their own position.

This remark echoes another accusation that Tait had frequently made against Tyndall and others belonging to the metropolitan group of scientific naturalists: the criticism that they were not motivated by scientific concerns, but by a 'morbid craving for excitement.'[142] Although the article in which Tait wrote this, 'Sensation and Science', does not explicitly mention Tyndall, the fact that it appeared in the same year as Tait's reply to Tyndall's lecture on the imagination, that it was aimed at another lecturer at the Royal Institution, and that it reiterated several of the key points in Tait's earlier critique, suggests that Tait remained on the offensive towards scientific naturalism and its vicious lack of restraint.[143]

Moreover, Tait had frequently referred to Tyndall as a popular lecturer, and this article can therefore be interpreted as a critique on Tyndall's practices as well. In a source that I discussed before in the section on fame in chapter 1, Tait's review of Rev. Prof. Haughton's book on *The Principle*

138 Ibid. 16.
139 Ibid. 35.
140 Tait, 'Imagination in Science', 395.
141 Ibid.
142 Tait, 'Sensation', 177-178
143 See also Brown, *Poetry of Victorian Scientists*, 128-131.

of Least Action, Tait called out Haughton's 'morbid craving for excitement', which was 'characteristic of mental indolence', and which Tait saw as a 'contamination' of science.[144] Characteristics of 'sensation', according to Tait, were the facts that the writer left 'strictly mathematical applications' and plunged 'headlong into a wild sea of speculation, without previous careful definition of his terms'[145], being 'loose and slipshod' in language and mathematics[146], and displaying 'ignorance' of (better) work by previous authors.[147] This criticism echoed Tait's critique of Tyndall's speculations, made without basing himself 'on the firm ground of the known'. I argued in the first chapter that Tait's arrows were aimed at the vices exemplified by Haughton: a speculative use of the imagination and the want for excitement. I want to add now that these charges did not just apply to Haughton, but to Tyndall (Haughton's colleague at the Royal Institution) as well.

This firm ground of the known, as is observed by Daniel Brown, was formed both by the results of thorough experimentation, and by its conceptualisation in strict mathematical formulae. This was another North British point of critique on Tyndall: 'he was not a Wrangler', whereas Thomson, Maxwell and Tait were.[148] A lack of mathematical definiteness on Tyndall's behalf became a sign of scientific sensation in Tait's eyes. The linkage of popular sensationalism and the lack of mathematics and experiment in Tyndall's work was also expressed by James Clerk Maxwell, who loved to write in verse, and also attributed several verses to the feud between the mathematical Tait and the popular Tyndall:

> For Tait comes with his plummet and his line,
>
> Quick to detect your
>
> Old bosh new dressed in what you call a fine

144 Tait, 'Sensation', 177.
145 Ibid.
146 Ibid.
147 Ibid. 178.
148 Brown, *Poetry of Victorian Scientists,* 115.

Popular lecture

. . .

But see! Tait writes in lucid symbols clear

One small equation;

And Force becomes of Energy a mere

Space-Variation[149]

The claiming of strict and definite mathematical language for the cause of the North British science of energy was also another claim on Newton's legacy, who had, after all, devised the new calculus. The Tyndallic praise of imagination, creativity and genius was interpreted as an attack on this Newtonian ideal and was attributed to a desire for sensation, popularity and excitement. Tyndall, on the other hand, saw Thomson and Tait's stance as motivated by a fear of error, rather than by a love of truth, and himself cherished the imaginative genius of Faraday and Darwin over the inductive and fear-mongering dogmatism of the North British science of energy.

Two observations can be made on the basis of the above debate. First of all, Tait and Tyndall disagreed about the role the imagination should play in science, and, more specifically, which virtues should be cultivated. This was a question of balance: Tyndall lacked restraint, while Tait was excessively cautious. Secondly, the debate shows that the two assailants attacked not only each other's constellation of virtues, but also each other's love of science. Tyndall, Tait argued, was motivated by a morbid craving for excitement, while Tait was accused of fearing error more than he loved science. Both points are reminiscent of the common ground I sketched in the previous chapters: balance and a love of truth were thought to be remedies against vice. The debate between Tyndall and Tait shows that a perceived imbalance and inappropriate desires resulted in vice charges.

149 The full poem is cited in: Brown, *Poetry of Victorian Scientists*, 118–121.

Tait versus Ingleby

The role of mathematics in Tait's ideal of science was that it described nature in the most accurate and definite way possible. Although experiments and observations were the raw inductive resources for natural science, mathematics was the only language suitable to go beyond the observations and experimental results in order to arrive at a more general theory. In claiming this role for mathematics, as we have seen, Tait also claimed the Newtonian image as one which combined observation, experiment and generalisation in the one way in which that was possible: through rigid and definite mathematical conceptualisations, the influence of imaginative fancies was kept to a minimum.

Speaking of Newton's calculus, however, also brings to mind the old controversy between Isaac Newton and Gottfried Wilhelm Leibniz (1646-1716) over who had first invented the method of calculus in mathematics. It is now clear, as A. Rupert Hall writes in his book on the controversy, that 'it was certainly Isaac Newton who first devised a new infinitesimal calculus and elaborated it into a widely extensible algorithm', but that it was of 'equal certainty, the differential and integral calculus . . . was created by Gottfried Wilhelm Leibniz.'[150] In the late nineteenth century, however, this was not clear at all, and the quarrel between the German philosopher and the British philosopher was marked by an afterlife full of controversy and bad blood between German and British advocates of the one priority over the other.

Chauvinism played a major role in the discussions over the merits of both Newton and Leibniz, as both British and German writers sought to claim national aggrandisement for association with the calculus that did so much to improve scientific progress. In the late nineteenth century, with German science in the ascendant, the image of the British hero Newton was in need of protection and assertion. Peter Guthrie Tait, staunch defender of

150 A. Rupert Hall, *Philosophers at War. The Quarrel between Newton and Leibniz* (Cambridge: Cambridge University Press, 1980) 1.

his view of 'Newton', and often accused of being motivated by chauvinism[151], was found on the ramparts in the early 1870s, attempting to defend his image of Newton against intrusions from the side of metaphysicians, in a debate with the lawyer and metaphysician Clement Ingleby, who sought to rehabilitate Leibniz's claims. Through Leibniz and Newton, Ingleby and Tait discussed the ideal relationship between mathematics and metaphysics, and the role to be played by the imagination in the two. In their discussion, at least on Tait's side, chauvinism and national character also played a major role, as Tait sought to claim the virtuous Newton as a national symbol to counter all too metaphysical German science as symbolised by Leibniz.

The debate was provoked by Tait on the 17th of May 1879, when he read a paper on 'Hegel and the Metaphysics of the Fluxional Calculus', written by his assistant William Robertson Smith (1846-1894).[152] The paper was more or less a refutation of Hegel's views on Newton's calculus, interspersed with accusations of vice on Hegel's account. Terms such as 'self-complacent arrogance', 'shallow empiricism', 'self-conceited dogmatism' and 'vague pomposities' recur often and were employed to ridicule Hegel, who lacked a proper mathematical basis.[153] But the paper was not solely aimed at a refutation of Hegel's views on Newton. Its aims were more urgent, because in recent years Hegel was becoming more and more influential 'on British speculation'.[154] Moreover, Smith stated that metaphysical science was on the rise as well, and that the hubristic 'assumption of omniscience' on their part was very troubling for the progress of science as a whole, because the Hegelian approach was so imperialistic: it provided answers not only to metaphysical questions, but to physical and mathematical ones as well.[155] Smith was worried, and having read the paper, so was Tait. After reading

151 See for example Knott, *Life and Scientific Work*, 225.
152 W. Robertson Smith, 'Hegel and the Metaphysics of the Fluxional Calculus', *Transactions of the Royal Society of Edinburgh* 25 (Edinburgh: Robert Grant & Son, 1869) 491-511.
153 Ibid. 505
154 Ibid 491.
155 Ibid.

the paper and adding his own comments, Tait drew the boundaries between metaphysics and mathematics even more strictly, and argued that it was impossible for a metaphysician to also be a proper mathematician. The two were mutually exclusive, and it was clear that Tait preferred one to be a mathematician.[156] He even challenged the audience and the 'metaphysical world' at large 'to produce a metaphysician who was also a mathematician', and could not think of such a person himself.[157] By drawing such firm boundaries, Tait hoped to save inductive science from being contaminated by metaphysical speculations, which were characterised by the above-mentioned vices of shallowness, self-conceit and complacency.

Clement Ingleby, who taught logic and metaphysics at the Birmingham and Midland Institute, felt urged to respond to Tait's attack on metaphysics, calling it 'a confusion of thought respecting the intellectual ranks of mathematicians and metaphysicians.'[158] In response, Ingleby argued that there were three types of mathematicians (inventors, experts and students), and only two types of metaphysicians (creators and students). Having cleared up his definitions, Ingleby took up Tait's challenge and argued that both former classifications (mathematical inventors and metaphysical creators) could very well be combined in a single person, and that at least Descartes and Leibniz would qualify: they had both invented new mathematical approaches and constructed metaphysical systems. The simple fact that Tait had missed these two eminent names was the result of 'ignoration on the part of the Scotch mathematician . . . that challenge was doubtless intended as mere *badinage,* at the expense of a science which he had taken no pains to understand.'[159] Moreover, Ingleby added that it would indeed be very fruitful if mathematics and metaphysics would come closer together, and declared anyone who opposed that view, as Tait did, to

156 Peter C. Kjærgaard, 'Migraine and Metaphysics: Sentinels of Science in Nineteenth-century Physics', *Journal of Cambridge Studies* 5:4 (2010) 1-15, 2.
157 Cited in: C.M. Ingleby, 'Creators of Science', *Nature* 5 (23 November 1871) 62.
158 Ingleby, 'Creators of Science', 62.
159 Ibid.

be 'the enemy of intellectual progress, who delights in setting the one class of investigators against the other.'[160] Not only were Tait's views wrong, he was also motivated by a masochistic delight in sowing discontent within science.

Tait, accused of being an enemy of science, responded within a week and called Ingleby's personal attack 'appalling' and the work of 'a strategist of no mean order.'[161] On a less personal note, Tait repudiated Ingleby's trichotomy of mathematicians: 'The man is either a Mathematician or a Non-Mathematician.'[162] Being a mathematician was much easier than being a mathematical inventor, and so people like William Thomson and James Clerk Maxwell also qualified as mathematicians in Tait's view. As regards metaphysics too, Tait proposed a different distinction to that of Ingleby: 'genuine' metaphysicians and 'spurious' metaphysicians.[163] Names in the first category were deemed properly scientific and included mathematicians and physicists such as Descartes, Hamilton and many more. Leibniz, however, was harshly excluded from the list, because he was 'simply a thief as regards Mathematics, and in Physics he did not allow the truth of Newton's discoveries.'[164] Illegitimate, or 'spurious' metaphysicians, on the other hand, were arrogant imposters, 'dwellers in a sublime sphere', pompous and prideful system builders that offered nothing but nonsense.[165] Leibniz belonged to that group. In Tait's eyes, those who saw themselves as 'metaphysicians', almost exclusively belonged to the latter class, while proper mathematicians and physicists were the genuine kind of metaphysicians. The opposition between genius and method thus played a major role in Tait's boundary work between mathematics and metaphysics. The former could be pursued by anyone skilled in mathematics, whereas

160 Ibid.
161 Peter Guthrie Tait, 'True and Spurious Metaphysics', *Nature* 5 (30 November 1871) 81.
162 Tait, 'Metaphysics', 81.
163 Ibid.
164 Ibid.
165 Ibid.

the latter was a pseudo-science, pursued by unaccountable and viciously prideful imposters. Metaphysicians, in other words, did not pursue truth, but rather their own imaginative fancies.

Tait's derogative response prompted Ingleby to defend himself and the metaphysics he represented. For the sake of argument, Ingleby followed up on Tait's classification, and showed that it offered some 'surprising results'.[166] First of all, in Tait's view Descartes was deemed a mathematician, while in Ingleby's eyes Descartes would qualify both as a bad mathematician and a 'spurious' metaphysician.[167] Secondly, and more importantly, Tait's treatment of Leibniz as a non-mathematician and a mere thief of Newton's theories was grossly unfair in the eyes of Ingleby, and simply incorrect: 'this charge is made just twenty years too late. It is exactly that time since the last vestige of presumption against the fair fame of the great German was obliterated.'[168] Ingleby spoke firmly in defence of Leibniz –a matter he thought had already been cleared up– and again questioned Tait's judgment on this matter.

At this point, the debate took another turn. Where Ingleby and Tait had disagreed on the relative merits of metaphysics and mathematics, the debate now started to focus on the character of Leibniz. In a later contribution, Ingleby repeated his conviction that Leibniz was a true mathematician and stated that he revered 'the name and intellect of Leibnitz, and I, for one, have a human interest in clearing that name from a foul slander.'[169] What 'Newton' was to Tait, 'Leibniz', as this quote suggests, was to Ingleby: an *exemplar* of what a good metaphysician or mathematician should be. Tait, on the other hand, reiterated his claim that Leibniz had stolen Newton's calculus, accusing him of being 'dishonest' and calling his behaviour 'suspicious'.[170]

166 C.M. Ingleby, 'Leibnitz and the Calculus', *Nature* 5 (14 December 1871) 122.
167 Ingleby, 'Leibnitz', 122.
168 Ibid.
169 C.M. Ingleby, 'Leibnitz's Mathematics', *Nature* 19 (23 January 1879) 267.
170 Tait, 'Leibnitz's Mathematics', *Nature* 19 (30 January 1879) 288.

This in turn prompted Ingleby to clear Leibniz's good name. He called upon the Royal Society to reopen the investigation into the Leibniz and Newton controversy and to release the papers on the basis of which the priority was decided. Only if these papers would be reread, 'evidence to character' could become a factor in the appraisal of Newton and Leibniz.[171] Responding, again within a week, Tait found Ingleby's sudden call for a reopening of the investigation into Newton and Leibniz rather surprising, because Ingleby had said earlier that 'the last vestige of presumption' against Leibniz had been obliterated twenty years ago. Having backed Ingleby into a corner, Tait delivered the final blow by citing the 'true metaphysician' Kant's opinion of Leibniz, who compared Leibniz to people who 'gave themselves out to be possessed of secrets, when they had really nothing but a persuasion and a conviction of their capacity for acquiring such.'[172] Leibniz, in Kant's eyes, did not proceed inductively but intuitively –the mark of a spurious metaphysician–, and was quite dishonest about his findings at the same time.

The fact that both Ingleby and Tait discussed the question of Leibniz's or Newton's priority in inventing the calculus in terms of 'evidence of character' is very striking. Tait's argument against Leibniz was not only motivated by his disdain for deductive metaphysics and the imagination, it was also intended to reassert the claims of the North British science of energy on a Newtonian character; if Newton was not solely responsible for the new calculus, then the claims of a Newtonian pedigree would certainly be diminished. The list of Tait's scientific heroes –Joule, Thomson, and of course Newton–, necessitated a list of anti-heroes, or villains. Joule was the antithesis of Mayer, Tyndall of Thomson, and finally, the dishonest and metaphysically arrogant 'Leibniz' stood against the inductive and mathematical 'Newton'. As a lecturer in metaphysics, Ingleby's status relied heavily on Leibniz's status as metaphysician and proper mathematician.

171 C.M. Ingleby, 'Leibnitz and the Royal Society', *Nature* 19 (20 February 1879) 364.

172 Peter Guthrie Tait, 'Leibnitz's Mathematics', *Nature* 19 (27 February 1879) 384.

As he said himself, he had a 'human interest' in clearing Leibniz from Tait's foul slander. To conclude this section, then, I hope to have shown that the quarrel between Newton and Leibniz led a surprising afterlife in a late nineteenth-century discussion between Tait and Ingleby. Leibniz was invoked either as an *exemplar* or as a villain, depending on who was asked.

Finally, both Tait and Ingleby attributed different constellations of virtues and vices to 'Leibniz'. As far as Tait was concerned, 'Leibniz' stood for a combination of vices: dishonesty, pride, arrogance, and reliance on intuition. In Tait's eyes, 'Leibniz' was a landmark on the 'map' of science that was to be avoided at all costs in favour of 'Newton'. By ascribing vices to Leibniz, Tait drew imaginary boundaries between good and bad science. As in the disputes with Tyndall, the imagination plays a central role in these accusations: Leibniz's metaphysics was too imaginative, whereas Newton had successfully disciplined and guided his imagination.

Tait versus Spencer

Between 1873 and 1880, Tait fell out with another member of the X-Club, the philosopher and metaphysician Herbert Spencer. Again, the discussion focused on metaphysics, experiment and intuition. Again, Newton's image and the *Principia* were invoked. What distinguishes this case from the previous cases, however, is the fact that both Tait and Spencer sought to claim Newton for their own purposes: Spencer employed Newton to support his argument that all basic physical truths were to be grasped *a priori*, while Tait claimed Newton to show that induction, experiment and observation lay at the basis of physical truths. The debate on *a priori* reasoning that was fought out between Spencer and Tait can therefore also be seen as a renegotiation of Newton and a frontal attack by Spencer on the Newtonian pedigree claimed by Thomson and Tait in their *T&T*'.

The controversy started with an anonymous review of Herbert Spencer's *First Principles*, *Principles of Biology*, and *Principles of Psychology*

in October 1873.[173] The reviewer was rather critical of Spencer's work, but, according to Spencer himself, 'not wholly unsympathetic'.[174] Spencer therefore took time to refute the criticisms made on his philosophical system by the anonymous reviewer. The reviewer deplored the fact that metaphysicists like Spencer undermined physical and inductive science by placing their *a priori* metaphysical systems above 'all experimental evidence'.[175] In response, Spencer confirmed the fact that *a priori* reasoning took precedent over experimental evidence, and in the process, he touched upon Thomson and Tait's *T&T*'.[176]

The reason for drawing in Tait and Thomson was that the anonymous reviewer had invoked a remark by Tait, namely that 'Natural philosophy is an experimental, and not an intuitive science. No *a priori* reasoning can conduct us demonstratively to a single physical truth.'[177] We have already seen that this was Tait's conviction; in all controversies thus far, he had underlined the centrality of experiment to natural science and warned against too great an influence of the imagination. Herbert Spencer, on the other hand, called this remark 'rather doubtful' and 'imperfect', because the question of experiment versus *a priori* reasoning was not a matter of physics, but a question 'respecting the nature of proof', in which Tait's judgment of the matter bore far less weight.[178] Spencer took it even further by attacking both *T&T*' and its framing of Newton's *Principia* as a feat of inductive science. It was rather odd, Spencer stated, that Tait asserted that 'no *a priori* reasoning' could lead to physical truths, when at the same time, Tait took Newton's laws of motion 'as basis for Physics', which were,

173 N.N., 'Herbert Spencer', *British Quarterly Review* 58 (October 1873) 472-504. Ruth Barton later identified the writer as J.F. Moulton, a mathematician: Ruth Barton, 'Scientific Authority and Scientific Controversy in *Nature*: North Britain against the X Club', in: Louise Henson et. al. (eds.), *Culture and Science in the Nineteenth-Century Media* (Aldershot: Ashgate, 2004) 223-235, 235.

174 Herbert Spencer, 'Replies to the Quarterly Reviewer', *The Popular Science Monthly* (March 1874) 541-552, 541.

175 N.N., 'Herbert Spencer', 477.

176 Spencer, 'Replies', 548-552.

177 Ibid. 548.

178 Ibid.

in Spencer's view at least, literal *a priori* 'physical truths'.[179] Newton's laws simply could not be established *a posteriori*, Spencer claimed, and so it was 'not a little remarkable' that Tait spoke of the primacy of experiment 'when he has before him the fact that the system of physical truths constituting Newton's "Principia", which he has joined Sir William Thomson in editing, is established by *a priori* reasoning.[180] Tait had misunderstood Newton, and the mantle belonged ultimately to Spencer.

Tait wrote to *Nature* immediately, questioning the 'mental attitude' and 'preposterous notions' exhibited by Spencer. As such, Tait was echoing the accusation of a vicious 'mental bias' made against Tyndall. The reply was rather brief and amounted to a mockery of Spencer's skills in mathematics, which Tait compared with that of an oblivious undergraduate student.[181] It seems however, that Tait either misunderstood Spencer's argument or consciously avoided his main points, because the attack was mostly focused on Spencer apparently doubting the reality of the laws of motion, while in his article, Spencer had only disputed the epistemological grounds for those laws.[182] Tait's reply once again prompted a response by Spencer, who reiterated his conviction that 'there are *a priori* mathematical truths . . . so are there *a priori* physical truths' that were 'enunciated by Newton as such' and even 'adopted by Professor Tait as such'.[183] Spencer thus claimed that Tait did not understand Newton's reasoning and that even he himself was engaged in *a priori* 'intuitions', even though he militated against such reasoning.[184]

In the same issue of Nature, the anonymous reviewer from the *Quarterly Review* took up arms in favour of Tait and the latter's framing of

179 Ibid 549.
180 Ibid. 550.
181 Peter Guthrie Tait, 'Herbert Spencer versus Thomson and Tait', *Nature* 9 (26 March 1874) 402-403.
182 Baldwin, *Making Nature*, 44.
183 Herbert Spencer, 'Prof. Tait and Mr. Spencer', *Nature* 9 (2 April 1874) 420-421, 420.
184 Spencer, 'Tait and Spencer', 420.

Newton's merits, in an article titled 'Herbert Spencer versus Sir. I Newton'. He wrote: 'neither Prof. Tait nor myself are, after all, treated so cruelly as is Newton, who, though his life was spent in maintaining the experimental character of all physical science, is cited as an authority for the *a priori* character of the most important of all physical truths – the well-known Three Laws of Motion.'[185] Moreover, Spencer's cruel treatment of Newton was the result of Spencer's metaphysical dogmatism; the reviewer advised him to 'dogmatise either less elaborately or less rashly about the views of a philosopher like Sir. I. Newton.'[186] Again, an accusation of vice was used in a debate to discredit someone's view of the ideal scholar. The debate simmered on through 1873 and 1874, and even though Tait had withdrawn from the debate, Spencer's perceived attacks on Newton and his alleged 'intensely unmathematical' disposition were continuously deplored in *Nature's* pages. Spencer even wrote to the editor of *Nature*, Norman Lockyer, that he had been treated unfairly.[187] Tait, on the other hand, was quite content with Spencer's shredding in the pages of the journal, not in the least because this felt like revenge on Tyndall as well, for he too wrote to Lockyer, in verse form:

> We'll see in a jiffy if this Mr. S[pencer]
>
> Has the ghost of a claim to be thought a good fencer.
>
> To my vision his merits have still seemed to dwindle.
>
> Since I found him allied with the great Dr. T[yndall]
>
> While I have, for my part, grown cockier and cockier,

185 The Author of the Article in the British Quarterly Review, 'Herbert Spencer versus Sir I. Newton', *Nature* 9 (2 April 1874) 421. Confusingly, the anonymous author of this article published under the name 'The Author of the Article in the British Quarterly Review'.

186 Author, 'Spencer versus Newton', 421.

187 Baldwin, *Making Nature*, 45.

Since I found an ally in yourself, Mr. L[ockyer][188]

Again, the discussion between adherents to different conceptions of science was fought out with reference to, firstly, the personal character of those involved and the virtues and vices they exhibited, and secondly, with reference to the Newtonian image in Victorian science and the virtues attributed to him.

In 1880, however, the debate ensued, as Herbert Spencer published a new article dealing with criticisms of his theories, specifically those uttered earlier by Tait and the mathematician Thomas Kirkman.[189] In the article, Spencer began by repeating the argument he had made earlier: mathematical and physical truths cannot be established experimentally, but rather only through *a priori* reasoning. This view, he thought, was confirmed by Newton's establishment of the laws of motion.[190] Secondly, Spencer attacked Tait for misunderstanding the principles of evolution that he had articulated in his work. More importantly, however, Spencer reflected on the reasons for Tait's disagreement with this position, attributing this to flaws of character and 'mental peculiarities', 'idiosyncrasies of thought', and a faulty 'habit of mind'.[191] Spencer argued that Tait's judgment was very inconsistent, and that he had a 'curious mental trait' that made him 'incapable of distinguishing' between a position communicated by Spencer himself and a caricature of this position constructed in Tait's own mind.[192] Tait would do well, Spencer believed, to strengthen his 'analytical faculties',

188 The verse is cited fully in Baldwin, *Making Nature*, 46. Moreover, Baldwin makes the point that the X-Club, to which both Spencer and Tyndall belonged, no longer saw *Nature* and Lockyer as an ally in their naturalistic ambitions, partly as a consequence of Spencer's treatment.

189 Herbert Spencer, 'Criticisms Corrected: I. Tait and Kirkman', *The Popular Science Monthly* (October 1880) 795-801. Kirkman had attacked Spencer's formula of evolution and made a mockery of it: John Offer, *Herbert Spencer and Social Theory* (New York: Palgrave Macmillan, 2010) 152.

190 Spencer, 'Criticisms Corrected', 795-796.

191 Ibid. 795.

192 Ibid. 799-800.

and to take a lesson in 'mental discipline' from Spencer.[193] Furthermore, Spencer attributed the vices of 'men of letters' to Tait, arguing that Tait lacked the scientific ability to look beyond the particularities of his research, because he missed 'a synthetical habit', which caused this 'defects of judgement'.[194] Thus, Spencer attacked not only Tait's experimental methodology, but attributed this to Tait's vices: a lack of mental discipline, poor judgment and inconsistency. Moreover, Spencer again claimed the Newtonian image for his own purposes by downplaying the virtues of the inductive method and championing the Newtonian imagination instead.

Tait, in response, attacked both Spencer's accusations of vice and his appropriation of Newton with recourse to even more accusations. He accused Spencer of 'habitual laziness', 'mental peculiarity' and a 'desire to appear to know where knowledge is not', of 'speculation' and trying to 'dogmatise' on his metaphysical system, of lacking 'accuracy' and, most importantly, for arrogantly positioning his own metaphysical system of evolution on the same level as Newton's laws: 'He puts his Formula of Evolution alongside of the Law of Gravitation!'[195] A week later, Spencer repeated his defence of *a priori* reasoning, and attributed Tait's failure to see the correctness of his views again to his 'way of thinking', 'peculiarity of thought' and inconsistency of 'judgment'.[196] He even described Tait's views as 'fictions, pure and absolute'.[197]

Neither Spencer nor Tait were prepared to stand down and became bogged down in their own respective trenches, repeating the same arguments again and again, but, consequently, attacking each other's character ever more ferociously. Tait, recognising the quagmire in which he had become trapped, finally thought it time on the 9th of December 1880

193 Ibid. 800.
194 Ibid. 801.
195 Tait, 'Prof. Tait on the Formula of Evolution', *Nature* 23 (25 November 1880) 80-82, 80-81.
196 Herbert Spencer, 'Mr. Spencer and Prof. Tait', *Nature* 23 (2 December 1880) 100-102, 100-101.
197 Spencer, 'Mr. Spencer and Prof. Tait', 101.

that the hostilities should cease, but not without trying a final offensive. He repeated his disdain of Spencer placing his own formula of evolution on par with Newton and 'alongside of the Law of Gravitation' and attributed this to Spencer being one of the 'metaphysicians' who, in their imaginative 'fancy' uttered nothing but 'nonsense'.[198] Spencer's final reply was focused solely on Tait's treatment of him, which he found unfair, because Tait attributed statements to him that he never made.[199] The discussion was not resumed afterwards, as the positions and reciprocal animosity had become quite clear.

Let us take a step back and look at what was discussed between Tait and Spencer, and in which terms. First of all, as in the previous discussions between Tyndall and Tait, the legitimacy of *a priori* reasoning and the use of the imagination were at stake. Spencer held that experimental and inductive science could only proceed from principles that needed to be established *a priori*. Tait maintained the opposite point and argued that physical truths could only be established by induction and experiment. Secondly, the role of mathematics was discussed: both Tait and the anonymous reviewer accused Spencer of being 'unmathematical', while Spencer rebutted that mathematicians generally lacked the ability to see the bigger picture. Thirdly, as the debate escalated further, both Tait and Spencer resorted more and more to attacks on each other's character. Terms such as 'mental peculiarities', 'habits of laziness', 'lack of judgment', and 'desire to know where knowledge is not' recurred often: both Tait and Spencer recognised that in order to criticise each other's methodological orientations – *a priori* versus inductive reasoning – , they needed to attack the character of the *a priori* philosopher or the inductive experimentalist. The controversy not only revolved around the question of whether Spencer was correct in stating that there was an *a priori* element in Newton's *Principia*, but also around what such an argument said about the character of the man wielding it. In

198 Peter Guthrie Tait, 'Prof. Tait and Mr. H. Spencer', *Nature* 23 (9 December 1880) 123.

199 Herbert Spencer, 'Mr. Spencer and Prof. Tait', *Nature* 9 (16 December 1880) 144.

these discussions, the imagination took centre stage: was the imaginative genius the motive force of science, or was it the inductive experimentalist? Finally, as in the other cases I have discussed in this chapter, the quarrel between Spencer, Tait and others shows how debates on what good science was, which virtues should be employed and what vices should be shunned, were fought out via *personae*, models of scientific selfhood. For Tait, as we have seen earlier, Newton was shorthand for inductive science and inductive virtues. Spencer, however, appropriated the Newtonian image for his *a priori* metaphysical ends, thus angering not only Tait, but also many others in the pages of *Nature* and the *British Quarterly Review*. The accusation that Spencer placed his formula of evolution on par with the grand Newtonian laws of gravity, therefore, should not be overlooked: it was the virtuous mantle of Newton that was at stake in this debate.

Conclusion: mapmaking and the imagination

This chapter has zoomed in on four controversies in which ideals of scholarly selfhood were at stake.[200] In these debates and personal quarrels, Victorian scholar negotiated and demarcated their ideals of what it took to be a scholar. Although the four controversies that I discussed took place over three decades and concerned different parties and debates, I can offer three general concluding remarks about the language of virtue and vice, *personae*, and the imagination in late Victorian science, respectively.

200 These four are of course not the only debates in which Tait was engaged, nor have I explored every theme in every discussion exhaustively. There was, for example, a very visible discussion between Tait and Tyndall in *Nature* on the work of J.D. Forbes, Tait's predecessor at Edinburgh, which I have not discussed (Melinda Baldwin has, in her *Making Nature*, pages 41-43), nor have I discussed Tait's incidental clashes with vector analysts Olivier Heaviside and Josiah Willard Gibbs over the merits of the quaternion method. Chris Pritchard and Michael J. Crowe have discussed this: Crowe, *History of Vector Analysis*, esp. chapters 5 and 6; and Pritchard, 'Tendril of the Hop and Tendril of the Vine: Peter Guthrie Tait and the Promotion of Quaternions, Part I', and 'Flaming Swords and Hermaphrodite Monsters: Peter Guthrie Tait and the Promotion of Quaternions, Part II'.

Let me start with the language of virtue and vice. The four controversies show that debates about proper scientific methodology and debates about disciplinary boundaries were also fought out at a very personal level. This is no surprise for historians of science, but since virtue language is often read as a way of creating unity within particular disciplines or communities, it is worth stressing that virtue and vice were also a sign of discontent.[201] There were generally two contexts in which language of virtue and vice was employed. First of all, there was the polemical context: Spencer accused Tait of 'defects of judgment', Tait accused Spencer of 'laziness', Tyndall accused Thomson of 'unoriginality' and 'dishonesty', and so on. Accusations of vice were thus uttered frequently at opponents in a scientific controversy, as a means to discredit the views of one's adversary. I will return to this kind of vice charge in the next chapter.

As I have stated in the introduction to this chapter, there was also a second, more complex context in which accusations of vice and attributions of virtue functioned: they served to fight out debates about what it took to pursue physical knowledge in late Victorian Britain. The language of virtue and vice offered a common tongue for speaking about matters of scholarly selfhood, and differences of opinion about what a good scholar looked like were therefore fought out in this common tongue. The quarrels between Tait and Tyndall focused not only on what counted as decent scientific evidence (the discussion regarding the merits of Joule and Mayer), or whether men of science could grasp the essence and origin of matter (Tyndall's lecture), but also on what type of scholar should be cultivated. Tyndall clearly cherished a constellation of genius, ingenuity, courage and originality, virtues he opposed to Tait's vices of fear-inspired restraint, caution or Joule's careful experimentation. The same can be said for the dispute between Ingleby and Tait: not only were the relative merits

201 This point has been made by Herman Paul, who has argued that language of virtue and vice not only served to strengthen bonds between scholars, but that it was also meant to stress difference; virtues were often employed as a declaration of war, or as a defence of a position under pressure: Paul, 'Weber, Wöhler, and Waitz'.

of metaphysics and mathematics discussed, but also the personal traits of mathematicians and metaphysicians. Leibniz's vice of dishonesty is a case in point, as is the 'evidence to character' to which Ingleby referred. Finally, Spencer and Tait discussed not only the importance of *a priori* reasoning as opposed to inductive experimentation, but also questions of scientific selfhood and the mental peculiarities of both Tait and Spencer. Debates over what it took to be a good scholar, therefore, were fought out through the attribution of virtues and the accusation of vice.

This brings me to my second remark, which deals with the relation between the language of virtue and vice, and models for living a scientific life. None of the discussions above were about singular virtues or vices, but rather about a balanced constellation of them. We have seen this emphasis on balance in earlier chapters too: writers of scholarly obituaries taught that a skewed moral balance would lead to vices. When Tait and Tyndall discussed Joule and Mayer, they did not speak about the importance of laboriousness or accuracy or ingenuity in their own right, but rather disputed the relative importance of these virtues for the ideal make-up of the scientific man. In Tyndall's ideal configuration, or Spencer's for that matter, ingenuity and courage were more important than carefulness and laboriousness. Tait, on the other hand, prioritised caution, discipline and restraint over a freer use of the imagination. They each promoted different constellations of virtues, because they held different views of what science was. Tait, being committed to a tradition of natural theology, stressed restraint, while Spencer, committed to scientific naturalism and his own metaphysical system, stressed intuition and creativity.

These constellations of virtues were often inscribed on past scientific heroes, like Newton, Faraday, or Leibniz. Such names functioned as shorthand for a specific way of doing science. 'Newton', at least in Tait's perception of him, stood for a constellation of virtues that enabled an inductive methodology and disciplined the imagination. The appropriation of such *personae* was not unproblematic, however. Tyndall's romantic and

imaginative perception of 'Faraday', for example, was at odds with other interpretations of 'Faraday' that cherished the more methodical side of his character. Also, the discussions between Tait and Ingleby, and Spencer and Tait both show that ideal versions of 'Newton' or 'Leibniz' were not always readily accepted. The images of these *personae* needed to be negotiated and their boundaries required policing. This is why the discussion between Spencer and Tait was so fierce: both claimed 'Newton' as their hero. Was Newton an example of an *a priori* metaphysician, as Spencer presented him? Or was he the virtuous symbol of induction, as Tait would have preferred? These shorthand classifications for what it took to be a scholar in late Victorian Britain therefore required continuous boundary work. To frame one type of scientific selfhood as ideal-typical, another type often needed to be presented as an enemy of scientific progress. Accusations of vice and attribution of virtue therefore demarcated and policed the boundaries of scholarly *personae*.

Herman Paul has described this process of boundary work between different scientific *personae* as a process of map-making, a metaphor which fits the findings of this chapter quite well: 'Newton' was a coordinate on an imaginary map of the discipline, just like 'Bacon' or 'Leibniz'. Because these names referred to real historical individuals, there was some consensus about the make-up of these *personae* (Newton, for example, generally referred to a combination of Baconian methodology and imaginative genius), but at the same time, some leeway for reinterpretation was left. Tait's 'Newton', a constellation in which the imagination was disciplined by Baconian virtues of induction, was not the same as Spencer's 'Newton', which cherished ingenuity over these inductive virtues. Moreover, associating a scholar with such a *persona*, e.g. associating Tyndall with 'Mayer' or Ingleby with 'Leibniz', was a strategy of attributing vice to someone. Through association with the spurious 'Leibniz', who in the eyes of Tait stood for dishonesty, arrogance and pride, Tait accused Ingleby of the very same vices. The language of virtue and vice in Tait's four quarrels was thus indicative of a broader disagreement on what good science was, which models of

scientific selfhood should be emulated and what the exact content of these models was. Moreover, accusation of vice and attribution of virtue were effective strategies in the process of map-making, as they drew and shifted boundaries between different coordinates on the imaginary map of science.

Finally, this chapter has something to say about the imagination in Victorian science, as it was central to all discussions I have analysed. First of all, a certain measure of imagination was recognised by all parties as being necessary for the pursuit of knowledge. However, what was disputed was the scope of the role the imagination should be allowed to play. Tait did not dismiss the power of the imagination, but expressed that science could only progress if the inductive and Baconian method was primary in science. Like 'Newton', men of science should discipline their imagination through careful, accurate, patient and modest science. Tyndall, Ingleby and Spencer attributed great role to the imagination. Like Mayer, Tyndall's 'Faraday' or Spencer's 'Newton', men of science should enable the imagination to ensure scientific progress. The discussions therefore were not about *whether* the imagination had a role to play in science, but about *which* role the imagination should play. Because everyone was endowed with the faculty of the imagination, moreover, the discussion centred on constellations of virtues that either disciplined or enabled the imagination. Again, balance was the key point here. As such, Tait's controversies echo the themes in academic memory culture: the use of the imagination was not a problem in itself, but an enthusiastic and undisciplined use of this faculty was.

However, historiographical accounts have provided a narrative of disappearance of the imagination in science, in which the faculty became increasingly feared, and even loathed during the nineteenth century because it threatened ideals of communicability and objectivity in science. I have argued that historiography generally tells a tale of disappearance: Lorraine Daston, Richard Yeo and Rebekah Higgitt, all claim that the late nineteenth century saw a new consensus about genius and method and hence the role of the imagination in science. This consensus was very much shaped by the

increasing importance of the ideal of objectivity in science: the scientific but subjective self needed to be disciplined in order to arrive at objective knowledge and hard accountable facts. Debates about moral character, these authors claim, slowly became debates about objective methodology, and the interest in the moral make-up of the scholar waned.[202]

This chapter shows that although ideals of objectivity certainly play a major role in the discussions I have analysed, the imagination did not disappear from discussions about scholarly selfhood, and the interest in the moral character of Victorian scholar was still very much alive. Tait explicitly called for the performance of inductive virtues of patience, carefulness, modesty, laboriousness and accuracy to discipline the subjective imagination. In this sense, the Tait case certainly ties in with the historiographical accounts of disciplining the imagination and Tait's accusations of vice can be understood in this light. Tyndall, however, tried to counter subjectivity as well, not through virtues of restraint, but rather through an attack on natural theology and religious prejudice in science, an attack that required the assistance of creative imagination. This suggests that there were multiple threats to the ideal of objectivity: not only sources within the self, like the faculty of imagination, but also sources outside the self, like religious prejudice. The imagination, then, was a human faculty that could lead to vices if deployed wrongly, but which could also be used for virtuous causes. The vices associated with the imagination, therefore, were *relative*, in the sense that some parties considered traits of restraint to be virtuous, while others saw them as vices, depending on their perception of what science ought to be.

In this chapter, I have shown how the language of vice was employed to perform moral boundary work between ideals of science and the models of scientific selfhood that accompanied those ideals. I have focused mostly

202 Daston, 'Fear and Loathing', 86-87. Higgitt, *Recreating Newton*, 184, 191-192; Yeo is more nuanced, and argues that moral and intellectual virtues were uncoupled by the end of the nineteenth century: Yeo, 'Images of Newton', 278-279.

on physics: an academic discipline with career-paths, professorships, journals and other institutions well in place. Although there was a deep disagreement about the aims, methods, ideals and futures of physics, proponents of all parties had access to professorial chairs, laboratories and outlets for their views. Physics, despite internal differences, was an established discipline in late nineteenth-century Britain. The institutional embeddedness of physics translated into a focus on moral boundary work: the boundaries of the discipline had to be constantly policed to keep inappropriate characters, ideals and methods at bay. This caused the debates about virtue and vice to focus primarily on so-called epistemic vices: vices that impeded the acquisition of good knowledge had to be ousted from the disciplinary space of physics. The debate thus focused more on boundary work than it focused on cooperation. In the following chapter, however, I will scrutinise how scholarly cooperation in a decidedly unstructured institutional environment (Shakespearean scholarship) gave rise to wholly different debates about the category of vice. In these debates over scholarly cooperation, it were not epistemic vices in the strong reading of that word that were at stake, but rather, social vices.

4

Frederick James Furnivall

and social vice

Introduction

In April 1881, a large group of reputed Shakespearean scholars announced that they had resigned their membership of the New Shakspere Society[1], due to the deplorable conduct of its founder, Frederick James Furnivall.[2] Their exodus heralded the end of the society: publications became fewer and fewer over the next years and its T*ransactions* ceased in 1892.[3] Why did they leave? And, what could the founder and president of the society's committee, Frederick James Furnivall, possibly have done to cause this exodus?

The exodus of members was the result of Furnivall's quarrel with the antiquarian Shakespearean scholar James Halliwell-Phillipps (1820-1889), who had been a productive member of the society since its inception in 1873.[4] From 1880 onwards, Halliwell-Phillipps and Furnivall engaged in a dispute that not only embroiled many other members, but that was so

1 The spelling 'Shakspere' was based on two known autographs by Shakespeare and Furnivall adopted it as a means to underline the accurate ambitions of the society.

2 'The New Shakspere Society', *Athenaeum* (30 April 1881) 593.

3 William Benzie, *Dr. F.J. Furnivall. Victorian Scholar Adventurer* (Norman, OK: Pilgrim Books, 1983) 208.

4 Marvin Spevack coined the term 'philological antiquary' to describe Halliwell-Phillipps as a scholar and offers a short description of his life: Marvin Spevack, 'James Orchard Halliwell: Outlines of a Life', *Anglia – Zeitschrift für englische Philologie* 114:1 (2009) 24-56, 44.

acrimonious that many members felt uncomfortable being associated with Furnivall. I will discuss their dispute and its origins in more detail later, but a few examples may suffice here to illustrate how heated the dispute became and how accusations of vice played a central role in it.

In one rather insulting pamphlet, Furnivall deplored Halliwell-Phillipps' 'mortified vanity' and proneness to 'injudicious flattery', and called him 'as learned as a turnip-top'.[5] Furnivall's insults at Halliwell-Phillipps' address prompted the latter to defend himself. As we have come to expect, Halliwell-Phillipps also drew on the powerful discourse of vice to denunciate his attacker: he deemed him 'dictatorial', and argued that his alleged 'want of temper'[6] and 'ungentlemanly manner'[7] had 'thrown ridicule on Shakespearean criticism'.[8] Moreover, Halliwell-Phillipps organised resistance to the founder of the Society, his goal being to elicit an apology.

Many members answered that call. They tried to pressure Furnivall into apologising, which failed, and then saw no other option but to resign: 'after another but unfortunately unsuccessful attempt to obtain from Mr. Furnivall some slight expression of regret . . . they have left the Society and drawn up a protest.'[9] Moreover, the members complained about the passivity of the Society's committee by claiming that 'if the Society has no organisation capable of putting a stop to the use of such language by its Director, it is not a society to which a gentleman can belong.'[10] In

5 Frederick James Furnivall, *The "Co" of Pigsbrook & Co.* (London: privately published, 1881) 3-5.

6 Halliwell-Phillipps to Ingleby, 3 December 1879, printed in: William Peterson, *Browning's Trumpeter: The Correspondence of Robert Browning and Frederick J. Furnivall, 1872-1889* (Washington D.C.: Decatur House Press, 1979) 168

7 Halliwell-Phillipps to Robert Browning, 26 January 1881, printed in: Peterson, *Browning's Trumpeter*, 169-171.

8 Halliwell-Phillipps to Robert Browning, 31 January 1881, printed in: Peterson, *Browning's Trumpeter*, 172-174, 172.

9 'The New Shakspere Society', *Athenaeum* (30 April 1881) 593. The resignation was announced earlier (on the 17th of April), but the *Athenaeum* reported only on the 30th of April.

10 Benzie, *Furnivall*, 207.

other words, Furnivall's anti-social behaviour, his vicious language and his breaking of gentlemanly codes of conduct led to an end of scholarly cooperation.

This was a great shame, because the New Shakspere Society had published a vast amount of decent scholarly work on the life and works of Britain's greatest bard. Furnivall's biographer has described the output of the New Shakspere Society as 'far from insignificant' and its members as a 'well-disciplined team of workers [who] did a great deal for the study and appreciation of Shakespeare'.[11] The meetings of the society were especially marked by quality. It was 'matched by only the very best analytical German scholarship, and throughout the period of the society's existence, a large gathering of distinguished scholars regularly presented and discussed the papers.'[12] Thus, it was Furnivall's vicious conduct in his controversy with Halliwell-Phillipps that ended the society's scholarly successes.

Now, let me zoom out a little to show what issues were at stake in this debate. A first observation is that personal attacks, in the form of accusations of vice, play a central role in the debate between Halliwell-Phillipps and Furnivall. This should not be surprising in light of the previous chapter, in which we have seen Tait and his opponents exchange personal attacks and accuse each other of vice. As I have argued in the previous three chapters, the centrality of vices in Victorian debates over scholarship pointed to an agreement on the moral nature of scholarship (vices threatened the pursuit of knowledge and had to be kept at bay), and, simultaneously, to a disagreement about what good scholarship actually constituted. Personal vice charges were therefore common strategies to neutralise adversaries, as we have seen in chapter three. Many other histories of Victorian knowledge have pointed to the often very bitter and

11 Ibid. 210.
12 Ibid. 211.

ad hominem attacks between scholars holding opposing views.[13]

A second observation is that Furnivall was primarily attacked for his vicious *social* behaviour, and that he himself predominantly charged others with such vices too. These *social* vices, as I will call them, – being 'dictatorial' and 'ungentlemanly' – had dire *epistemic* consequences – the breaking down of scholarly cooperation within a literary society. It was not so much epistemic vices in the *strong* sense of the word (*strong* here signifying the reading that epistemic vices are exclusively aimed at epistemic goods) that were at the centre of this debate, but rather epistemic vices in a *weaker* definition of the adjective: violations of scholarly and

13 There are a lot of examples. A very important one is James Secord's detailed history of the 'Cambrian-Silurian' controversy – the quarrel of thirty years between geologists Sedgwick and Murchison-, which shows how even seemingly uncontroversial objects like geological maps could be carriers of personal attacks and markers of controversy. Secord marvellously brings scientific controversy and a social history of science to the centre stage and argues that debate and disagreement were not pathology of science, but a creative force: Secord, *Controversy in Victorian Geology,* especially 312-318. Melinda Baldwin also sheds light on such discussions about what it took to pursue knowledge, and, moreover, shows how scientific discussions in the columns of *Nature* could get very personal indeed: Baldwin, *Making "Nature"*, especially chapters 1, 3 and 4. For *ad hominem* attacks as a rhetorical literary strategy in the hands of geologist Hugh Miller, see: Michael Shortland, 'Hugh Miller's Contribution to the *Witness*: 1840-56', in: Michael Shortland (ed.), *Hugh Miller and the Controversies of Victorian Science* (Oxford: Clarendon Press, 1996) 287-300, 291. Also within the humanities, such personal attacks were commonplace. Examples showing this are: Ian Hesketh, 'Diagnosing Froude's Disease'; and: Trev Broughton. 'The Froude-Carlyle Embroilment: Married Life as a Literary Problem', *Victorian Studies* 38:4 (1995) 551-585. A final example of how heated Victorian controversies could become, and how central matters of character, vice and gentlemanliness were to such controversies, is the drawn out rivalry between Charles Dickens and William Thackeray: Michael John Flynn, 'The Book of Snobs: Thackeray, Dickens, and the Class Polemics of Victorian Fiction' (PhD-dissertation, Washington University, 2006), especially 16-33; and: Michael John Flynn, '*Pendennis, Copperfield*, and the Debate on the "Dignity of Literature", *Dickens Studies Annual* 41 (2010) 151-189.

gentlemanly codes of conduct and vicious behaviour in controversy.[14] Such vices also threatened standards of communicability, not because it pitted private epistemic desires against common goals and standards, but because it thwarted the process of scholarly cooperation. As such, the example of Furnivall deviates from Tait's controversies, where a narrower version of epistemic vice charges can be distinguished.

Recent scholarship has argued that *strong* readings of epistemic vice are often historically anachronistic, in the sense that nineteenth-century learned men did not distinguish between different sets of vice. In my introduction, I already drew attention to Christiaan Engberts and Herman Paul's article on nineteenth-century orientalist scholars in which they forward the more inclusive epithet of 'scholarly vices' rather than 'epistemic vices' to draw attention to the often overlapping meanings of 'vice'.[15] I also mentioned another article published by Engberts on how the German orientalist Heinrich Ewald emerged as a negative ideal-type of scholarly conduct, especially because of his anti-social behaviour: he was said to lack humility and was deemed arrogant and dogmatic.[16] In Ewald's case, as in the case of Furnivall, transgressions of social norms were envisioned to threaten a collective epistemic project. Despite these explorations however, *social* vice, as a distinctive part of the more inclusive

14 Focusing on the *weak* reading of epistemic vice and virtue 'allows for multiple, overlapping and/or contrasting aims, including epistemic ones, which makes it possible to understand a virtue such as impartiality as moral, epistemic and political at the same time': Creyghton, Huistra, Keymeulen, and Paul, 'Virtue language in historical scholarship', 935.

15 Christiaan Engberts and Herman Paul, 'Scholarly Vices: Boundary Work in Nineteenth-Century Orientalism', in: Jeroen van Dongen and Herman Paul (eds.), *Epistemic Virtues in the Sciences and the Humanities*, Boston Studies in the Philosophy and History of Science 321 (Cham: Springer, 2017) 79-90, 86.

16 Christiaan Engberts, 'Gossiping about the Buddha of Göttingen'. Philosophers in virtue epistemology, moreover, have also drawn attention to the social contexts of knowledge production, in which social virtue is indispensable: Adam Green, *The Social Contexts of Intellectual Virtue: Knowledge as a Team Achievement* (Abingdon: Routledge, 2017). For a reading of epistemic vices as inherently social, see: Alessandra Tanesini, 'Epistemic Vice and Motivation', *Metaphilosophy* 49:3 (2018) 350-367.

group of *scholarly* vices, remains an understudied subject in the history of scholarship, especially in the Victorian context.[17] Compared with the other cases that I have outlined in this dissertation, moreover, Furnivall's case shows a remarkable emphasis on the *social* components of scholarly vice and therefore merits a closer look.

There is another related imbalance in scholarship: much of the work done on scholarly virtues and vices focuses on *well-established* academic disciplines, such as history or physics. In these cases, the language of vice often functioned as a means of boundary work: scholars used the language of vice to exclude what they called amateurs from their communities and boycott scholars whom they deemed unfit to take up professorial positions.[18] The previous chapter on the controversies of Peter Guthrie Tait illustrates this mechanism of boundary work in a structured institutional environment: Tait actively sought to limit the academic influence of scientific naturalists such as Tyndall and Spencer by attributing epistemic vices to them.[19] Charging someone with vice, in these cases, was a means to protect academic communities, standards and ideals, and to exclude vicious influences from power.

However, not all Victorian learning was organised in academic disciplines, with professorial chairs and support networks well in place. In many fields of scholarship, there was no such thing as an academic discipline in the first place; there was no disciplinary space to demarcate and there were no boundaries to police. Victorian literary scholars, for example, did not organise as an academic discipline until 1894, upon the establishment

17 I do have to mention Ian Hesketh's account of the embroilment between Froude and Freeman here though, which touches upon the language of character and moral boundary-work, but does not systematically analyse the language of vice itself. There is work on early modern conceptions of scholarly vice too, as mentioned in the introduction. See: Goldgar, *Impolite* Learning; Kivistö, *The Vices of Learning*; and: Corneanu, *Regimens of the Mind*.

18 The Freeman-Froude controversy that Ian Hesketh describes is a case in point: Froude and Freeman fought over professorial chairs and academic influence. See also: Léjon Saarloos, 'Virtue and Vice in Academic Memory'.

19 See chapter 3, and: Saarloos, 'Virtues of Courage and Virtues of Restraint'.

of the Oxford English School, and in the later decades of the nineteenth century, there was no consensus at all about the future, object, method, or goals of literary studies.[20] Instead, the period was marked by 'passionate and confused debates about what was proper to the academic study of English literature', and scholars were often 'caught between enthusiasm and scholarship, between the work of philology and criticism.'[21]

The field of Shakespearean scholarship in particular had no clear boundaries: there was no settled method of analysis, no institutional embedment, nor was there a coherent idea about what Shakespearean scholars should be like. Of course, scholars had engaged with Shakespeare for centuries, but unlike in Germany, where Shakespeare came to be studied philologically at universities in the nineteenth century, there was no Victorian tendency to form an academic discipline or institutionalise

20 See: D.J. Palmer, *The Rise of English Studies* (London: Oxford University Press, 1965). Palmer traces the 'rise of English studies' and describes some of the developments that led to this rise: the professorial seats of English at King's College and University College, the discussions in Oxford during the 1870s and 1880s between philologists, historians and classical scholars, and, ultimately, the debates that led to the establishment of the Oxford English School as a truly academic discipline. Other accounts have shown how English became studiable *outside* of the academy in the nineteenth century: Charlotte C. Morse, 'Popularizing Chaucer in the Nineteenth Century', *The Chaucer Review* 38:2 (2003) 99-125; Noelle Phillips, '"Texts with Trowsers": Editing and the Elite Chaucer', *The Review of English Studies* New Series 61: 250 (2009) 331-359.

21 Stephanie Trigg, *Congenial Souls: Reading Chaucer from Medieval to Postmodern* (Minneapolis: University of Minnesota Press, 2002) 159, 178. Richard Utz makes a similar point: Utz, 'Enthusiast or Philologist?'. For Furnivall's position in the establishment of modern philology, see also: James Turner, *Philology: The forgotten origins of the modern humanities* (Princeton, NJ: Princeton University Press, 2014) 262-265.

Shakespearean scholarship through professorial chairs or curriculums.[22] Instead, a very diverse group of people engaged in the study of Shakespeare: playwrights, poets, critics, antiquarians, quantitative scholars and philologists all engaged in reading and analysing Shakespeare's plays and determining, by all kinds of methods, which plays were authentically his.[23] This also meant that the boundaries between scholarship and ambient society were porous and rather poorly defined.

One of the first serious efforts at organised cooperative Shakespeare scholarship was Frederick James Furnivall's New Shakspere Society, which was founded in 1873.[24] From the very start, the New Shakspere Society incorporated a heterogeneous group of scholars with a diverse array of methods: antiquarians like James Halliwell-Phillipps, quantitative

22 Mark Hollingsworth has shown that the many different and competing views of Shakespeare in the late nineteenth century were rooted in diverse ideological and methodological agendas: Mark Hollingsworth, 'Nineteenth-century Shakespeares: nationalism and moralism' (PhD-thesis, University of Nottingham, 2007) 11-14. For German Shakespearean scholarship, see: John A. McCarthy (ed.), *Shakespeare as German Author*: *Reception, Translation Theory, and Cultural Transfer* (Leiden: Brill, 2018), especially chapter one, 'The "Great Shapespere." An Introduction', 1-75; and Rüdiger Ahrens, 'The Critical Reception of Shakespeare's Tragedies in Twentieth-Century Germany', in: Ronald L. Dotterer (ed.), *Shakespeare: Text, Subtext, and Context* (Selinsgrove, PA: Susquehanna University Press, 1989) 97-106, 98-99. For the Victorian context and the influence of German philology, see: Charles Laporte, 'The Bard, the Bible, and the Victorian Shakespeare Question', *ELH* 74:3 (2007) 609-628.

23 For an overview of this heterogeneous engagement with Shakespeare in Victorian Britain, see: Gail Marshall (ed.), *Shakespeare in the Nineteenth Century* (Cambridge: Cambridge University Press, 2012); for the debates on Shakespeare's authorship, see: Emma Smith, 'The Shakespeare Authorship Debate Revisited', *Literature Compass* 5:3 (2008) 618-632. Although Shakespeare was engaged with theatrically and in performance, most of the engagement with Shakespeare was through texts. See: Hollingsworth, 'Nineteenth-century Shakespeares', 5-6.

24 The New Shakspere Society had one precedent, the Shakespeare Society, which existed between 1840 and 1853, but was far less significant in scope, ambition and output. Its main practice was the antiquarian illustration and emendation of Shakespearean texts. The Society's founder, J.P. Collier, moreover, was implicated in the forgery of a Shakespearean folio and scholarly fraud. See: Benzie, *Furnivall*, 180; and: Samuel Schoenbaum, *Shakespeare's Lives* (Oxford and New York: Oxford University Press, 1993) 245-265.

scholars like Frederick Gard Fleay (1831-1909), literary critics like James Spedding (1808-1881), and philologists like Alexander Ellis (1814-1890).[25] So instead of being defined by boundaries, the New Shakspere Society was characterised by diversity and lack of structure in terms of method and the types of scholars involved. Before discussions of boundary-work could arise that would set the society apart from other forms of organised scholarship, the very centre of the new society had to be defined: what were the preferred methods of Shakespeare scholarship? What type of scholar did it take to analyse Shakespeare's texts? Should Shakespeare scholarship be (academically) institutionalised in the first place?

In such a loose institutional context, with such a diverse membership, and with so much at stake, scholarly cooperation was a very fragile process. Consequently, the function of the discourse of virtue and vice in a largely unstructured institutional environment was not primarily that of boundary work. Rather, talk of virtue and vice functioned in the first place as a marker of successful or unsuccessful scholarly cooperation. Virtuous behaviour guaranteed the success of a collective epistemic project, whereas social behaviour that was considered 'vicious' – like Furnivall's 'dictatorial' and 'ungentlemanly' conduct in his dispute with Halliwell-Phillipps – thwarted scholarly cooperation and risked the fragile process of defining the centre of the new society. Socially virtuous behaviour was crucial to communicability.

In the case of the New Shakspere Society, there were three main controversies that offer insight into such mechanisms and the role of vice: Furnivall's clash with Halliwell-Phillipps, which led to the end of scholarly cooperation, Furnivall's falling out with Frederick Gard Fleay, a prominent member of the society who was increasingly marginalised, and Furnivall's well-known quarrel with Algernon Swinburne, a poet who criticised the New Shakspere Society for its disciplining effect on Shakespeare

25 Frederick James Furnivall, *Revised Prospectus of The New Shakspere Society* (London: Clay and Taylor, 1873).

scholarship.[26] This chapter will explore these three main controversies with the view to analysing the function of social vices in unstructured institutional environments. How was the discourse of virtue and vice employed to guide, smoothen, protect and, ultimately, end the fragile process of scholarly cooperation?

I will discuss the three controversies in chronological order. Firstly, the controversy between Furnivall and Fleay (1873-1874), then the dispute between Furnivall and Swinburne (1875-1881), and finally, the quarrel

26 These three controversies have received some attention in literature, but apart from William Benzie, Furnivall's biographer, nobody treats the three in comparison. Moreover, historians tend to describe the controversies between Furnivall and the others in terms of method or personal antipathy only, and pay no attention to the language of vice so prevalent in the discussions. Benzie offers a short description of the three controversies, but does not dive deeply into the reasons for the falling-out. The controversy between Fleay and Furnivall, for example, took place because 'Furnivall . . . was never taken in by Fleay' (page 189), and the dispute between Halliwell-Phillipps and Furnivall was due to him being 'secretly pleased of the chance to get a shot at Furnivall' (page 203). As for the Swinburne controversy: most authors refer to Oscar Maurer's 1952 article, which describes the controversy between Furnivall and Swinburne in great detail, but analyses it solely in terms of a clash between 'aesthetic' versus 'scientific' or 'mechanical' criticism. As I will argue, however, Swinburne and Furnivall's methodological positions were much closer than Maurer is suggesting, and their controversy centred more on matters of character, vice, and the organisation of scholarship in disciplinary institutions such as the New Shakspere Society. See: Benzie, Furnivall, 189, 203; and: Oscar Maurer, 'Swinburne vs. Furnivall. A Case Study in "Aesthetic" vs. "Scientific" Criticism', *The University of Texas Studies in English* 31 (1952) 86-96. Only Richard Storer, in an article on Shakespearean scholar Clement Mansfield Ingleby, touches upon the project of collective scholarship in the New Shakspere Society and its demise through the dispute between Furnivall and Halliwell-Phillipps, but his account is rather brief and focuses mainly on Ingleby's scholarship, which was threatened by Furnivall's 'rulebreaking': Richard Storer, '"Shakespeare appears in the character of the modern Prometheus": C.M. Ingleby and Victorian Shakespeare Controversies', *Victorians: A Journal of Culture and Literature* 131:1 (2017) 1-12, especially 15-16. Finally, William Peterson offers an account of the Halliwell-Phillipps controversy by publishing the letters sent by those involved to the president of the society, Robert Browning. There is some context given, but not much analysis of the language of virtue and vice that is almost omnipresent in the correspondence: Peterson, *Browning's Trumpeter*, Appendix A.

between Furnivall and Halliwell-Phillipps (1880-1881).To start, however, let me present a brief account of the founding of the New Shakspere Society and Furnivall's position in late Victorian literary scholarship and Shakespeare scholarship in particular. This background will enable me to outline the debates between Furnivall, Fleay, Swinburne, and Halliwell-Phillipps in more detail.

The New Shakspere Society and Frederick James Furnivall

Frederick James Furnivall founded the New Shakspere Society in 1873. He was relatively successful in gathering early support, and enlisted no less than sixty-six reputed scholars to serve as (ceremonial) vice-presidents. Among them were well-known Shakespearean scholars such as Edward Dowden (1843-1913), Walter William Skeat (1835-1912), and Bernhard ten Brink (1841-1892), but famous Victorians like Thomas Henry Huxley and John Ruskin (1819-1900) were also present on the list.[27] The society started out with 250 members and saw its membership doubled over the decade, which was quite a feat for a literary society in this period.[28]

The early success of the society was mostly due to Furnivall's own massive scholarly network and his experience in founding literary societies focusing especially on early English literature. In his capacity as editor of the *Oxford English Dictionary*[29], Furnivall had previously founded three literary societies as a means to give the dictionary access to a vast amount of early English material: the Early English Text Society (founded in 1864), the

27 The presence of Ruskin and Huxley owes to Furnivall's involvement with the Working Men's College, of which he was a founder.

28 Benzie, *Furnivall*, 184-185.

29 At the time, this project was known as the *New English Dictionary*. Furnivall was its editor from 1861 until 1870. See: Simon Winchester, *The Meaning of Everything*: *The Story of the Oxford English Dictionary* (Oxford and New York: Oxford University Press, 2004). Furnivall (performed by Steve Coogan) made a surprising comeback in the 2019 film *The Professor and the Madman*, which centres on the compilation of the *Oxford English Dictionary*.

Chaucer Society (1868) and the Ballad Society (1868).[30] He hoped that the same cooperative scholarly work that characterised the Early English Text Society and the Chaucer Society could now bring comparable successes to Shakespearean studies.[31] What were the aims of the society, and how did Furnivall muster support?

The Prospectus for the New Society offers answers to these questions, as it set out its ambitious societal and methodological commitments. The main goal would be to 'do honour to Shakspere, make out the succession of his plays and thereby the growth of his mind and art, promote the intelligent study of him and print texts and illustrate his work and times.'[32] Shakespeare would have to be studied as a whole, so that his entire mind could be understood. The earlier antiquarian Shakespeare Society, by contrast, had only focused on one or two plays, but neglected Shakespeare's wholeness.[33] Moreover, the founder of that earlier society, John Payne Collier, had been implicated in scholarly fraud and the forgery of a Shakespeare folio.[34] Furnivall deemed this early 'narrow' approach not 'worthy' of the great Shakespeare.[35] In a later version of the Prospectus, Furnivall added a nationalistic flavour to the recipe for the New Shakspere

30 The New Shakspere Society was Furnivall's fourth society, and after that came the Wyclif Society (1881), the Browning Society (1881) and the Shelley Society (1886). On the Early English Text Society, see: Antony Singleton, 'The Early English Text Society in the Nineteenth Century: An Organizational History', *The Review of English Studies*, New Series, 56: 223 (2005) 90-118. For the Chaucer Society, see: Morse, 'Popularizing Chaucer'; Phillips, '"Texts with Trousers"; and: Trigg, *Congenial Souls*. For the other, smaller societies, see: Benzie, *Furnivall*, 220-255.

31 For the successes of cooperative work for the New English Dictionary, see: Hans Aarsleff, *The Study of Language in England, 1780-1860* (Princeton, NJ: Princeton University Press, 1967) especially chapter VI. For Furnivall's role in this work, see: Benzie, *Furnivall*, 179-184. Singleton has argued that the cooperative work within the Early English Text Society became 'an example *par excellence* of the industrious, co-operative middle-class activity that characterised' Victorian literary culture: Singleton, 'The Early English Text Society', 91.

32 The original Prospectus is quoted in: Benzie, *Furnivall*, 179.

33 Furnivall, *Revised Prospectus*.

34 See note 24 in this chapter.

35 Furnivall, *Revised Prospectus.*

Society: 'It was then a disgrace to England, that while Germany could boast of a Shakspere Society . . . England was then, and had been for 20 years been, without such a Society.'[36] One reason for the public support, then, was nationalist sentiment: Britain needed its bard back and Furnivall proposed to rescue him from the clutches of German scholars and fraudulent predecessors.

Another legitimation was provided by the society's ambition to render the study of Shakespeare scientific. To this end, Furnivall introduced the readers of the Prospectus to the quantitative tools of literary scholarship. He wrote that like the 'geniuses of Science so wrested her secrets from Nature', 'faithful students' of Shakespeare could make use of the scientific method to gain access to Shakespeare's mind.[37] What this scientific method amounted to, in Furnivall's eyes, was a close scrutiny of Shakespeare's changing style and the resulting 'gradual changes of versification'.[38] These changes (in style of verse, line endings, rhyme schemes and so on) should be studied quantitatively as to guarantee accuracy and trustworthiness.

This public commitment to quantitative scholarship, however, was not followed through in practice. This is nicely illustrated by Furnivall's opening and agenda-setting speech to the society. In this speech, Furnivall backtracked on the Prospectus' dedication to quantitative scholarship. Although he did attribute an important role to quantitative methods in Shakespearean scholarship, he vindicated the primacy of more traditional scholarship and its philological, antiquarian and aesthetic arguments. He stated that 'a very close study of the metrical and phraseological peculiarities of Shakspere' would enable scholars to 'get his plays as nearly as possible into the order in which he wrote them', but added that such methods only offered a decent starting point for scholarship.[39] Championing non-

36 Ibid.
37 Ibid.
38 Ibid.
39 Frederick James Furnivall, 'Opening Address', *New Shakspere Society's Transactions* 1 (1874) v-vi, vi.

quantitative methods, then, Furnivall claimed that scholars should employ 'higher tests of imaginative power, knowledge of life, self-restraint in expression, weight of thought, depth of purpose; and then to use that revised order for the purpose of studying the progress and meaning of Shakspere's mind'.[40] For Furnivall, quantitative research was only the first step towards a true understanding of Shakespeare. More important were *higher* tests: the aesthetic interpretation of Shakespeare's texts by a capable critic.

The discussions during the meetings of the society also show how cooperative scholarship within the society was actually marked by heterogeneity, and that quantitative methods were only a part of the society's discussions. The discussion on a paper by quantitative scholar Frederick Gard Fleay, for example, containing a chronological ordering of Shakespeare's plays, shows how quantitative assessments about rhyme, line endings, and so on, were treated as a starting point by other scholars, who used aesthetic and historical-philological arguments to poke holes in Fleay's thesis.[41] This was cooperative scholarship at work. Fleay used the comments he received and integrated his response in his later paper, in which he offered a revised chronology.[42] Although the discussion could be heated and there was much disagreement, the fact that all participants were dedicated to the discussion and Fleay used the comments to come to a new thesis, shows the success of cooperative scholarship. This success depended on the members' shared commitment to Shakespearean scholarship and

40 Ibid.

41 The discussion after Fleay's first paper to the first meeting of the society, for example, shows contributions by Richard Simpson, who forwarded historical arguments about a quote by Shakespeare on another occasion, Edwin Abbott, discussing quantitatively the scheme put forward by Fleay, Alexander Ellis, who treated Fleay's numerical work as a starting point for qualitative scholarship, and B. Nicholson, who offered philological comparison with the work of Marlow and Greene. See: 'Discussion on Mr Fleay's First Paper', *New Shakspere Society's Transactions* 1 (1874) 17-20, 17-18.

42 Frederick Gard Fleay, 'On Metrical Tests as Applied to Dramatic Poetry. Part II. Fletcher, Beaumont, Massinger', *New Shakspere Society's Transactions* 1 (1874) 51-72. The paper was again followed by a discussion: 'Discussion on Mr Fleay's Second Paper', *New Shakspere Society's Transactions* 1 (1874) 73-84.

their adherence to gentlemanly codes of conduct and discussion.[43]

Furnivall also encouraged scholarly cooperation beyond discussions during the society's meetings. He proposed that members should meet privately with one another to talk about manuscripts and scholarly works, or, in his own words: 'to form Reading-Parties in their own circles of friends, to read Shakespeare chronologically at one another's houses, having a discussion after each Paper'.[44] The members, moreover, should try to interest the rest of the country in their Shakespearean readings, and were encouraged to collectively popularise Shakespearean scholarship: 'That is what I do want to see: a really national study of Shakspere . . . all our young fellows being traind[45] on Shakspere's thoughts and words . . . a much finer nation of Englishmen than we have now.'[46] Scholarly cooperation and collective popularisation would have national benefits.

Allow me to briefly summarise. The New Shakspere Society was founded in 1873 as an attempt to organise the study of Shakespeare in Victorian Britain, just like the earlier Early English Text Society and the Chaucer Society had been successful in establishing cooperative literary scholarship on other topics. Support was mustered by drawing attention to the national significance of Shakespeare and the deficiency of earlier attempts at organised Shakespearean scholarship. The new society promised to be scientific, accurate and thorough. In its public presentation, the society underlined its dedication to quantitative methods, but internal heterogeneity was preserved in terms of method: in line with the diversity within the society, Furnivall proposed a combination of quantitative scholarship and more aesthetic methods. Finally, the society was designed to promote collective and cooperative scholarship. I will now proceed to analyse the problems encountered by the collective scholarly project of the

43 Only Furnivall himself did not adhere to these codes, as I will show in the next section.

44 Furnivall, 'Opening Address', ix.

45 Furnivall, rather annoyingly, employed an idiosyncratic phonetic spelling of words like 'trained'.

46 Furnivall, 'Opening Address', ix.

New Shakspere Society.

Furnivall versus Fleay

Cooperative scholarship in the New Shakspere Society was not without its problems, nor without its critics. A first problem was the relative importance of quantitative methods as advocated by Frederick Gard Fleay, to more qualitative and aesthetic methods as practiced by Edward Dowden or James Spedding. As explained in the previous section, many members of the society regarded Fleay's quantitative tables and metrological tests as a *starting point* for further research, rather than as definitive proof. Furnivall himself, although he glowingly endorsed quantitative Shakespearean scholarship à la Fleay in the Prospectus for the society, was critical of Fleay's tabulations and calculations in practice. Already during the opening speech to the society, as I have stated earlier, Furnivall backtracked on his endorsement and described quantitative scholarship as just one ingredient of good Shakespearean scholarship. Furnivall saw a clear hierarchical relationship between 'higher tests of the imagination', and Fleay's mere wrangling with numbers. This tension between quantitative scholarship and more traditional qualitative scholarship was largely negated by the heterogeneity of viewpoints within the society and the constructiveness of critics during the society's meetings, but minor irritations, unfair criticisms and asides ultimately led to a falling-out between Fleay and Furnivall. I will first describe Fleay's methodological commitments, and will then proceed to analyse Furnivall and Fleay's dispute. Finally, I will argue that the social vices of which Fleay and Furnivall accused each other show that their debate was not only about centring on the proper methods of Shakespearean scholarship, but also about virtuous social conduct during a precarious process of scholarly cooperation.

Frederick Gard Fleay was a mathematician by training. He had graduated as thirteenth Wrangler and third Smith's prize winner in the Cambridge Tripos, which was a testament to his mathematical prowess and

his originality as an applied mathematician.[47] Following his graduation, Fleay was increasingly drawn to literary scholarship and employed his mathematical capacities to shed light on literary problems of authorship, authenticity and chronology.[48] His vision for the future of quantitative literary scholarship was very ambitious, as he stated in his first paper to the society:

> This, however, is the great step we have to take; our analysis, which has hitherto been qualitative, must become quantitative; we must cease to be empirical, and become scientific: . . . if you cannot weigh, measure, number your results, however you may be convinced yourself, you must not hope to convince others, or claim the position of the investigator; you are merely a guesser, a propounder of hypotheses.[49]

Fleay distinguished between true investigators of Shakespeare, and guessers. He was clearly aware of the radicalness of this position, because he responded to criticism not yet given: 'is it possible so to examine the outer form in which genius has clothed itself?'[50] Fleay argued that he could, if 'sufficient care' was given to the analysis.[51] For him, accuracy, carefulness and objectivity were the marks of a true literary scholar, as opposed to the mere aesthetic judgment of 'guessers'. The rest of his paper was a showcase of his method and provided an ordered list of Shakespeare's plays based on this method.

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47 The Smith's prize in particular was instituted to foster the application of pure mathematics to practical problems. See: June Barrow-Green, '"A Corrective to the Spirit of too Exclusively Pure Mathematics": Robert Smith (1689-1768) and his prizes at Cambridge University', *Annals of Science* 56:3 (1999) 271-316.

48 For biographical information, see: Sidney Lee, 'Fleay, Frederick Gard', in: Sidney Lee, *Dictionary of National Biography, 1912 Supplement* (Oxford: Oxford University Press, 1912) 31-33.

49 Frederick Gard Fleay, 'On Metrical Tests As Applied To Dramatic Poetry. Part 1: Shakspere.', *New Shakspere Society's Transactions* 1 (1874) 1-16, 2.

50 Ibid.

51 Ibid.

Not unexpectedly, Fleay's ambition to centre the New Shakspere Society on quantitative methods encountered resistance from a number of members, who were committed to more qualitative, traditional, aesthetic, antiquarian or philological methods. The discussions following Fleay's paper are a showcase of this resistance. As mentioned in the previous section, most of the criticisms were constructive and treated Fleay's work as a contribution to scholarship. Alexander Ellis, for example, praised Fleay for being 'independent of mere subjective feeling', but then proceeded to criticise the method on more qualitative grounds: what was rhyme to Fleay's ears might not have been rhyme to Shakespeare's, and 'mere mechanical counting' was not sufficient to analyse verse and metre. Ellis stated that Fleay's worth was in 'initiating rather than . . . completing the work'.[52]

Furnivall's criticisms of Fleay, however, were not as constructively phrased as those of Ellis. He responded to Fleay's first paper by saying that he was 'astonisht'[53] by the 'remarkable' order that Fleay presented.[54] In rebuking that order, Furnivall referred constantly to the 'higher tests of imaginative power' to which he alluded in his opening address.[55] He submitted himself to the authority of traditional Shakespearean scholars, aesthetic critics and reputed poets such as James Spedding, Alfred Tennyson, and Edward Dowden, even if their results were at odds with those of Fleay.[56] Their authority, Furnivall deemed higher than any metrical test: 'A Tennyson, a Spedding, has no need of the aids that some of us beginners find most valuable. . . . This, then, shows that metrical tests must, in such questions, come second, not first. Heads must judge, then fingers may count.'[57] Furnivall thus envisioned a hierarchy between 'heads' such as Spedding and 'fingers' such as Fleay: the latter should always follow the

52 'Discussion on Fleay's First Paper', 19-20.
53 Furnivall's idiosyncratic spelling even ended up in the *Transactions.*
54 'Discussion on First Paper', 17-18.
55 Ibid. 17.
56 Ibid. 18.
57 'Discussion on Fourth Paper. *Timon of Athens*', *New Shakspere Society's Transactions* 1 (1874) 242.

former's authority.

Furnivall's tone did not soften over the following months. In March, Furnivall produced a letter from James Spedding, who made a vigorous plea for the study of Shakespeare's mind, rather than the peculiarities of his verse.[58] Furnivall then used Spedding's authority to state that changes in Shakespeare's brilliant 'mind . . . cannot be detected by metrical tests', and that 'the results of these tests must be subject to, must be controlld and checkt by, the results of higher criticism.'[59] Metrical tests were only good as checks upon the higher tests of imagination, and only great men, like Spedding or Tennyson could employ such tests.

In April, Furnivall again disparaged Fleay's claims as misinformed 'checks' upon the views of Spedding and described his work as 'racy', 'hasty' and as a drawback in scholarship.[60] In the subsequent May meeting, Furnivall stated that metrical tests were useful only for a 'weak-kneed brother who has not had the training to enable him to rely on his own judgment.'[61] He then called Fleay a 'metrical-test-worker' as opposed to a 'poet-critic' such as Tennyson or Spedding, who were of considerably more value to scholarship than the mere 'worker' Fleay.[62] To make matters worse, Furnivall was not only critical during the discussions of his papers, but was also prone to give 'frequent impromptu remarks' during Society meetings, intended to taunt and belittle Fleay.[63] Despite the centrality of new scientific methods in the rhetoric of the society, Furnivall was dismissive of Fleay's prowess as a quantitative scholar, repeatedly drew attention to Fleay's character, which he deemed 'racy' and 'hasty', and typified him as a mere 'worker', as opposed to the higher 'poet-critics'.

Fleay, in response, was primarily angry with Furnivall, and not

58 Ibid. 26.
59 Ibid. 32.
60 Ibid. 102.
61 Ibid. 243.
62 Ibid. 253.
63 Peterson, *Browning's Trumpeter*, 166.

with the other critics within the society. Members such as Edwin Abbott (1838-1926), who himself was often (constructively) critical of Fleay's work, even tried to intervene and mediate. By March, Abbott persuaded Fleay not to resign over Furnivall's comments. By May, all communication between Fleay and Furnivall took place through Abbott, and by July, Fleay had resigned from the Committee of the Society and stopped contributing papers.[64] He wrote to the *Athenaeum* to defend himself publicly and ceased the use of the *Transactions* as the main forum for his theories.

In response to Furnivall's criticisms, Fleay drew on the discourse of vice. Interestingly, he aimed his arrows at Furnivall's vicious conduct, rather than at his scholarly work: he accused Furnivall of 'bitterness' and attacked him for a violation of 'earnestness' and 'that tranquil spirit in which alone the works of our great author can be duly studied'.[65] In Fleay's eyes, Furnivall had always thwarted his work because of 'personal feelings', and felt that the society was dismissing 'their hardest worker' in treating Fleay so badly.[66] Repeating his argument in the columns of the *Academy,* Fleay stated that he was offended by Furnivall's 'ungracious . . . *argumentum ad hominem*' and asked for a clarification of Furnivall's harsh words against him.[67]

Both during the meetings of the Society and later in print, Furnivall lashed out at Fleay's hastiness, inexperience, raciness and his vanity, for

64 Benzie, *Furnivall*, 189.

65 Frederick Gard Fleay, '"The Taming of the Shrew"', *Athenaeum* (30 May 1874) 732.

66 Frederick Gard Fleay, 'New Shakspere Society', *Athenaeum* (19 September 1874) 385.

67 Frederick Gard Fleay, 'Posthumus in "Cymbeline." – A Corrector Corrected', *Academy* (12 September 1874) 297. The epithet 'ungracious' is telling: *ad hominem* attacks were quite common in Victorian controversy. See note 13 in this chapter.

contending that metrical tests could reach the genius of Shakespeare.[68] In his eyes, Fleay was just a worker, who could never reach the level of imaginative power possessed by Spedding and Tennyson. Moreover, he also complained about Fleay's conduct: he referred to him as 'the industrious (&often furious) flea', and called him a 'lying sneak & cad'[69], because of his 'shuffling, evasions, & effrontery'.[70] Fleay and Furnivall never reconciled. As late as 1881, Fleay wrote to the President of the New Shakspere Society, Robert Browning (1812-1889), to persuade him to distance himself from Furnivall because of the 'opprobrious insult' that Furnivall had given.[71]

We can learn three things from the dispute between Fleay and Furnivall. A first observation is that although the New Shakspere Society was marked by heterogeneity in terms of methods used and types of scholars involved, the discussions during its meetings were generally constructive. Two layers of discussion can be discerned. On the surface, members of the society debated chronological schemes of Shakespeare's plays and questions of authenticity and authorship. At the more fundamental level, the 'centre' of the society was being defined during these discussions: through cooperation and discussion, the members decided what acceptable methods, acceptable proof, and acceptable ways of being a scholar would be. Coming to an agreement on these matters was a precarious process and a matter in which scholars with varying methodological orientations were invested. Only when Fleay became convinced that his particular brand of quantitative scholarship did not stand a chance against Furnivall's incessant criticism, did he turn to extra-societal debate in the *Academy* and the

68 For example here, in a discussion about the correct pronunciation of the word 'posthumous', where Furnivall accused Fleay repeatedly of being 'incautious': Frederick James Furnivall, 'Posthumus in "Cymbeline." – A "Correction" Confirmed', *Academy* (19 September 1874) 322.

69 'Effrontery' referred to Fleay's shamelessness in treating Furnivall as the culprit, while 'cad' had several meanings, ranging from ungentlemanliness to being unskilled, disagreeable and working class.

70 Furnivall, 'Posthumus in "Cymbeline."', 8, 166.

71 Fleay to Browning, 5 February 1881, printed in: Peterson, *Browning's Trumpeter*, 174.

Athenaeum.

Secondly, precisely because this process of centring was so precarious, social virtues and codes of gentlemanly conduct were important guarantors of constructive discussion. This becomes especially apparent when we look at the *social* vices with which the two assailants charged each other. The more the dispute regarding the relative worth of quantitative methods versus qualitative and aesthetic criticism spun out of control, the more both assailants felt the need to draw attention to the flaws of their opponent's character. Furnivall complained of Fleay's insincerity, his lying and 'effrontery', and called him a 'cad': a reference to ungentlemanliness and coarseness. In turn, Fleay accused Furnivall of ungracious *ad hominem* attacks, and for acting out of personal feelings against him. Most importantly, Fleay stated that Furnivall had effectively destroyed the 'tranquil spirit in which alone the works of our great author can be duly studied'. When seen in the light of the attempt to make collective Shakespearean scholarship work and to come to some agreement about what it meant to be a Shakespearean scholar, codes of conduct and virtuous social behaviour were crucial to the success of this venture. When these codes were breached – the 'tranquil spirit' that Fleay referred to –, intervention became necessary and the limits of cooperation were reached.[72]

Furnivall versus Swinburne

The second controversy in which Furnivall became engaged during the existence of the New Shakspere Society was wildly outrageous and deeply bitter. His opponent was Algernon Charles Swinburne (1837-1909), poet,

72 Furnivall had been accused of compromising such a 'spirit' of cooperation on earlier occasions too. When he was still a teacher of literature in the Working Man's College in London – another example of a heterogeneous grouping of scholars -, Furnivall's conduct in controversy was also regarded as being 'out of harmony' with the 'College spirit' and the 'air of friendship' that smoothed the operation of the institution. See: G.M. Trevelyan, 'The College and the Older Universities', in: J. Llewelyn Davies (ed.), *The Working Men's College 1854-1904* (London: Macmillan and Co., 1904) 187-189.

author, critic and playwright. During the 1870s, Swinburne was already quite well known, and notorious for his eccentricity, alcoholism, and his rebellious willingness to break taboos of homosexuality, bestiality and masochism. He was also interested in Shakespearean criticism and questions of authenticity.[73]

The quarrel between Swinburne and Furnivall started in 1875 and dragged on until the exodus of society members in 1881. Three layers of disagreement can be discerned. First of all, the controversy between Furnivall and Swinburne was marked by a disagreement on the proper methods of Shakespearean scholarship. Swinburne was a fierce opponent of any metrical approach, championed his own aesthetic and poetic imagination, and blamed Furnivall for introducing 'finger-counting' quantitative methods.[74] Not surprisingly, the debate on these methods was fought out using the language of vice: Furnivall was accused of 'nescience' and 'presumption' – for thinking that his methods could unravel Shakespeare's mystery –, while Swinburne was charged with 'ignorance' and lack of 'modesty' – for only trusting his own aesthetic judgment.[75] As we have seen in the previous sections however, Furnivall was at best ambiguous about the role of quantitative scholarship, and used quantitative data solely as a starting point for 'higher' tests of aesthetic judgment and imagination. While their actual methodological positions might therefore have been much more similar than they themselves would have liked, previous scholarship has primarily pointed to this layer in the debate: the tension between Furnivall's 'scientific' or 'mechanical' scholarship and

73 A good source for biographical material about Swinburne is: Edmund Gosse, *The Life of Algernon Charles Swinburne* (New York: The Macmillan Company, 1917).

74 Algernon Charles Swinburne, 'The Three Stages of Shakespeare', *Fortnightly Review* XXIV (May 1875) 613-632, 615.

75 For example in these articles: Algernon Charles Swinburne, '"The Court of Love"', *Athenaeum* (14 April 1877) 481-482, 481; Frederick James Furnivall, '"The Court of Love"', *Athenaeum* (21 April 1877) 512-513, 512.

Swinburne's 'aesthetic' criticism.[76] These themes are reminiscent of the discussions between Tait and Tyndall on the imagination, but betray a deeper layer of meaning at the same time.

Although I would absolutely agree that the Swinburne-Furnivall argument offers insight into such tensions between methods of literary scholarship, a careful reading of the sources and the language of vice used shows that there was another, more fundamental issue at stake: the question whether Shakespearean scholarship should be institutionalised in societies such as the New Shakspere Society in the first place. This matter of institutionalisation and the carving out of a disciplinary space in which Shakespeare could be studied was, I contend, central to the dispute. Swinburne not only took jabs at the metrical tests of the society, but aimed his arrows specifically at the 'professional' character of the society, Furnivall's position as 'sovereign pontiff' of the 'New Shakespearean church', and the dogmatic adherence of its members to the 'literary catechisms' set out by Furnivall.[77] His attacks on quantitative methods were thus embedded in a much broader resistance against what he considered the professionalisation of Shakespearean scholarship and the vicious disciplining effect this had on scholars.

The final and most superficial layer to be distinguished in the Swinburne-Furnivall controversy is that of ludicrous insult and personal antipathy. Both Furnivall and Swinburne went far beyond gentlemanly

76 This is even the subtitle of the influential 1952 article by Oscar Maurer: 'A case study in "Aesthetic" vs. "Scientific" Criticism'. In his introduction, Maurer describes the case as the result of 'the problem of the relative worth of scholarly, historical, linguistic, analytical judgments as opposed to judgments called intuitive, emotional, instinctive, synthetic. . . . it was a controversy between *scientific* and *literary*, between *mechanical* and *aesthetic* criticism.' Maurer, 'Swinburne vs. Furnivall', 86. Other scholars, like Benzie, Peterson and Storer, point to Maurer's article for the best summary of the case.

77 Algernon Charles Swinburne, 'Note on the Historical Play of King Edward III, Part I', *Gentleman's Magazine* (August 1879) 170-181, 171; Swinburne, '"The Court of Love"', 482; Swinburne, 'Note on the Historical Play of King Edward III, Part II', 336, 334.

codes of conduct and the intensity of their exchanges was not easily matched in the Victorian age. A few examples will suffice to show how low both parties stooped. Furnivall, scandalously referring to Swinburne's well-known alcoholism, repeatedly called him 'tipsy and clumsy'[78] and a 'drunken clown'[79], while on other occasions he called him a pig ('Pigsbrook' – a play on 'Swinburne'[80]) or a donkey ('an ass').[81] Furnivall's language was matched in viciousness by Swinburne's insults, delivered in his distinctive hyperbolic prose. He described Furnivall as 'the most bellicose bantam-cock that ever defied creation to a match for mortal combat on the towering crest of his own dunghill' and deplored 'his monumental, his pyramidal, his Cyclopean, his Titanic, his superhuman and supernatural nescience.'[82] Although both Swinburne and Furnivall went far beyond Victorian mores, we should not forget that *ad hominem* attacks were common in Victorian controversy, and that beneath the layers of insult lay a disagreement about the social organisation of scholarship.

Asides from these three layers, we can distinguish four distinct phases: a rather mild prelude, which drew in Furnivall and set the stage, a second phase in which actual discussion and debate took place, a third phase of warfare and lost tempers, and finally, the broadening of the controversy and the start of yet another between Furnivall and Halliwell-Phillipps. I will briefly discuss each phase and will pay particular attention to the language of vice.

First up is the prelude. Fleay's first agenda-setting paper to the New Shakspere Society had drawn Swinburne's attention because of an aside: 'But is not metre too delicate a thing to be put in the balance or crucible in this way? . . . [Is] not the trick of Swinburne's melody easily acquired and

78 Furnivall, '"The Court of Love"', 512.
79 Furnivall, *The "Co" of Pigsbrook & Co.,* 2.
80 Ibid.
81 Frederick James Furnivall, *The Leopold Shakspere* (London: Cassell Petter & Galpin, 1877) cxviii.
82 Swinburne, '"The Court of Love"', 481.

reproduced?'[83] Swinburne was especially triggered by Fleay's affirmative reaction to his own question: yes, Swinburne could be understood metrically.[84] In reaction, Swinburne published an attack on the New Shakspere Society in general and on Fleay in particular.[85] He described the members of the society as 'scholiasts', 'pedants', 'metre-mongers', and 'finger-counters', who studied the outer shell of Shakespeare, and not the internal genius.[86] Swinburne juxtaposed virtues such as 'imagination', 'modesty', and being 'patient', with vices of 'bootless ingenuity' and 'fruitless learning', motivated by 'the horny hide of a self-conceit to be pierced by no man's pen.'[87] Where the New Shakspere Society sought to place literary scholarship on an objective 'scientific' footing, Swinburne stressed innate aesthetic sensibilities.

This heralded a short scuffle between Fleay and Swinburne. Fleay responded to Swinburne's charges by accusing Swinburne of the vice of 'arrogance', for thinking 'that his capacity is large enough to serve as a measure of the myriad-minded Shakespeare'.[88] It was not the New Shakspere Society that was marked by the vice of 'self-conceit', but Swinburne himself. This was enough to prompt Swinburne to write two angry articles. In the first, he accused Fleay, who he called a 'scholiast', of using his 'professional lash' to 'stigmatise' poets and critics, and for forcing them to follow a programme of 'measuring and appraising the height and depth of Shakespeare'.[89] In the second, he poked fun at the New Shakspere Society as a whole and described its members as 'metre-mongers', who viciously reduced the mystery of Shakespeare's mind to 'numeration'.[90]

83 Fleay, 'On Metrical Tests', 2.
84 Ibid.
85 Swinburne, 'The Three Stages of Shakespeare'.
86 Ibid. 615.
87 Ibid. 621-623.
88 Frederick Gard Fleay, 'Who Wrote Henry VI', *Macmillan's Magazine* XXXIII (November 1875) 62.
89 Algernon Charles Swinburne, 'A Discovery', *Athenaeum* (15 January 1876) 87.
90 Algernon Charles Swinburne, 'The Three Stages of Shakespeare', *Fortnightly Review* XXV (January 1876) 24-45.

Fleay, wisely, never responded to Swinburne's taunts, but their brief interaction does show all three layers I distinguished earlier: both parties used *ad hominem* vice charges bordering on downright insults, debated the proper methods of Shakespearean scholarship distinctively in terms of vice, and at the root of matter seems to have been the question whether or not Shakespeare should be studied in a collective effort. Swinburne's charges against Fleay's 'professional lash' and the disciplining and stigmatising effect the 'scholiasts' had on other critics should especially be seen in this light.

Furnivall took up the gauntlet that Fleay had left behind. This opened the second phase of the controversy: more or less polite debate. Furnivall's first answer, an article to the *Academy*, functioned as a fact-check on Swinburne's earlier article in the *Fortnightly Review*, in which he had attacked the views of James Spedding. Spedding, as stated earlier, was one of Furnivall's role models: a scholar and critic fully capable of the 'higher tests of the imagination'. Furnivall's fact-check was a vindication of Spedding's views, criticising Swinburne's attack as 'a most glaring misstatement of fact', pointing to at least twenty matters on which Swinburne was wrong, and concluding by stating that Spedding was 'greater than Swinburne'.[91]

Swinburne immediately wrote a reply and attacked the ambitions of the New Shakspere Society as a whole. Although he did reflect on the futility of quantitative tests, his main point was that the society had created its own 'hallowed ground of the scholiasts', controlled by 'a grand jury of Parnassian Pedagogues', which had 'established as a primary axiom or postulate that verse . . . does not appeal to the ear, but to the fingers.'[92] Swinburne's distrust of quantitative methods, then, was embedded in a much broader attack on the disciplinary space that the society had created: a hallowed ground for esoteric learning and pretentious pedagogues, far removed from the

91 Frederick James Furnivall, 'Mr. Swinburne and Mr. Spedding – Shakspere's "Henry VIII"', *Academy* (8 January 1876) 34-35, 35.
92 Algernon Charles Swinburne, 'King Henry VIII and the Ordeal by Metre", *Academy* (15 January 1876) 53-55, 54.

real world of scholarship.[93] By portraying Furnivall and his compatriots as 'pedagogues' and 'scholiasts', moreover, Swinburne typified his enemies as dogmatic commentators, only interested in their own right and viciously confident in their methods.

Furnivall's response in the *Academy* struck a similar note. He attacked Swinburne's method of aesthetic judgment, but also embedded this attack in a denunciation of Swinburne's idiosyncratic approach to scholarship and his refusal to cooperate with other scholars:

> He comes forward, not against me only, but against . . . Mr. Tennyson . . . Mr. Browning . . . Mr. Spedding . . . Professor Dowden . . . Messrs. Clark and Wright; – and with what weapon does Mr. Swinburne come? Simply his own confidence in his own ear, which he refuses to aid or test by another sense that God has given him.[94]

The two charges are very similar. Swinburne charged Furnivall and the New Shakspere Society with dogmatism and closed-mindedness, while Furnivall charged Swinburne with vices of overconfidence, carelessness, and deplored his refusal to let his aesthetic insights be checked by a community of scholars. Both men, then, charged each other with distinctively *social* vices: character traits that thwarted the collective pursuit of knowledge, either by dogmatically prescribing the wrong methods to others, or by forwarding theories that could not be checked. This language of social vice, moreover, suggests that it was more than competing methods of scholarship that were at stake: namely, the effort to organise scholarship and the disciplinary effect that this institutionalisation brought. Where Furnivall aimed to build common scholarly standards, Swinburne rejected communicability in literary scholarship.

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93 For the negative connotations of 'pedagogue', see: Mariolina Rizzi Salvatori (ed.), *Pedagogy: Disturbing History, 1819-1929* (Pittsburgh: University of Pittsburgh Press, 1996).

94 Frederick James Furnivall, 'Mr. Swinburne and Mr. Spedding – Shakspere's "Henry VIII"', *Academy* (29 January 1876) 98-99.

In the years that followed this exchange, the third stage of the controversy, Swinburne and Furnivall repeated these same arguments with ever more anger and bitterness in a barrage of letters to editors, articles to journals, books and prefaces. Nevertheless, despite their growing antipathy and vile childishness, their central concerns remained the same. Swinburne mostly stuck to the argument he made earlier: Shakespearean scholarship as practiced by Furnivall and his adepts was tainted by vices of overconfidence, dogmatism and closed-mindedness.[95]

In April 1876, for example, Swinburne published fake proceedings of what he called the 'Newest Shakspere Society', which amounted to an incessant mockery of the society and its project.[96] In the fake proceedings, Swinburne sketched a dystopian view of the society: members would only listen to metrical and tabulated evidence, a dictatorial 'Chairman' – clearly a reference to Furnivall – overruled all members who disagreed with him, and all members spoke scathingly about Swinburne's own aestheticism and the virtues of 'diffidence' and 'modesty' that were central to it.[97] The aim of this vicious 'Newest Shakspere Society', moreover, was 'the demolition of the old one'.[98] Underneath all the layers of cheap parody, however, Swinburne's arguments were quite coherent: the New Shakspere Society was dogmatic, disciplined its members into only using quantitative methods, and Furnivall was its dictatorial chairman.

Later articles by Swinburne's hand repeat the same concern with the social vices of dogmatism, discipline and dictatorialness. In 1877, to illustrate this, he attacked Furnivall's 'malevolence' and 'nescience' as the 'warlike founder of the Neo-Shakespearean dynasty – be it a dynasty of

95 For closed-mindedness as an epistemic vice, see: Battaly, 'Closed-Mindedness and Dogmatism'.

96 The mock-proceedings were re-printed as an appendix to Swinburne's *A Study of Shakespeare*. I will refer to this re-print as it appeared in the second edition of the book: Algernon James Swinburne, *A Study of Shakespeare* (London: Chatto & Windus, 1880).

97 Ibid. 277-278, 282.

98 Ibid. 289.

dunces mainly.'[99] And he continued by describing Furnivall as a 'scholiast', 'a medieval pedant', and as 'the sovereign pontiff of the New Shakespearean church'.[100] In 1879, likewise, he deplored the 'literary catechisms' of the 'professed critic and esoteric expert', and described Furnivall as a 'professional proficient', who was characterised by his 'presidential bray'.[101] The quarrel between Furnivall and Swinburne, at this point, had stopped being a debate, but rather resembled trench warfare. Nonetheless, as I hope to have shown, Swinburne's arguments, although more vile and childish each time, were coherent: Furnivall displayed social vices of dictatorialness, overconfidence, closed-mindedness and dogmatism, and the 'professional' institutionalisation of scholarship in the New Shakspere Society fostered those vices.

In the trench opposite Swinburne, Furnivall also repeated coherent arguments against his opponent, while enveloping them with the same layers of insult. Where Swinburne deplored the disciplining force of institutionalisation, Furnivall embraced it. Swinburne was at fault, he believed, because he was overconfident in his own aesthetic abilities, ignorant to the point of stupidity, and so vain that he was unmanly. Let me unpack and illustrate Furnivall's arguments briefly. Furnivall started out, as we have seen, by pointing to factual errors in Swinburne's articles on Shakespeare. He married these fact-checks, however, to vice charges. In a lengthy preface to his *Leopold Shakespeare* (1877), Furnivall attacked Swinburne's manifest 'ignorance', referenced Shakespeare by calling Swinburne 'a fool and a knave', and added that it was especially damaging that Swinburne would never admit his own wrongs, because of his 'wounded vanity and want of

99 Swinburne, '"The Court of Love"', 481. 'Dunce' referred to scholasticism as well. The etymology of the insult 'dunce', or fool, can be traced back to the Scholastic theologian John Duns Scotus. See: Thomas Williams, 'Duns Scotus, John', in: Ian McFarland, David Fergusson, Karen Kilby and Iain Torrance (eds.), *The Cambridge Dictionary of Christian Theology* (New York: Cambridge University Press, 2011) 150-151.

100 See note 77 in this chapter.

101 Ibid. 'Bray' refers to the unpleasantly loud sounds that donkeys make.

manliness'.[102]

The invocation of masculinity is significant. On other occasions, too, Furnivall blamed Swinburne's unmanly vices for his deficiency as a scholar and critic. In the same year for example, Furnivall again attacked Swinburne's 'ignorance', 'conceit', 'querulous vanity', and lack of 'self-restraint', but coupled this to a vindication of his own masculinity: 'I, who am at least a man.'[103] Multiple times later in the controversy, Furnivall referred to Swinburne's vanity and ignorance as markers of his unmanliness.[104] Even Swinburne's well-known vice of alcoholism did not escape Furnivall's scrutiny: this was also the effect of his opponent's unmanly lack of self-restraint.[105]

Furnivall's appeal to masculinity can best be understood as a performance of the ideal of 'muscular Christianity', or, in Furnivall's case 'muscular agnosticism'.[106] As William Peterson has observed, Furnivall 'naively imagined his quarrels to be an adult equivalent of the schoolground fight, and he always assumed that afterwards the participants would slap each other on the back and receive compliments from the spectators on their prowess as boxers.'[107] Moreover, Furnivall was in vigorous health and was an enthusiastic sculler; he was often found on the Thames in his boat.[108] His sportsmanship and appeal to masculinity, therefore, drew on the

102 Furnivall, *The Leopold Shakspere,* xx, xcii, cxviii. 'A fool and a knave' refers to Shakespeare's *All's Well That Ends Well*, in which the character Parolles is described as a 'fool and a knave', for his cowardice, his bragging and his effeminate qualities.

103 Furnivall, '"The Court of Love"', 512.

104 For example in these articles: Frederick James Furnivall, 'Mr. Swinburne and Shakespeare', *The Spectator* (6 September 1879) 1130; Frederick James Furnivall, 'Mr. Swinburne and Shakspere', *The Spectator* (13 September 1879) 1159.

105 For a reference to Swinburne being 'tipsy & clumsy', see: Furnivall, '"The Court of Love"', 512.

106 The term 'muscular agnosticism' is Bernhard Shaw's, according to Peterson: Peterson, *Browning's Trumpeter*, xxvii.

107 Peterson, *Browning's Trumpeter*, xxvii.

108 For Furnivall and sculling, see: Benzie, *Furnivall*, 28-38.

discourse of muscular Christianity that stressed virtues of independence, pluck, truthfulness, hard work, comradeship and resiliency.[109] From this perspective, Swinburne's vices of vanity, immodesty, and lack of self-restraint were a big affront to Furnivall's sensibilities. Moreover, they were distinctively social vices: they prevented successful cooperation. Swinburne, too vain to admit his mistakes or to face a fair fight, was not someone to cooperate with and had to be kept out of the scholarly community.

Like Swinburne, then, Furnivall never lost sight of his main arguments against his opponent. Although both parties stooped lower and lower in this third phase of controversy, the three layers of the debate were still very much present: *ad hominem* vice charges were abound, aesthetic and quantitative methods of scholarship were treated as markers of one's position, and, most importantly, the attitude towards scholarly cooperation was central.

The final phase of the controversy was set in motion in 1880, when Swinburne decided to dedicate his *Study of Shakespeare* to James Orchard Halliwell-Phillipps, a senior scholar and member of Furnivall's New Shakspere Society. Swinburne's dedication to Halliwell-Phillipps was quite obviously designed to also be a provocation of Furnivall. It praised the former by giving 'praise and thanks of all true Shakespearean scholars', and then juxtaposed these true scholars to those that reap only from the 'harvest

109 For masculinity in Victorian science, see: Heather Ellis, 'Knowledge, character and professionalisation in nineteenth-century British science'; and: Heather Ellis, *Masculinity and Science in Britain*. For critical accounts of muscular Christianity and the qualities of independence, resiliency, comradeship, pluck, and hard work that it cherished, see: Donald E. Hall, *Muscular Christianity. Embodying the Victorian Age* (Cambridge: Cambridge University Press, 1994). For muscular agnosticism as a variety of muscular Christianity, see: Francis O'Gorman, '"The Mightiest Evangel of the Alpine Club": Masculinity and Agnosticism in the Alpine Writing of John Tyndall', in: Andrew Bradstock, Sean Gill, Anne Hogan, and Sue Morgan (eds.), *Masculinity and Spirituality in Victorian Culture* (Basingstoke: Macmillan Press, 2000) 134-148; and: Norman Vance, *The Sinews of the Spirit. The Ideal of Christian Manliness in Victorian Literature and Religious Thought* (Cambridge: Cambridge University Press, 1985) especially pages 182-186.

of their own applause or that of their fellows.'[110] Swinburne alluded to the echo chamber that was the New Shakspere Society in his view. Furnivall struck back with a review, in which he repeated his charges of 'ignorance' and inaccuracy in matters of fact.[111] Swinburne, finally, retorted with another charge of social vice, accusing Furnivall of an 'evident and elaborate endeavour to put himself outside the pale of possible intercourse.'[112] This was the last exchange between the two adversaries, as Furnivall now turned his attention to Halliwell-Phillipps, a matter that I will discuss in the next section.

Let me offer a brief conclusion to the Furnivall-Swinburne controversy, as the stream of insults may have proven confusing. What was at stake in this debate? And what was the role of scholarly vice, and especially social vice? As mentioned, three layers of controversy can be distinguished. First of all, there was the personal antipathy of two sworn enemies that tainted many of their exchanges, which were vile, very personal, and of an intensity far transcending Victorian norms of gentlemanly debate. As the years passed, this layer became thicker and more prominent. But underneath this layer, we find two others: a disagreement about what methods should be used to understand Shakespeare, and an even deeper layer of debate about what the institutionalisation of scholarship and scholarly cooperation actually meant. The prominence of social vices, such as dogmatism and dictatorialness (Swinburne's accusations), or wilful ignorance and vanity (Furnivall's charges) clearly point to the central importance of this deep layer of controversy: the anxiety over institutionalisation and

110 Swinburne, *A Study of Shakespeare*, acknowledgement.

111 Frederick James Furnivall, 'Mr. Swinburne's "Study of Shakespeare",' *Academy* (10 January 1880) 28. In another review, Furnivall deplored Swinburne's pretence of knowledge': Frederick James Furnivall, 'Fletcher's and Shakspere's Triple Endings', *Academy* (10 July 1880) 27-28, 28. Another member of the society, Edward Dowden, also reviewed the book and questioned Swinburne's 'undisciplined' approach to scholarship: 'are we to wander in dilettantism, from one unfounded assumption to another, lit by will-o'-the-wisp fancies, until we suddenly find ourselves in the mud?': Edward Dowden, 'Mr. Swinburne's Study of Shakespeare', *Academy* (17 January 1880) 49.

112 Algernon Charles Swinburne, 'Notes and News', *Academy* (3 July 1880) 9.

the disciplining of literary scholarship, or, from Furnivall's perspective, the resistance of aesthetic idiosyncrasy to collective endeavours. A vice perspective on the Swinburne-Furnivall controversy thus clearly adds to existing historiography, which has thus far only touched upon the question of method and the enmity between Furnivall and Swinburne.

Furnivall versus Halliwell-Phillipps

The final stage of the Swinburne-Furnivall controversy led to the third controversy that I will discuss here: the clash between Furnivall, Halliwell-Phillipps and a large group of members who were mobilised by the latter. Like the other controversies, this one was characterised by the prominence of social vice charges. As mentioned, social vice was an important marker of unsuccessful scholarly cooperation, and indeed, the result of the Halliwell-Phillipps controversy shows that Furnivall's alleged social vices were enough to end the New Shakspere Society. So, what happened?

When Swinburne dedicated his book to Halliwell-Phillipps, Furnivall was infuriated with both of them. He attacked Swinburne in public, but he turned to private correspondence to deal with Halliwell-Phillipps. At first, he tried to persuade him not to accept the dedication, as he would consider that a sign of bad faith: the book, after all, was filled with criticisms of Furnivall and the New Shakspere Society. Halliwell-Phillipps, however, saw no need to decline such an admiration of his scholarly standing.[113] Annoyed, Furnivall turned to Clement Mansfield Ingleby, a prominent member of the society, and wrote about Halliwell-Phillipps: 'You'll admit that he is no gentleman. No one can pretend he is one. He acted like a cad in accepting Pigsbrook's[114] dedication of those

113 Benzie guesses that Halliwell-Phillipps accepted because he was either flattered or annoyed by Furnivall. I have found no evidence to say anything about Halliwell-Phillipps' motivations, besides the fact that he thought the dedication a great honour.

114 A pun on Swinburne's name. Cad, as said earlier, referred to ungentlemanliness.

reprints of the little beast's abuse.'[115] He added that Halliwell-Phillipps was in his view 'one of the commonest & meanest minds that I've come across' and 'also a sneak', because of his 'stupidity to sneer at our methods . . . & gratify his vanity thereby.'[116] Furnivall closed with the suggestion that he had always suspected Halliwell-Phillipps of lacking the proper traits of a scholar and doubted his 'manliness & gentlemanliness.'[117] The accusations of unmanliness and vanity that Furnivall had made against Swinburne were now repeated to Ingleby.[118] Furnivall also promised to go public with his accusations if Halliwell-Phillipps did not atone.[119]

Halliwell-Phillipps, however, saw no need to do so. He had also written to Ingleby to voice his thoughts on Furnivall, who in his view, displayed social vices: a 'want of temper' and 'silly & mischievous behavior'.[120] Moreover, Halliwell-Phillipps echoed both Fleay's and Swinburne's arguments, when he called Furnivall 'his Royal Highness' and stated that he had never encountered such 'dictatorial insolence'.[121] For these reasons, after having written to Ingleby and after having refused Furnivall's demands, Halliwell-Phillipps sought out the governing Committee of the New Shakspere Society, and requested that they intervene. Trying to preserve the good peace, however, the committee stated that the matter was not within their jurisdiction. Frustrated, Halliwell-Phillipps wrote to the president of the society, Robert Browning, to make his point at the highest level. His letter to Browning again drew attention to Furnivall's 'ungentlemanly manner', his 'scurrilous attacks', 'vulgarities', and 'repulsive

115 Furnivall to Ingleby, 22 July 1880, printed in: Peterson, *Browning's Trumpeter*, 167. We have met Ingleby in the previous chapter as a staunch defender of metaphysics.
116 Ibid. 168.
117 Ibid.
118 Ingleby was in contact with both Halliwell-Phillipps and Furnivall and sought to negotiate an end to the controversy: Storer, 'C.M. Ingleby and Victorian Shakespeare Controversies', 16.
119 Peterson, *Browning's Trumpeter*, 168.
120 Halliwell-Phillipps to Ingleby, 3 December 1879, printed in: Peterson, *Browning's Trumpeter*, 168.
121 Ibid.

discourtesies', and stated that the society was a 'mere book-club' if the committee did not nothing more than Furnivall's bidding.[122]

Browning responded that he was merely fulfilling an honorary position and could do nothing besides urging Halliwell-Phillipps to 'invoke the spirit of "gentle Shakespeare" and be done with the matter.'[123] Halliwell-Phillipps, quite unsatisfied, answered with a denunciation of Furnivall. It was Furnivall, not him, who was responsible for the disturbance of 'the spirit of "gentle" Shakespeare', and it was Furnivall who, through his 'exaggerated behavior' and 'indecorous slang', threw 'ridicule on Shakespearean criticism'.[124] It was Furnivall, finally, who had become 'intolerable . . . to quiet-loving students'.[125] For that reason, and because of the committee's and Browning's silence on the matter, Halliwell-Phillipps went public, and printed his letter to Browning.[126]

Furnivall responded publicly. He published a rather insulting pamphlet called *The "Co" of Pigsbrook & Co.,* in which he attacked Halliwell-Phillipps for his association with the 'drunken clown' Swinburne.[127] He stated that Halliwell-Phillipps' acceptance of Swinburne's dedication was effectively 'a deliberate adoption by him of the insults' contained in Swinburne's book.[128] Moreover, Furnivall was angry that Halliwell-Phillipps had written to the committee and Browning behind his back, instead of defending himself like a real man would have: 'how much more manly it would have been in him to stand up and fight his own battle, than to go whining to our President, like a little sneak at school, "Please, Sir, Furnivall's been rappin' my knuckles . I never done nothin' to him. You

122 Halliwell-Phillipps to Robert Browning, 26 January 1881, printed in: Peterson, *Browning's Trumpeter*, 169-171.
123 Robert Browning to Halliwell-Phillipps, 27 January 1881, printed in: Peterson, *Browning's Trumpeter*, 171.
124 Halliwell-Phillipps to Robert Browning, 31 January 1881, printed in: Peterson, *Browning's Trumpeter*, 172-174, 172.
125 Ibid. 173.
126 Ibid.
127 Furnivall, *Pigsbrook & Co.*, 2.
128 Ibid.

punish him.'"[129] In presenting Halliwell-Phillipps as a childish, unmanly and cheating opponent, Furnivall again drew on the discourse of muscular Christianity that had shaped his view of Swinburne too. These unmanly social vices stood in the way of true scholarly cooperation.

But the insults did not stop there. Halliwell-Phillipps' reason for accepting Swinburne's dedication, said Furnivall, was his 'mortified vanity': Halliwell-Phillipps had never complained about the 'mere book-club' that was the New Shakspere Society, and was always positive, 'as long as he was praised'.[130] Because of his vanity, moreover, he was especially prone to Swinburne's 'injudicious flattery which has made a fool's paradise for him to live in'.[131] Swinburne's praise, Furnivall suggested, was neither sincere nor just. Halliwell-Phillipps, an 'amateur labourer' because of his old-fashioned antiquarian methods, was inferior to the 'scientific botanist', with which Furnivall himself identified.[132]

The quarrel between Furnivall and Halliwell-Phillipps echoes many of the themes of the other controversies. The quarrel shows, first of all, the thick layer of personal antipathy and insult, but is once again founded upon genuine concerns regarding both the methods of scholarship (Furnivall's juxtaposition of the 'scientific botanist' and the 'amateur labourer'), and the question of scholarly cooperation: Halliwell-Phillipps' complaint of Furnivall's 'dictatorial insolence', and the latter's accusations of 'vanity' and 'unmanliness' at the former's address point to the lack of virtuous social behaviour that would make scholarly cooperation work. Virtues of gentlemanly conduct, such as honesty, modesty and manliness were the lubricants that reduced friction between competing ideals of Shakespearean scholarship, while vices of dictatorialness and unmanly vanity were envisioned to thwart scholarly cooperation. Finally, similarly to Fleay accusing Furnivall of threatening 'that tranquil spirit' needed for

129 Ibid. 3.
130 Ibid. 5
131 Ibid.
132 Ibid. 4.

scholarship, Halliwell-Phillipps pointed to Furnivall's attack on 'the spirit of "gentle" Shakespeare' and the 'ridicule' which this had thrown on the project of collective scholarship that was the New Shakspere Society. Both Fleay and Halliwell-Phillipps, then, directly linked their attack on the social vices of Furnivall to the precariousness of a collective epistemic project: without virtuous behaviour, there was no collective scholarship. Furnivall had to be stopped if the collective project was to succeed.

To this end, Halliwell-Phillipps sought the help of fellow members of the society, with the aim of organising resistance to Furnivall and getting him to apologise and repent.[133] He found an ally in Clement Ingleby, who had concluded that Furnivall's behaviour was bad for the standing of Shakespearean scholarship. Richard Storer has argued similarly by stating that for Ingleby, Furnivall's 'volatility and rule-breaking' had sabotaged the collectivism of the enterprise', and that this was the reason for his support of Halliwell-Phillipps.[134] Together, Halliwell-Phillipps and Ingleby secured the support of many members for an effort to have Furnivall apologise for his ungentlemanly conduct. A considerable number of prominent members wrote to Browning with threats of resignation if he would not act.[135] Browning, again, sought to calm everyone down and called upon the members to be a 'temperate-blooded fellow-student', but to no avail.[136]

133 He had received a declaration of support from Swinburne, who was happy to see adversaries of Furnivall mobilise: Swinburne to Halliwell-Phillipps, 6 February 1881, printed in: Peterson, *Browning's Trumpeter*, 175-176. Fleay, although he had already stepped down as member, also wrote to Browning to voice his support of Halliwell-Phillipps: Fleay to Browning, 5 February 1881, printed in: Peterson, *Browning's Trumpeter*, 174.

134 Storer, 'C.M. Ingleby and Victorian Shakespeare Controversies', 17. Storer writes primarily about Ingleby's position in the 'ongoing process of professionalisation' in scholarship, and does not touch upon the language of vice or Furnivall's own arguments.

135 Those members included A.B. Grosart, William Aldis Wright, Samuel Timmins, Joseph Woodfall Ebsworth, and Halliwell-Phillipps and Ingleby themselves. See: A.B. Grosart to A.C. Swinburne, 15 February 1881, printed in: Peterson, *Browning's Trumpeter*, 176-177.

136 Browning to Ingleby, 9 February 1881, printed in: Peterson, *Browning's Trumpeter*, 181-182.

Browning's attitude led Halliwell-Phillipps and Ingleby to orchestrate a mass exodus of members. As the introduction to this chapter has shown, this effort was successful: in April 1881, a large number of members resigned from the society. Furnivall's alleged social vices, displayed over and over again in the controversies with Fleay, Swinburne, and Halliwell-Phillipps, ultimately led to the demise of the New Shakspere Society and the particular type of social organisation of collective scholarship that it represented.

Furnivall was not the type to apologise. Instead, he wrote a letter to all who withdrew from the society, in which he stated that it was the duty of all members of the New Shakspere Society 'to mind its own business . . . to study Shakspere . . . not to gad about interfering in its Members' quarrels.'[137] He regarded the meddling in his 'private' affairs as 'an impertinence' and he was 'glad to be rid' of their 'censorious caballing' against him.[138] For Furnivall himself, the affair between himself and Halliwell-Phillipps had always been a private matter, but as the fall-out after their controversy has shown, many members of the New Shakspere Society regarded Furnivall's conduct as detrimental to the status of Shakespearean scholarship. Indeed, their referral to gentlemanly codes of conduct was effectively an appeal to a professional ethos in the making. It was not the disciplinary effect of collective scholarship that was at stake, as it was in the Swinburne controversy, but rather the undisciplined and dictatorial behaviour of the founder of the society that alienated most members.

Conclusion: social vices and scholarly cooperation

What can we learn from the three controversies that characterised the New Shakspere Society? In all three discussions, three concerns seem to be central, which I have described as layers: 1) a superficial but increasingly thick layer of personal antipathy, 2) an intermediate layer of disagreement

137 Furnivall to former members of the New Shakspere Society, 25 April 1881, printed in: Peterson, *Browning's Trumpeter*, 191-192, 191.
138 Ibid. 192.

about the proper methods of Shakespearean scholarship, and 3) a deep layer of anxiety regarding the social organisation of scholarship, either in disciplinary and 'professional' institutions like the New Shakspere Society, or in highly idiosyncratic individuality. It is especially on this last, deep layer that I will focus in these concluding remarks.

All three controversies were marked by disagreements on scholarly cooperation. In the Fleay-Furnivall debate, it was not just the disagreement on method that frustrated Fleay, but also Furnivall's attitude during meetings, his incessant and often unfair critique, and his dictatorial and dogmatic leanings. Furnivall, on the other side, was not primarily angry at Fleay's quantitative methods, but rather with his behaviour: Fleay was ungentlemanly, sneaky and was too easily provoked. The same can be said for the Swinburne-Furnivall debate: although the matter started as a disagreement on methods, it turned into a debate on the proper organisation of collective scholarship. Furnivall scolded the 'unmanly' Swinburne for not allowing criticism and resisting discipline, while Swinburne deplored the 'professional', dogmatic and disciplining effects of the New Shakspere Society. Finally, Halliwell-Phillipps (and the rest of the exiting members) fell out with Furnivall not because they disagreed about methodology, but because socially vicious and ungentlemanly behaviour was displayed.

The above paragraph already shows the omnipresence of social vice charges in these discussions: accusations of ungentlemanliness, vanity, sneakiness, dogmatism and dictatorialness flew back and forth. Why were they so important in these debates? I think for two reasons at least. First of all, scholarly cooperation in the field of Shakespearean studies was very precarious. There had been almost no precedent for a society such as the New Shakspere Society, and the heterogeneity in terms of types of scholars, preferred methods, and commitments was a striking feature of the society. In such an unstructured and diverse environment, scholarly cooperation was built on mutual trust and adherence to gentlemanly codes of conduct. Or, in other words, scholarly cooperation depended on social

virtues: collegiality, supportiveness, unselfishness and patience. Many of the social vice charges that I have outlined – ungentlemanliness and vanity for example – point to a breach of such codes of social conduct: they were character traits that obstructed the collective project of the society by thwarting cooperation, breaking trust and impeding both the 'tranquil spirit' needed for Shakespearean scholarship and the 'spirit of "Gentle Shakespeare"' that should permeate the society. The language of social vice, then, is an important marker of failed scholarly cooperation. Social vices threatened the construction of communicability in the realm of Shakespearean studies. As such, the debates in the New Shakspere Society reflected much older ideals of scholarly cooperation, going back to at least the early modern 'Republic of Letters'. As both Sari Kivistö and Anne Goldgar have shown, early modern scholars also relied on the practice of social virtues of 'politeness' to safeguard cooperation in a shifting institutional and ideological environment.[139]

The second reason for the prevalence of social vices in the controversies surrounding the New Shakspere Society is the disciplining effect that this new social organisation of scholarship had on individual scholars. Intensive cooperation, to put it bluntly, came at the cost of freedom and autonomy. It was a homogenising force: Fleay's quantitative methods needed to be reconciled with aesthetic and philological arguments, Halliwell-Phillipps' 'amateur' antiquarianism with Furnivall's 'scientific botanism', and Swinburne's aesthetic judgment had to be checked by organised scholarship (at least in Furnivall's opinion). The process of centring the society on the future aims, methods and personae of Shakespearean scholarship thus also incorporated the drawing of tentative boundaries and the enforcing of discipline. The social vices with which Furnivall was charged (dictatorialness and dogmatism for example) point to uneasiness with or downright resistance to this process, while his own vice charges (lack of self-restraint and vanity, to name two) were aimed at those resisting cooperation. Finally, the fact that many eminent members

139 Kivistö, The *Vices of Learning*; Goldgar, *Impolite Learning*.

of the society left in 1881, with reference to Furnivall's ungentlemanly and dictatorial behaviour, shows that many thought that Furnivall himself had become a danger to the growing professionalism of Shakespearean scholarship.

As mentioned in the introduction to this chapter, one should not make the mistake to read the language of social vice apparent in these cases as only referring to the social realm. Social vice, as I hope to have illustrated here, not only had social consequences for those involved, but also deep epistemic consequences: the future of the institutional landscape of Victorian Shakespearean scholarship was entangled with the controversies I have described, and the ultimate failure of cooperation put an end to a rather fruitful period of scholarship. As such, many of the social vices that I have discussed in this chapter would decidedly belong to the more inclusive category of 'scholarly vices' that Engberts and Paul propose to use: scholars do not pursue social goals in isolation from epistemic, political or moral goals.[140] Nonetheless, the case I have laid out in this chapter does show the importance of the social in scholarly discussions. Especially in an unstructured institutional environment, where cooperation was precarious and conflict-ridden, virtuous social behaviour was an important condition for scholars to do their work properly.

This becomes especially clear when the role of vice in this case is compared with the role of vice in the previous chapter on Peter Guthrie Tait's controversies. In the latter, the language of vice functioned primarily as a means of boundary-work between different ways of being a scholar: Tait and his opponents ascribed a certain constellation of virtuous qualities to themselves, while attributing an array of vicious qualities to their enemies. Moreover, these constellations of virtues and vices were projected on 'scientific heroes' such as Newton, Faraday and Leibniz: exemplars of scientific selfhood. As such, I have argued, accusations of vice and attribution of virtue demarcated and policed the boundaries of scientific personae. Tait

140 This is a paraphrase of my earlier quotation in note 14 of this chapter.

and his opponents primarily debated the question of what the ideal scholar should be like, while the social organisation of scholarship was of much less importance. This was primarily due to the fact that Victorian physics was already organised into an academic discipline, with support networks in place, and multiple institutions available in which careers could be made.

In unstable and incoherent institutional landscapes, as the landscape of late Victorian literary studies surely was, the language of vice was as potent a discourse as it was in such established disciplines like physics. Nonetheless, it functioned rather differently in the two contexts. Not boundaries, but centres were defined by it. Not exclusion of differing elements, but scholarly cooperation was the goal. Historians of scholarly virtue and vice, then, should keep an open eye for the institutional landscape of the field they are researching, because the discourse of virtue and vice was deeply entangled with the social organisation of scholarship.

Conclusion

Why was the category of vice so important to British scholars around 1900?

This dissertation has argued that there were two main reasons for the importance of vices in British scholarship around 1900. The first reason was that British scholars around 1900 could not answer the question to what it meant to be a scholar without referring to vices. In other words: ideals of scholarly selfhood were articulated with vices constantly in mind, because scholars agreed that the pursuit of knowledge relied on their ability to withstand vices. As such, the language of vice provided a common idiom for scholars to discuss the threats to their ideals of what it took to pursue knowledge. Vices were no abstract threats. Far from it: Victorian and Edwardian academic memory culture was riddled with telling examples of how vices could compromise the scholarly self, and the broader culture in which British scholarship was embedded was preoccupied with the threats that moral flaws could pose to civilisation and progress.

There was a second reason for the importance of vices in British scholarship, however. Although the language of vice offered common ground for scholars to discuss threats to their scholarly selves, scholars did not always agree upon the definition of good or bad scholarship. While scholars agreed about the importance of a virtuous character, they often disagreed about the exact composition of such a character. Consequently, the language of vice was not only employed to shape ideals of scholarly selfhood, but also to demarcate them from competing ideals. As I have shown in this dissertation, the language of vice was employed often in scholarly debates and controversies to discredit opponents and to attack ideals that were considered by others to be vicious. The vice charges that were employed in Victorian scholarly debates were more than pejorative tools to discredit opponents, they were heartfelt responses to moral threats.

Understanding this dual role of vice language in the shaping of scholarly selves is crucial for our understanding of British scholarship around 1900, yet this topic has received scant attention from historians. Although this period (often described as a period of discipline formation and scholarly specialisation) has been studied extensively, historians have mostly zoomed in on institutions, methods, inventions and theories.[1] The practitioners themselves and their ideals about what it took to be a scholar have been cropped out of the picture. The disciplining of scholarly selves during processes of discipline formation, institutionalisation and scholarly specialisation, in effect, has remained understudied. This dissertation has broken new ground by focusing on ideals of scholarly selfhood and the crucial role that the language of vice played in the formation and demarcation of such ideals.

To corroborate these points, let me recount the arguments made in this dissertation in more detail, before I turn to their historiographical ramifications. First of all, I have drawn attention to the role of vices as a common threat to scholars across all kinds of disciplines. In chapter 1, I have presented an analysis of vices found in scholarly obituaries. I argued that Victorian and Edwardian scholars felt their scholarly selves to be under constant threat from vices. The project of scholarship was threatened by various dangers, some even lurking within scholars themselves. Writers of obituaries highlighted six of such dangers: uselessness, enthusiasm, prejudice, money, fame, and distraction. These dangers could be sources of vice, or could be effected by them, but they had to be neutralised either way. By offering detailed descriptions of how eminent scholars withstood and fought vices, obituary writers offered instructions for dealing with the threats to scholarly selfhood. In general, scholars offered two remedies to these ills: balancing virtues, and cultivating a love of science. To withstand the dangers that threatened their pursuits, writers of obituaries thus advised fellow scholars to discipline their scholarly selves. This shows that the emphasis on virtues and desires in scholarly discourse was to some extent a

1 See the introduction, note 45.

reaction to the threat of vices. Vices, in their capacity as a common enemy, were formative of the configuration of scholarly selves in the period around 1900.

In my second chapter on the moral instruction of Edward Frankland I have further developed this argument. By tracing the moral instruction of young Frankland through children's books, advice letters, and aphorisms, I have made clear that the fight against vices was not exclusively a scholarly affair. Instead, a generic process of moral instruction prepared Frankland for the challenges of adult life: a process on which subsequent university educators such as Robert Bunsen and Lyon Playfair built. Frankland's moral instruction shows that strategies for identifying and dealing with vices such as avarice, distraction and selfishness were ideally already instilled in one's childhood. In other words: Frankland's conception of what it took to be a scholar was largely built on more generic conceptions of what it took to withstand vices as a virtuous British citizen. This suggests yet again that the fight against vices was central to the cultivation of scholarly selfhood. The fight against vices, chapters 1 and 2 show, provided scholars with a shared enemy: a common ground upon which conceptions of scholarly selfhood could be built.

This common ground however, as I have argued in chapters 3 and 4, was not as stable as my analysis of moral instruction and academic memory culture suggests. The landscape of Victorian and Edwardian scholarship was characterised by dissent and controversy. Although scholars agreed about the moral nature of scholarship and the importance to identify and withstand vices, they disagreed about what the fight against vices exactly entailed. This disagreement was rooted in varying conceptions of the aims, methods and ideals of scholarship.

As the controversies of Peter Guthrie Tait (chapter 3) illustrate, the language of vice was employed regularly and forcefully in debates on the use of the imagination in late Victorian physics. Tait's debates with Tyndall, Ingleby and Spencer on matters of scientific evidence, the claims

of science, the merits of metaphysics, or the value of *a priori* reasoning were fought out with constant reference to ideals of scholarly selfhood. Vices, in these debates, were often used pejoratively. Because Tait disagreed with his opponents about fundamental matters of virtue and vice — should the scholar value restraint over courage? Was carefulness more important than originality? How was the imagination to be used? — the common ground offered by the language of vice became an arena in which differing conceptions of scholarly selfhood were pitted against each other. In this third chapter, I have shown that because vices were considered to be a common enemy to scholarship, disagreements about the nature of good scholarship were fought out with constant reference to such vices. Also, I have shown that ideals of scholarly selfhood were often projected upon historical figures such as Newton, Faraday or Leibniz. By presenting a historical figure such as Newton as an epitome of restrained and disciplined scholarship, Tait crafted a powerful model of scholarly heroism that he could inhabit. At the same time, Tait created villains: the image of the lying and unoriginal Leibniz came to stand for a vicious model of scholarly selfhood, which could then be projected upon Tait's opponents. Drawing on the powerful language of vice, Tait defended his own convictions about what good scholarship was against the vicious influence of others, and the models of scholarly selfhood that they stood for.

Chapter 4, finally, zoomed in on the process of scholarly cooperation and the controversies that arose when scholars endeavoured to work together. By focusing on the case of Frederick James Furnivall and the New Shakspere Society, I found that cooperation between scholars relied heavily on ideals of gentlemanliness and social virtues. When scholars neglected or transgressed such social codes, their colleagues used the language of vice to discipline them, or to exclude them from scholarly cooperation altogether. The language of vice, especially in a field that was as unstructured as Shakespearean scholarship, served not only to fight out debates about the aims and methods of scholarship, but also to determine if and how scholarship should be professionally organised. If scholars were

to work together professionally, then it was paramount that they practiced social virtues. Although Furnivall frequently deplored the social vices in others, he ultimately found himself at the receiving end of such charges, because his own ungentlemanly behavior threatened scholarly cooperation.

The language of vice, in other words, was instrumental both in the formation of shared ideals of what it meant to be a scholar, and in the demarcation and policing of these ideals. For Victorian and Edwardian scholars, vices were the enemy of scholarship. They felt themselves to be under constant threat by them, and therefore, their ideals of scholarly selfhood were articulated by contrasting them to vices. But because multiple models of scholarly selfhood coexisted and competed, competing models were also identified as threats and actively attacked. Vices were so important to British scholars around 1900, because they were terrified of them. Scholars feared vice, built their ideals of character upon a resistance to vice, and charged anyone who did not live up to these standards, to be guilty of such vices. To answer my research question to the importance of vices can thus be summarised in one sentence: the language of vice was so omnipresent in late Victorian and Edwardian scholarship because it offered the means both to agree and to disagree about what it meant to be a scholar.

Vices in historiography

This dissertation is the first book-length study of scholarly vices in the late nineteenth and early twentieth centuries. What implications do my results have for historiographical debates about scholarly virtues and vices, British scholarship and the history of scholarship in general? Let me start by pointing out how my findings fit in with existing scholarship on the notions of virtue and vice in the history of scholarship.

As I have argued at length in the introduction, historians have focused primarily on the role of virtues in the history of scholarship. Historians such as Lorraine Daston, Peter Galison, George Levine, Graeme Gooday and Kasper Eskildsen have done amazing work on the virtues

of objectivity, self-abnegation, precision and accuracy.[2] Their accounts of epistemic virtue show how epistemology was thoroughly moralised in the nineteenth century, and gave rise to specific practices and theories. However, as I have mentioned earlier in the introduction, these scholars have focused primarily on singular and narrowly defined epistemic virtues such as objectivity or accuracy, while leaving vices out of the equation altogether.[3]

This dissertation makes four major contributions to the existing historiography on virtues and vices in the nineteenth century. Let me start with the most crucial point: vices. As I have argued, the category of vice was central to Victorian and Edwardian conceptions of scholarly selfhood, because Victorian and Edwardian scholars formulated and demarcated their ideals of selfhood in response to the threat of vice. If vices were fundamental to the formation of these ideals, then it is crucial that historians broaden their view, and include such vices in their analyses. In *Objectivity*, Lorraine Daston and Peter Galison claim that 'it is fear that drives epistemology' and that the fear of not being able to know everything led to the rise of objectivity as a cardinal virtue – subjectivity could only be countered by objectivity.[4] This dissertation has shown that the fear of subjectivity was not the only fear that troubled nineteenth-century scholars. I have listed numerous fears, dangers and vices that Victorians and Edwardians considered threats to their scholarly selves. Understanding historical epistemology and the role of selves in the history of scholarship then also requires an account of the threats identified by historical actors, because it is to these threats that epistemic virtues offered a solution. The following three historiographical points build on this insight that vices were crucial to the self-understanding

2 Daston and Galison, *Objectivity*; Levine, *Dying to Know*; Gooday, *The Morals of Measurement*; Eskildsen, 'Inventing the Archive'. I have included more references in my discussion of the historiography on epistemic virtues in the introduction.

3 See the section on Vices in historiography: epistemology, in the introduction. Paul has made similar observations in: Paul, 'Weber, Wöhler, and Waitz', 93.

4 Daston and Galison, *Objectivity*, 49.

of Victorian and Edwardian scholars.

A second point that this dissertation has to add to existing historiography on virtues and vices is closely related to the first point, and concerns the focus on singular character traits. Historians, as stated above, have tended to focus their analyses on singular epistemic virtues such as objectivity, accuracy or self-discipline. My research has shown that, at least for Victorian and Edwardian scholars, historical actors themselves did not see their own character traits as isolated entities, but rather as part of a coherent and balanced constellation.[5] An understanding of the role of virtues and vices in nineteenth-century scholarship, then, needs to acknowledge the interrelatedness of these character traits. Moreover, the category of scholarly vice can only be understood properly with reference to such balanced constellations. As I have shown, vices were often the result of a disturbed balance of character traits: too much thoroughness, for example, could lead to uselessness and unproductivity, while a lack of restraint could lead to speculation and amateurishness.

Thirdly, this dissertation has shown that a narrow reading of epistemic virtues and vices (as traits that are oriented exclusively towards epistemic goods) obscures the layered meanings of virtue and vice language in Victorian and Edwardian scholarship. Virtues and vices, in the Victorian and Edwardian understanding, were never solely oriented towards epistemic goods and cannot be neatly separated from moral, social, religious or political virtues and vices.[6] Vices such as ungentlemanliness or selfishness did have epistemic layers of meaning (they made fruitful scholarly cooperation impossible, which had dire epistemic results), but not exclusively: the fulfilment of arduous academic duties relied on unselfishness, and gentlemanliness was an important socio-cultural marker

5 This point has been made earlier by Herman Paul: Herman Paul, 'What Is a Scholarly Persona?', 363-365.

6 For a broader reading of scholarly virtues, see: Creyghton, Huistra, Keymeulen, and Paul, 'Virtue language in historical scholarship'.

in Britain around 1900.[7] Likewise, vices such as 'dictatorialness' were socially and politically unpleasant, but in the case of Furnivall, this vice also had epistemic layers of meaning. A broad reading of epistemic vice takes into account these multiple layers of meaning, while a narrow reading is needlessly restrictive. If we want to understand the role of vice language in the history of scholarship, we should not exclusively focus on the epistemic layers of meaning. Instead, like Herman Paul and Christiaan Engberts have argued, we would do best to speak of 'scholarly vices'.[8]

Fourthly, this dissertation has shown that motivations matter. Good scholarly character was not just defined by a balanced constellation of character traits, but also by a motivation towards what was considered good scholarship. Bad scholarship, likewise, was oriented towards a goal that was not acceptable to other scholars.[9] In chapters 1 and 2, I have argued that a love of truth was a crucial ingredient of the scholarly self: both in academic memory culture and in moral instruction, an orientation towards truth was presented as a major safeguard against the vices that threatened scholarship. But also in chapter 3, I have shown that in scholarly controversies, desires were at stake. Tait and Tyndall both claimed the love of truth as their own, while simultaneously accusing each other of having different motivations: Tait accused Tyndall of a craving for excitement and sensation, while Tyndall accused Tait of being motivated by a fear of error, rather than a love of truth. A wrongful orientation of a scholar's character could be a source of vice, and could make vices out of traits that would otherwise be considered virtuous. Victorian and Edwardian scholars, for this reason, emphasised the importance of a love of truth.

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7 Scholars like Jo Tollebeek and Herman Paul have argued similar points for the language of virtue in other European contexts. Tollebeek has argued that the discourse of virtue in scholarly discourse pointed to shared commitments and strong bonds between scholars, while Paul has added that virtue language could also be an important marker of disagreement: Tollebeek, 'Commemorative Practices in het Humanities around 1900'; Paul, 'Weber, Wöhler, and Waitz'.

8 For 'scholarly vices' as an alternative to 'epistemic vices', see: Engberts and Paul, 'Scholarly Vices'.

9 See also: Tanesini, 'Epistemic Vice and Motivation'.

This study's focus on vices also has implications for our understanding of British scholarship between 1870 and 1910 in general; a period that has often been described as a period of scholarly discipline formation and specialisation. In the foregoing pages, I have shown that this process of discipline formation was bound up with discussions about the scholarly self. A changing intellectual and institutional landscape led to fundamental discussions about what it meant to be a scholar and to a reconfiguration of such ideals. The language of vice was the means by which many of these discussions were conducted. Understanding the debates about processes of modern discipline formation, specialisation and the institutionalisation of scholarship at universities in the late nineteenth and early twentieth century, then, can be helped greatly by taking the language of vice into account. If modern epistemology was indeed rooted in fear, as Daston and Galison have claimed, then we need to understand these fears. For nineteenth-century Britain, this means that we should look beyond the fear of subjectivity (so eloquently traced by George Levine in his *Dying to Know*) and include other fears in our accounts as well.[10] Some fears felt by the Victorians and Edwardians ('uselessness' for example) even required an assertion of the self, rather than self-abnegation. Broadening our view of Victorian and Edwardian threats to good scholarship, then, helps us to understand the making of modern British scholarship.

This dissertation, finally, has endeavoured to bridge the gap between two historiographical traditions: the study of public morality in Victorian and Edwardian Britain, and the study of epistemic vices. I stated in my introduction that there is a gulf between both approaches: historians of public morality have treated virtues and vices as features of a culture that was obsessed with morality and the threats posed to progress by all kinds of dangers, while historians of epistemic virtues and vices have made very specific points about the role of singular character traits in scholarly ideals and practices. Both perspectives, I have argued, cannot explain the importance of vices to British scholars in the period around 1900: one

10 Levine, *Dying to Know*.

approach is too generic, while the other is too specific.

In this dissertation, I have proposed an integrated approach to understand the role of vices in modern British scholarship. I have traced the usage and meaning of vice language through various levels of generalisation and in various contexts, and have connected specific scholarly discussions about methodology, epistemology and the aims of scholarship, to broader Victorian ideals about morality. This integrated approach has shown two things. First, it has shown that scholarly attitudes towards vices were built on more generic cultural ideas about vices. The moral economy of British scholarship was built on the ambient culture of Victorian and Edwardian Britain; a culture that imagined civilization as an ongoing battle against vices and temptations. Because many scholars were first socialised into the Victorian moral universe, these ideas about vice and temptation poured over into scholarly debates about the nature of scholarship and the identity of the scholar, and were appropriated to serve more specific functions. Secondly, however, scholars around 1900 sought to create boundaries between ambient society and the realm of scholarship.[11] The language of vice, although drawn from ambient culture, was instrumental in the creation and maintenance of these boundaries, and also performed further boundary work within scholarship. A focus on the language of vice, then, helps to connect broader cultural ideas about morality to specific discussions about the scholarly self. Further research into scholarly vices, scholarly selfhood and public morality should do well to take the interactions between ambient culture and the moral economy of scholarship into account.

Limitations and future research

Although this dissertation has sought to contribute to our understanding of

11 Lorraine Daston, in her article on moral economies, has argued that moral economies of science drew their power from ambient culture, but also tended to reassert the boundaries between the two: Daston, 'The Moral Economy of Science', 24.

scholarly vices in discussions about the scholarly self, my approach to the language of vice has some limitations, too. I would like to use these final paragraphs to indicate three major limitations and to offer suggestions for further research on these three points.

First of all, my focus has been on *ideals* of scholarly selfhood and the role of vice language in the construction and maintenance of these ideals. I have researched discussions about scholarly vices and scholarly selfhood in several contexts. But how were ideals of scholarly selfhood translated into actual practice? How did scholars work their resistance to vices into their everyday routines? How exactly did they balance an array of virtues, and what did a love of science look like in practice? In chapter 2, on the moral instruction of Edward Frankland, I have pointed towards some practices (diary writing, repeating aphorisms and shorthands), but a systematic approach to the fight against vices in scholarly practices is a theme that is to be followed up. This study's reliance on case studies begs the question to how ideals of scholarly selfhood functioned in other disciplines, and an ideal follow up would therefore be to study how the practices associated with vices diverged between various scholarly disciplines, regions and spaces. Although the language of vice transcended such boundaries, the translation of scholarly ideals into practices might vary from context to context.[12]

Secondly, this analysis is limited in the attention that it gives to the category of gender. I have focused almost exclusively on men and the construction of elite ideals of male scholarly selfhood. This has limited the scope of my argument in two ways. First of all: it is not true that it were exclusively men pursuing knowledge in Britain around 1900. There are many examples of women scholars who were actively excluded from elite male

12 For an interesting study in this respect, see: Sjang ten Hagen, 'How "Facts" Shaped Modern Disciplines', *Historical Studies in the Natural Sciences* 49:3 (2019) 300-337.

scholarly practices, communities and institutions.[13] My analysis of scholarly vice is thus restricted to this domain of elite male scholarship. Secondly, this study has not zoomed in on the role of gender in the construction of ideals of male scholarly selfhood. As historians like Heather Ellis have shown, the image of the male scholar as 'a completely secure masculine persona' is faulty and problematic.[14] The masculine status of the scholar was never secure in the nineteenth century. Rather, Ellis convincingly argues that we should see the nineteenth century as a battleground for different ideals of 'the male scientist'.[15] Additionally, historians have shown that the language of virtue and vice in Victorian moral discourse in general was heavily gendered.[16] Considering these two points (gendered concepts of virtue and vice, and unstable ideals of masculinity in scholarship), a promising direction for future research would be to include the category of gender in analyses of the threats to scholarly selfhood that this dissertation has identified. Although gender has not figured prominently in this

13 For accounts of these women scholars and the efforts to exclude them from male scholarship, see: Carolyn Merchant, *The Death of Nature: Women, Ecology, and the Scientific Revolution* (London: Wildwood House, 1980); Evelyn Fox Keller, *Reflections on Science and Gender* (New Haven, CT: Yale University Press, 1985); Londa L. Schiebinger, *Nature's Body: Gender in the Making of Modern Science* (New Brunswick, NJ: Rutgers University Press, 1993); Ludmilla Jordanova, *Sexual Visions: Images of Gender in Science and Medicine between the Eighteenth and Twentieth Centuries* (London: Harvester Wheatsheaf, 1989); Margaret W. Rossiter, *Women Scientists in America. Struggles and Strategies to 1940* (Baltimore: Johns Hopkins University Press, 1984); Patricia Phillips, *The Scientific Lady. A Social History of Women's Scientific Interests 1520-1918* (London: Weidenfeld and Nicolson, 1990); Smith, *The Gender of History.*

14 Ellis, *Masculinity and Science,* 3.

15 Ibid. 207. See also: Jones, *Intellect and Character in Victorian England*, chapter 4, especially page 155.

16 John Tosh has written on the Victorian virtue of politeness as a marker of (gentle)manliness: John Tosh, 'Gentlemanly Politeness and Manly Simplicity in Victorian England', *Transactions of the Royal Historical Society* 12 (2002) 455-472. Nick Taylor has argued that the Victorian notion of 'character' was gendered in: Nick Taylor, 'The Return of Character: Parallels Between Late-Victorian and Twenty-First Century Discourses', *Sociological Research Online* 23:2 (2018) 399–415, especially 405. Mary Poovey has shown how gender, character and ideology were entwined in mid-Victorian Britain and how women were often presented as foils for male identities: Poovey, *Uneven Developments*.

dissertation, some examples in the above pages show that Victorians and Edwardians did indeed perceive the threats to their own scholarly selves in gendered terms: Furnivall's identification of 'unmanliness' as a scholarly vice is a case in point.[17] A more systematic analysis of the gendered nature of Victorian and Edwardian scholarly vices can enrich our understanding of scholarly selfhood around 1900, while our understanding of masculinity in scholarship could benefit from an inclusion of the category of scholarly vice.

Thirdly, and finally, my analysis has been synchronic rather than diachronic: I have focused on the language of vice in a period in which ideals of scholarly selfhood were being reconfigured. This has had clear benefits for my understanding of the relationship between vices and ideals of scholarly selfhood between 1870 and 1910, but the development of these ideas over time is a theme for further research. Of particular interest would be questions regarding the origins of the language of vice, and how its meaning shifted yet persisted over time. The language of vice is old and many of the specific vices that I have addressed in this dissertation (avarice, selfishness, enthusiasm prejudice, and so on) have been around for centuries. Why did Victorian and Edwardian scholars attach so much value to concepts that were so old? What were the sources of this discourse?

This also begs the question to what happened to the discourse of scholarly vice in the period that succeeded the period that I have studied here. Did the language of vice disappear with the emergence of technoscience and the stable environment of the modern research university?[18] Or did categories of virtue and vice become embedded in contemporary reflections on research ethics, just like methodological

17 Another example would be Acton's 'uselessness', which was attributed to the 'sterilizing influence' of the period by Arnold Toynbee: Arnold Toynbee, *A Study of History,* vol. 1*, Introduction: The Geneses of Civilizations* (Oxford: Oxford University Press, 1934) 46–47.

18 See: Kasper Risbjerg Eskildsen, 'Scholarship as a Way of Life: Character and Virtue in the Age of Big Humanities', *History of Humanities* 1:2 (2016) 387-397.

manuals codified nineteenth century attitudes?[19] What happened to the often masculine and western ideals of scholarly selfhood when universities became more diverse institutions?[20] How do new developments in the infrastructure of scholarship (e.g. the scholar as entrepreneur, scholarly cooperation in research consortia, the competition for grants) impact our contemporary scholarly selves?[21] And, finally, as ideals of scholarly selfhood were formulated in response to real or imagined threats to civilisation and progress: what kind of scholars do we want to be in the face of the threats of the 21st century?

19 For research ethics and the scholarly self, see Herman Paul, 'The Scientific Self: Reclaiming Its Place in the History of Research Ethics', *Science and Engineering Ethics* 24:5 (2018) 1379-1392. For methodological manuals, see: Herman Paul, 'Manuals on Historical Method: A Genre of Polemical Reflection on the Aims of Science', in: Rens Bod, Jaap Maat, and Thijs Weststeijn (eds.), *The Making of the Humanities*, volume 3 (Amsterdam: Amsterdam University Press, 2014) 171-182.

20 See: Alison Mountz et. al., 'For Slow Scholarship. A Feminist Politics of Resistance through Collective Action in the Neoliberal University', *ACME* 14:4 (2015) 1235-1259.

21 See: Steven Shapin, *The Scientific Life: A Moral History of a Late Modern Vocation* (Chicago, London: University of Chicago Press, 2008). For a more practical take on our contemporary academic selves, see: Donald E. Hall, *The Academic Self: An Owner's Manual* (Columbus: Ohio State University Press, 2002).

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Summary in Dutch

De geschiedenis van wetenschap is op veel manieren bestudeerd: historici hebben aandacht besteed aan de ontwikkeling van belangrijke wetenschappelijke theorieën, de totstandkoming van wetenschappelijke instituties en methodes, en de alledaagse praktijken van wetenschapsbeoefening. Een thema dat in historisch onderzoek echter pas recentelijk aandacht heeft gekregen is het 'wetenschappelijke zelf': welke eigenschappen, attitudes, deugden of vaardigheden werden wetenschappers geacht te bezitten? Hoe verhielden wetenschapsbeoefening en de persoon van de wetenschapper zich tot elkaar? Wat betekende het eigenlijk om wetenschapper te zijn? Hoewel historici de institutionele en intellectuele geschiedenis van de wetenschap uitvoerig hebben beschreven, is er nog relatief weinig aandacht besteed aan de rol van het wetenschappelijke zelf.

Recent onderzoek naar het wetenschappelijke zelf biedt echter een interessant en vernieuwend perspectief op de geschiedenis van de wetenschap. Zo hebben wetenschapshistorici als Lorraine Daston en Peter Galison aangetoond dat wetenschappelijke praktijken in sterke mate werden gestuurd door wetenschappelijke deugden: karaktereigenschappen die het beoefenen van wetenschap bevorderen. Denk bijvoorbeeld aan karaktereigenschappen als objectiviteit, verbeeldingskracht, precisie en onpartijdigheid. Historici als Kasper Eskildsen, Herman Paul en Jo Tollebeek hebben bovendien beargumenteerd dat de taal van deugden een belangrijke rol speelde in de cultuur van de wetenschap: ze droeg bij aan de totstandkoming van wetenschappelijke gemeenschappen en het vinden van gemeenschappelijke normen van wetenschapsbeoefening. De toenemende interesse van historici in het wetenschappelijke zelf sluit daarnaast naadloos aan bij recente ontwikkelingen in de wetenschapsfilosofie, waarin het belang van deugden voor kennisverwerving wordt onderstreept.

Tegelijkertijd staat het onderzoek naar het wetenschappelijke zelf nog in de kinderschoenen. Historici hebben hun aandacht vooral gevestigd op individuele deugden en hebben slechts sporadisch gekeken naar de relaties tussen deze deugden. Als deugden inderdaad karaktereigenschappen zijn die wetenschapsbeoefening ten goede komen, dan zouden historici ook moeten kijken naar de verhouding tussen deze verschillende karaktereigenschappen – zo keken historische actoren immers ook zelf naar hun eigen karakter. Bovendien hebben historici zich vooral gericht op positieve formuleringen van het wetenschappelijke zelf in termen van deugden, terwijl ondeugden minstens zo relevant zijn voor het begrijpen van discussies over het wetenschappelijke zelf. Sterker nog, ik betoog in dit proefschrift dat constellaties van deugden vaak een *antwoord* waren op de dreiging van ondeugden. Dit proefschrift doet een bijdrage aan het historiografische debat over het wetenschappelijke zelf door juist deze taal van ondeugden te bestuderen.

Ik richt me daarbij op de Britse wetenschap tussen 1870 en 1910. De Britse context is in het bijzonder interessant vanwege haar diverse institutionele landschap: wetenschap werd op veel verschillende manieren en in verschillende contexten bedreven. Deze diversiteit is een voordeel, omdat ze de mogelijkheid biedt verschillende idealen van het wetenschappelijke zelf te onderzoeken en contrasteren. Een tweede reden voor mijn keuze voor de Britse context is de sterke invloed van de burgerlijke cultuur en idealen van de *gentleman* in Victoriaans en Edwardiaans Engeland. Omdat veel wetenschappers zichzelf beschreven als *gentlemen*, biedt de Britse context een kans om te onderzoeken hoe de bredere Britse burgerlijke cultuur zich verhield tot specifiekere wetenschappelijke contexten. De periode tussen 1870 en 1910 is vaak beschreven als de periode waarin moderne wetenschappelijke disciplines werden gevormd en waarin wetenschappers zich specialiseerden en professionaliseerden. Dat maakt deze periode ook bijzonder interessant voor een onderzoek naar wetenschappelijke ondeugden: juist in een periode van ingrijpende verandering worden idealen van wetenschapsbeoefening concreet gemaakt.

Wat betekende het dan om een goede wetenschapper te zijn in Groot-Brittannië rond 1900? Als we deze vraag voor zouden leggen aan negentiende-eeuwse Britse wetenschappers zelf, dan zouden zij hierop geen antwoord kunnen geven zonder daarbij te refereren aan *ondeugden*, dat wil zeggen, karaktereigenschappen die werden gezien als belemmerend voor de beoefening van goede wetenschap. In dit proefschrift betoog ik dat de taal van ondeugden een cruciale rol speelde in het Britse wetenschappelijke leven rond 1900. Ik draag daar in dit proefschrift twee redenen voor aan. Allereerst werden ondeugden gezien als een gemeenschappelijke vijand die het wetenschappelijke zelf constant bedreigde. Als wetenschappers geen weerstand kon bieden aan deze ondeugden (denk aan geldzucht, megalomanie of egoïsme), dan zou dat de kwaliteit van hun werk negatief beïnvloeden. Ik betoog ten tweede dat ondeugden zo belangrijk waren voor Britse wetenschappers, omdat er geen sluitende consensus bestond over de persoonskenmerken van de ideale wetenschapper. Hoewel wetenschappers het eens waren over het belang van deugden als accuratesse, bescheidenheid en terughoudendheid, bestonden er veel verschillende ideeën over hoe deze deugden zich tot elkaar verhielden. De meningen over de exacte constellatie van deugden die bij de ideale wetenschapper hoorde waren, kort gezegd, verdeeld. Deze onenigheid leidde dikwijls tot aanklachten van ondeugd: terwijl sommige wetenschappers niets zo belangrijk vonden als precisie, meenden anderen dat doorgeslagen precisie een ondeugd was die de wetenschap weinig goed deed.

De taal van ondeugden, met andere woorden, bood wetenschappers zowel een taal om hun verzet tegen de gedeelde dreiging van ondeugd te conceptualiseren, als een taal om onwelgevallige idealen van wetenschapsbeoefening te bekritiseren. Om deze twee redenen stond de angst voor ondeugden centraal in Victoriaanse en Edwardiaanse concepties van het wetenschappelijke zelf.

In dit proefschrift onderbouw ik deze twee punten met een analyse van de Britse academische herinneringscultuur tussen 1870 en 1910, en

drie uitgewerkte casestudies uit drie verschillende disciplines (scheikunde, natuurkunde en filologie). Ik kies in dit proefschrift nadrukkelijk voor een synchroon perspectief op wetenschappelijke ondeugden: ik bestudeer de taal van ondeugden in verschillende disciplines en in verschillende contexten.

In hoofdstuk 1 van dit proefschrift gooi ik mijn netten breed uit door de academische herinneringscultuur tussen 1870 en 1910 te analyseren. Ik richt me daarbij op de vele honderden necrologieën die in deze periode werden gepubliceerd door vooraanstaande wetenschappelijke instituties zoals de *Royal Society of London* en de *British Academy*. Het was in deze tijd gebruikelijk om overleden leden van deze genootschappen te eren met uitgebreide necrologieën, waarin het karakter van wetenschappers breed werd uitgemeten. Necrologieën zijn daarom belangrijke (maar weinig bestudeerde) bronnen voor wetenschapsgeschiedschrijving. Niet alleen geven ze een zeldzaam inzicht in de catalogi van deugden die Victoriaanse en Edwardiaanse schrijvers van overlijdensberichten belangrijk vonden, ze laten bovendien zien hoe Britten rond 1900 dachten over de ondeugden die een wetenschappelijk leven konden bedreigen. Schrijvers van necrologieën, zo laat ik zien in hoofdstuk 1, refereerden regelmatig aan de ondeugden die het wetenschappelijke zelf van de overleden wetenschapper bedreigden, en lieten bovendien zien hoe deze wetenschapper deze bedreigingen het hoofd wist te bieden.

In mijn analyse van deze necrologieën kom ik tot de conclusie dat Britse wetenschappers onderscheid maakten tussen zes gevaren voor het wetenschappelijke zelf: nuttelоosheid, enthousiasme, vooringenomenheid, geld, roem, en afleiding. Deze gevaren zijn niet een-op-een terug te brengen tot specifieke ondeugden, maar konden zowel een bron van ondeugden zijn (geld kon leiden tot hebzucht), als een gevolg van het toegeven aan ondeugden (overmatige voorzichtigheid kon leiden tot nuttelоosheid). Deze gevaren hebben gemeen dat ze het wetenschappelijke zelf bedreigden, en daarmee het project van wetenschap.

Over het algemeen boden necrologieën twee remedies voor de bedreigingen van het wetenschappelijke zelf: het hervinden van een goede balans tussen verschillende deugden en het cultiveren van een liefde voor de wetenschap. Balans was belangrijk, omdat Britse wetenschappers karakter beschouwden als een constellatie van verschillende deugden, die in een bepaalde verhouding tot elkaar stonden. Accuratesse, bijvoorbeeld, was belangrijk, maar als ze ten koste ging van productiviteit lag het gevaar van nutteloosheid op de loer. Naast deze precaire morele evenwichtskunst was de oriëntatie van het wetenschappelijke karakter belangrijk: een gebalanceerde constellatie van eigenschappen was alleen deugdzaam als deze gericht was op wetenschappelijke doelen. Om dat gevaar het hoofd te bieden adviseerden schrijvers van necrologieën het cultiveren van een liefde voor de wetenschap, als tegenwicht tegen een verlangen naar bijvoorbeeld geld, beroemdheid of macht. Hoofdstuk 1 laat dus zien hoe het wetenschappelijke zelf werd toegerust om weerstand te beiden aan de bedreiging van ondeugd.

Waar hoofdstuk 1 een brede exploratie van wetenschappelijke ondeugden biedt, gaan de volgende hoofdstukken in op specifieke casussen. Hoofdstuk 2 richt zich op de casus van de beroemde scheikundige Edward Frankland (1825-1899) en het proces van Franklands morele en wetenschappelijke socialisering. Ik zoek een antwoord op de vraag naar waar en hoe aspirant wetenschappers leerden dat het leiden van een wetenschappelijk leven een constante oefening was in het cultiveren van deugden en het bevechten van ondeugden. Franklands casus biedt daarvoor genoeg aanleiding: in zijn uitgebreide archief is veel materiaal bewaard gebleven uit Franklands jeugd. Op basis van dit materiaal (brieven van schoolmeesters, jeugdliteratuur, dagboeken en opgeschreven aforismen) analyseer ik hoe Franklands morele vorming in zijn werk is gegaan.

Ik betoog in hoofdstuk 2 dat de algemene morele instructie die Frankland ontving in zijn jeugd een basis vormde waarop zijn latere wetenschappelijke leermeesters steeds teruggrepen. Het socialiseren van

wetenschappers, in andere woorden, kon niet zonder het bredere proces van morele vorming. In het negentiende-eeuwse Britse denken over moraliteit werd groot belang gehecht morele vorming bij kinderen. Als dit niet in de kindertijd gebeurde, zo was de gedachte, dan was het te laat. Dat idee zien we terug in de casus Frankland. In Franklands geval zijn drie mechanismen van morele vorming aan te wijzen. Allereerst werd Frankland reeds als kind overstelpt met krachtige beelden van deugd en ondeugd. Uit de kinderboeken die hij las, de lessen die hij kreeg op school en de verhalen die de ronde deden in zijn geboorteplaats leerde Frankland hoe hij deugden van ondeugden kon onderscheiden. Een tweede mechanisme was het aanleren van morele gewoontes. Het schrijven in een dagboek was één van die gewoontes, maar ook in kleine zaken probeerden Franklands leermeesters zijn morele gevoel te vormen. Eén leermeester, James Willasey, werkte bijvoorbeeld met aforismen – krachtige korte zinnen die makkelijk te herhalen waren en een sterke morele boodschap bevatten. Frankland zou deze aforismen later zelfs doorgeven aan zijn eigen kinderen. Ten slotte besteedden Franklands leermeesters aandacht aan het cultiveren van 'hogere' verlangens (naar wetenschap of god, in plaats van geld of roem), zodat hij in zijn latere leven verleiding zou kunnen weerstaan. Franklands scheikundige leermeesters (Robert Bunsen en Lyon Playfair) bouwden voort op deze drie mechanismen en grepen in hun onderwijs en begeleiding steeds terug op de bredere morele vorming die Frankland reeds had genoten: ze vulden de beelden van goed en kwaad verder in, boden nieuwe wetenschappelijke gewoonten en positioneerden de liefde voor de wetenschap als het meest verheven verlangen. Deze wetenschappelijke socialisering was dus gebouwd op een breder proces van morele instructie.

Hoofdstuk 1 en 2 geven samen inzicht in hoe Britse wetenschappers rond 1900 zich wapenden tegen ondeugden. Ze vertellen een verhaal over consensus: wetenschappers waren het eens dat hun wetenschappelijke zelf werd bedreigd door ondeugden. Hoewel men het dus eens was over het feit dat goede wetenschap werd bedreigd, was men het oneens over welke karaktereigenschappen, vaardigheden en attitudes dan precies nodig waren

voor het bedrijven van goede wetenschap. Hoofdstukken 3 en 4 vertellen dat verhaal: een verhaal over hoe onenigheid over wat het betekende om wetenschapper te zijn zich vertaalde naar beschuldigingen van ondeugd.

In hoofdstuk 3 ga ik in op de casus van Peter Guthrie Tait (1831-1901), een Schotse wiskundige en natuurkundige. Tait was een vooraanstaand mathematisch fysicus. Zijn bekendste wapenfeit is waarschijnlijk de publicatie van *The Treatise on Natural Philosophy* in 1867, een invloedrijk boek waarin Tait en zijn medeauteur Lord Kelvin de nieuwe 'energiefysica' op de kaart zetten. Hoofdstuk 3 richt zich echter niet in de eerste plaats op de inhoud van Taits natuurkundige denken, maar op de vele wetenschappelijke controverses waarin hij verzeild raakte met wetenschappers als John Tyndall, Herbert Spencer en Clement Ingleby. Deze controverses maken zichtbaar hoe de taal van ondeugden werd gebruikt om wetenschappelijke tegenstanders verdacht te maken en uit te sluiten van het wetenschappelijke debat. De taal van ondeugden vervulde dus een belangrijke functie in het aangeven van grenzen aan het wetenschappelijke zelf.

Hoofdstuk 3 gaat in het bijzonder in op debatten over het belang van verbeeldingskracht in wetenschappelijk werk en de rol van wetenschappelijke deugden en ondeugden daarin. Tait geloofde dat de verbeeldingskracht moest worden gedisciplineerd door deugden (zoals terughoudendheid en voorzichtigheid), en beschuldigde tegenstanders die de verbeelding de vrije loop wilden geven van het toegeven aan ondeugd (een gebrek aan zelfbeheersing, bijvoorbeeld). Zijn tegenstanders hanteerden hetzelfde retorische middel. Zo schreef John Tyndall Taits voorzichtigheid in het gebruik van de verbeelding af als lafheid. Ook in deze discussies ging het over een balans: over de mate waarin de verbeeldingskracht moest worden gebruikt in de wetenschap, mede in relatie tot andere deugden. In hoofdstuk 3 laat ik zien dat verschillende idealen van wat het betekende om een wetenschapper te zijn met elkaar botsten en dat de taal van ondeugden een belangrijke rol speelde in die botsing.

Het laatste hoofdstuk bouwt voort op het inzicht uit hoofdstuk 3 dat de taal van ondeugden werd gebruikt om wetenschappelijke debatten uit te vechten. De context is echter een andere. Waar hoofdstuk 3 zich richtte op inhoudelijke discussies over verbeeldingskracht in de natuurwetenschap, beschrijft hoofdstuk 4 hoe de taal van ondeugden werd gebruikt om wetenschappelijke samenwerking te bevorderen of te saboteren onder Britse geleerden die zich met Shakespeare bezighielden. Hoofdstuk 4 gaat in het bijzonder in op de New Shakspere Society, een literair genootschap dat zich tot doel had gesteld om de werken van Shakespeare wetenschappelijk te bestuderen. Binnen de New Shakspere Society werkten allerlei soorten geleerden samen, variërend van filologen tot dichters, schrijvers en zelfs wiskundigen. Hun gedeelde doel was duidelijk (Shakespeare wetenschappelijk bestuderen), maar over de middelen daartoe verschilden zij van mening. Dat maakte samenwerking in het genootschap een uitdaging. In dit laatste hoofdstuk ga ik in op hoe wetenschappelijke samenwerking een beroep deed op sociale deugden zoals *gentlemanliness* en terughoudendheid, en hoe spanningen in deze samenwerking leidden tot beschuldigingen van ondeugd.

Belangrijk in hoofdstuk 4 zijn met name de ruzies van Frederick James Furnivall (1825-1910), de oprichter van de New Shakspere Society, met Frederick Gard Fleay (een wiskundige die Shakespeare kwantitatief trachtte te analyseren), Algernon Swinburne (een dichter die van leer trok tegen het hele idee van wetenschappelijke samenwerking in de studie van Shakespeare) en James Halliwell-Phillipps (een gerenommeerd kenner van Shakespeare). Hoewel er in alle ruzies aandacht was voor wetenschapsinhoudelijke zaken (het gebruik van een kwantitatieve methode versus het afgaan op intuïtie, bijvoorbeeld), draaiden de discussies vooral om sociale (on)deugden: welke karaktereigenschappen bevorderden wetenschappelijke samenwerking, en welke karaktereigenschappen verhinderden deze? Deze discussies laten zien dat het wetenschappelijke zelf niet alleen gericht was op kennisverwerving *an sich*, maar ook op het stroomlijnen van samenwerking in de wetenschap. Bovendien bestonden

ook daarin verschillende idealen: Furnivalls ideaal van de wetenschapper legde de nadruk op sociale deugden als mannelijkheid en oprechtheid, terwijl het ideaal van Halliwell-Phillipps sterker leunde op sociale terughoudendheid en *gentlemanliness*. Beschuldigingen van ondeugd speelden dus niet alleen een rol in wetenschapsinhoudelijke geschillen, zoals we in hoofdstuk 3 hebben gezien, maar ook in bredere debatten over wetenschappelijke samenwerking.

Dit proefschrift sluit af met een conclusie die bovenstaande punten bondig samenvat en de historiografische implicaties hiervan laat zien. De belangrijkste implicatie is dat het bestuderen van ondeugden meerwaarde heeft voor het begrijpen van grotere processen als disciplinevorming, professionalisering en specialisatie in de wetenschap rond 1900. Historici hebben al gewezen op het belang van deugden hierin, maar dit proefschrift laat zien dat ondeugden minstens even belangrijk waren in het conceptualiseren van het wetenschappelijke zelf. Als het waar is dat epistemologische idealen worden geboren uit angst, zoals Lorraine Daston en Peter Galison hebben betoogd, dan is het noodzakelijk dat historici ook deze angst historiseren en aandacht schenken aan de veelvormige bedreigingen die historische actoren zelf ervoeren. Mijn beschrijving van wetenschappelijke ondeugden in dit proefschrift vormt daartoe een eerste aanzet. Ten tweede betoog ik dat (on) deugden niet op zichzelf staande eigenschappen zijn, maar het beste kunnen worden onderzocht in samenhang met andere karaktereigenschappen. Dit proefschrift toont immers aan dat historische actoren het wetenschappelijke zelf beschouwden als een constellatie van karaktereigenschappen: door in te gaan op de complexe verhouding tussen verschillende (on)deugden kunnen historici meer recht doen aan deze historische werkelijkheid. Ten derde betoog ik dat historici de categorie van (on)deugden niet te nauw zouden moeten interpreteren: zoals ik in dit proefschrift laat zien speelde de taal van ondeugden een belangrijke rol in het conceptualiseren van het wetenschappelijke zelf. Historische actoren maakten zelf geen onderscheid tussen deugden die specifiek op kennisverwerving waren gericht en deugden die enkel van toepassing waren op sociale interacties.

Historici zouden die valkuil dus moeten vermijden. Ten slotte vraag ik aandacht voor beweegredenen. Dit proefschrift laat zien dat niet alleen deugden en ondeugden een belangrijke rol speelden in het definiëren van het wetenschappelijke zelf, maar dat ook motivatie zeer belangrijk was – de oriëntatie van een constellatie van karaktertrekken bepaalde of deze eigenschappen werden gezien als deugden, of als ondeugden.

De conclusie staat ook stil bij de beperkingen van dit proefschrift. Dat zijn er drie. Allereerst heb ik mij nauwelijks gericht op wetenschappelijke praktijken – hoe werden idealen over wat het betekende om wetenschap te bedrijven vertaald naar de dagelijkse praktijk? Ten tweede heb ik weinig aandacht besteed aan de invloed van gender op het discours van ondeugden – in hoeverre werden ondeugden geassocieerd met een specifieke genderrol? En hoe droeg de taal van ondeugden bij aan de constructie van een expliciet mannelijke wetenschappelijke autoriteit? Ten slotte wordt dit proefschrift gekenmerkt door een synchroon perspectief. Dat heeft grote voordelen opgeleverd, maar het vanzelfsprekende nadeel is dat er geen ontwikkeling door de tijd zichtbaar is, terwijl de wetenschap in de jaren rond 1900 juist tumultueuze veranderingen doormaakte. Hier liggen dus mogelijkheden voor vervolgonderzoek.

Curriculum Vitae

Léjon Saarloos was born in Middelharnis on the 17th of April, 1988. In 2009, he obtained his Bachelor of Education at the Hogeschool of Rotterdam. While teaching at primary schools, Léjon pursued a second bachelor's degree at Utrecht University. He obtained his Bachelor of Arts in history in 2012. This led to his enrolment in the master's programme of cultural history at Utrecht University, from which he graduated *cum laude* in 2013. His master's thesis dealt with the cultural construction of psychiatric expertise in the Netherlands around 1900. While pursuing his master's degree, Léjon worked as a teacher at primary schools in Utrecht, and as a teaching assistant in world history at Utrecht University.

After completing his MA, Léjon started his PhD research at the Institute for History at Leiden University as part of the NWO-funded project *The Scholarly Self: Character, Habit, and Virtue in the Humanities, 1860-1930*. Within this project, he worked on the language of vice in British scholarship around 1900. His research was supervised by Prof. Herman Paul (Leiden University) and Prof. Stuart Jones (University of Manchester) and led to several publications on the topic of vices in British scholarship.

Since 2020, Léjon works at the Hogeschool Utrecht as a teacher trainer. He teaches aspiring primary school teachers how to give classes in the topics he has grown to love: history, science, and technology.