ON THE ORIGINS OF THE MODERN CONCEPT OF SYPHILIS

EIGHTEENTH CENTURY DEBATE, LUDWIK FLECK, AND THE ENLIGHTENMENT

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Abstract

The enlightenment period is often considered a dark age within the history of medicine. Contrary to this sentiment, I argue that the enlightenment spirit of inquiry regarding venereal disease was vibrant, dynamic, and profoundly influenced how syphilis was understood in the subsequent century. Historiography frequently minimises advances of medical knowledge made in the eighteenth century by focusing on the inefficacy of treatments, rather than on developments in medical theories and concepts. This thesis attends to this gap by examining a case study within venereology to demonstrate that physicians engaging in public debate significantly advanced knowledge of syphilis. In doing so, this counters a historiographical trend that claims that French physician Philippe Ricord (1800-1889) was the first to distinguish syphilis from gonorrhoea in the nineteenth century. It uses historical evidence to show that the nature of syphilis was debated throughout the preceding centuries and that this distinction was clearly established in 1793 by Scottish surgeon, Benjamin Bell (1749-1806). This thesis uses the epistemic concepts devised by Ludwik Fleck in his *Genesis and Development of a Scientific Fact* (1979 [1935]) to illustrate how enlightenment ways of thinking substantially contributed to the development of modern medicine. This thesis therefore invites a reconsideration of the era, not as a dark age, but as a rich period of scientific endeavour.

Contents

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1. Introduction

The eighteenth century is often considered a dark age within the history of medicine. Given the widespread recognition of the period as *le siècle des Lumieres*,[1] it is particularly surprising that its medical community and medical knowledge have often been portrayed as bleak. This thesis counters this dominant theme within the history of medicine and shows instead that the period was a vibrant and dynamic area of scientific inquiry. I argue that the origins of the modern concept of syphilis can be traced back to the eighteenth century, and invite scholars to reconsider this period as an important headwater of modern medicine.

1.1 The nineteenth century: the dawn of modern medicine?

Modern scientific medicine is frequently recognised as originating in nineteenth century Europe. During this period medicine became significantly more effective. The achievements of Louis Pasteur (1822-1895), Robert Koch (1843-1910), John Snow (1813-1858), and others encouraged a major shift in medical thinking towards concepts familiar in the scientific medicine of today. By celebrating the triumphs of these individuals, scholars have tended to intersperse their works with hints of hagiography. This inevitably reflects those intellectually unfashionable sentiments of Thomas Carlyle who famously claimed: "The History of the world is but the Biography of great men (*sic*)."[2] Though Carlyle stated this in 1841, the trend persists throughout twentieth and twenty-first century scholarship.[3] Approaching the history of medicine in this way tends to conceal the dynamic intellectual achievements of the eighteenth century; the medical "heroes" of the enlightenment are simply obscured by a methodological approach that has

[1] This is the French term for the Age of Enlightenment. *Le siècle des Lumieres* translates to "the century of Lights". Although for the most part the Enlightenment covers the eighteenth century, the dates for the beginning and end of the period are contentious. This will be discussed later in this chapter.

[2] Thomas Carlyle, *On Heroes, Hero-worship, & the Heroic in History* (New York: D. Appleton & Co., 1841), p. 34.

[3] Christoph Gradmann, *Laboratory Disease: Robert Koch's Medical Bacteriology*, trans. by Elborg Forster (Baltimore: Johns Hopkins University Press, 2009); Thomas M. Daniel, *Pioneers of Medicine and Their Impact on Tuberculosis*, Pioneers of Medicine and Their Impact on Tuberculosis, pt. 184 (New York: University of Rochester Press, 2000) <http://books.google.co.nz/books?id=ipIrT1Hf-dYC>; Thomas D. Brock, *Robert Koch: a Life in Medicine and Bacteriology* (Washington, D.C: ASM Press, 1999). For a historical narrative on Louis Pasteur's life, see: Patrice Debré, *Louis Pasteur* (Baltimore: Johns Hopkins University Press, 2000). For information about John Snow's achievements, see: Steven Johnson, *The Ghost Map* (New York: Riv erhead Books, 2006); Sandra Hempel, *The Strange Case of the Broad Street Pump: John Snow and the Mystery of Cholera* (Berkeley: University of California Press, 2007).

favoured individual achievements over the context that fostered them. A recent trend in historiography aims to place individuals in their context and to demonstrate the fundamental influences of social, political, and economic factors on the development of knowledge. However, the nineteenth century is nevertheless significantly more represented in such works than the enlightenment period.

Arguably the nature of Western medicine, as represented in extensive scholarship, was determined by the socio-political setting of the nineteenth century.[4] A recent anthology, *The Western Medical Tradition* (2006), demonstrated the significance of these factors on the improved efficacy of medicine.[5] Hall's "Venereal Diseases and Society in Britain" illustrated that increasing publicity as well as medical theorizing can influence changes in how venereal diseases have historically been understood; changes can occur as a result of government recognition of a problem, regardless of how particular diseases are conceptualized by the medical community.[6] Along these lines, moral themes dominate historical studies of disease during the nineteenth century, for example the idea that disease is a manifestation of immoral behaviour. Bruno Wanrooij's "Thorns of Love" detailed the interconnectedness between concepts of venereal disease and contagion, and showed how religious notions of sin were woven into political discussion.[7] Analyses of the relationships between concepts of deviance and the consequent disease have prevailed. This has been investigated in terms of attitudes to prostitution,[8] gender representations,[9] legislation of morality, political attitudes to sexuality, sexual contact, and venereal disease more generally.[10] Of the nineteenth century, Hall claimed that the "characteristic squeamishness towards manifestations of sexuality assumed that venereal

[4] *The Western Medical Tradition: 1800 to 2000* (New York: Cambridge University Press, 2006), pp. 1–6. See also: Lesley A. Hall, 'Venereal Diseases and Society in Britain, from the Contagious Diseases Acts to the National Health Service', in *Sex, Sin and Suffering: Venereal Disease and European Society since 1870*, ed. by Roger Davidson and Lesley A. Hall (London: Routledge, 2001), pp. 120–136. However, there are also some detailed investigations of the scientific influences and epistemic reasoning that affected the development of medicine throughout the nineteenth century. For example, see: W. F Bynum, *Science and the practice of medicine in the nineteenth century* (Cambridge: Cambridge University Press, 1994).

[5] *The Western Medical Tradition*.

[6] Hall.

[7] Bruno P. F. Wanrooij, '"The Thorns of Love", Sexuality, Syphilis and Social Control in Modern Italy', in *Sex, Sin and Suffering: Venereal Disease and European Society since 1870* (London: Routledge, 2001), pp. 137–159.

[8] Mary Spongberg, *Feminizing venereal disease : the body of the prostitute in nineteenth-century medical discourse* (London: Macmillan, 1997).

[9] Helen Deutsch, 'Symptomatic Correspondences: The Author's Case in Eighteenth-Century Britain', *Cultural Critique*, 1999, pp. 35–80.

[10] *Sex, Sin and Suffering: Venereal Disease and European Society Since 1870*, ed. by Roger Davidson and Lesley A. Hall (London: Routledge, 2001).

diseases were too disgusting a subject for discussion, with consequent reluctance to recognize them as a problem."[11] Such attitudes were distributed throughout society.

1.2 The unenlightened eighteenth century?

In contrast to the efficacious medicine of the nineteenth century, the preceding century is often viewed as a dismally ineffective period in the history of medicine. It is this aspect that has contributed to the era being known as a dark age in the history of medicine. Guy Williams' aptly titled popular work, *Age of Agony* portrayed this well.[12] Williams' survey focused on the apparent miseries of Enlightenment medicine. Although bespeckled with quotes from primary sources, he frequently appealed to twentieth century ideals to showcase eighteenth century medicine as particularly unenlightened.[13] Williams' work also contains some dubious historical claims.[14] Overall, *Age of Agony* impresses upon its readers the bleak, archaic, and tragic nature of eighteenth century medicine,[15] a view succinctly summed up by this remark: "It is always darkest — the proverb *must* be repeated — just before the dawn."[16] Though this stance is exemplary of early twentieth century scholarship, it has recently been contested.

In 1995 Roy Porter lamented,

> It would be easy to paint a picture of medicine in eighteenth century England as meandering down the same channel, still unreformed, though still more oligarchic.... Historians have commonly endorsed [this] reading, seeing the eighteenth century as an era of medical stagnation, destined to be swept aside

[11] Hall, p. 20.
[12] Guy R. Williams, *The Age of Agony: The Art of Healing, C. 1700-1800* (London: Constable, 1975).
[13] The tone of his writing emphasises this. For example he stated, "... puerperal fever was still inducing certain deaths, and all too many of them throughout the eighteenth century. The mortality figures... are shocking", p. 45
[14] For example, Williams claimed that "... Columbus returned with his seriously infected sailors from the 'Asian Isles'" (p. 128), when this is not at all clear from Christopher Columbus's own diaries on board his ship. A further example of Williams' medical history is his account of that "breakthrough" invention, the condom. "What we might call now 'a real breakthrough' came when a citizen of London named Condom invented, somewhere around the year 1750, those invaluable little envelopes known, subsequently, in England as 'French Letters'...", pp. 136-7. However the history of the condom is contentious and Lesley A. Hall goes so far as to argue that this doctor Condom is almost certainly apocryphal. See: Lesley A. Hall, 'Condom', *The Oxford Companion to the Body*, ed. by Colin Blakemore and Sheila Jennett (University of Canterbury: Oxford Reference Online) <http://www.oxfordreference.com/views/ENTRY.html?subview=Main&entry=t128.e227> [accessed 1 November 2010].
[15] Williams, p. xi.
[16] Williams, p. 66. Original italics.

> in the 'age of reform' by a new broom that put an end to privilege and patronage, and created the 'career open to talent'.[17]

That dawn is so often considered to be the nineteenth century, when conditions for the reform of the medical community were ripe.[18] Quétel noted that medical reactions to venereal disease, which included syphilis and gonorrhoea, changed over time. Both Quétel and Porter contended that religious ideals were increasingly subordinated to secularised rationalism, challenging the ways in which disease was understood in the eighteenth century.[19] Porter showed that vast transformations in political ideologies throughout the enlightenment period were reflected in contemporary medicine, arguing that: "Thinkers propagating the socio-political outlooks of the Enlightenment were keen to promote secular welfare, *health* alongside the *wealth* of nations."[20] Furthermore, he showed that medical philanthropy abounded in eighteenth century England; five new general hospitals were founded between 1720 and 1750 in London for the benefit of the city's poor. Porter argued that the Lock Hospital, opened in 1746 for the relief of venereal disease, was founded on the basis of the "enlightened" view that humanity should not suffer.[21] Taking a cue from Porter, then, evidence for enlightenment thinking within the domain of medical knowledge should be identifiable.

However, medicine is rarely found within histories of science. Within this discipline, texts seldom engage with the development of *medical* knowledge. Richard S. Westfall's *The Construction of Modern Science* (1984) focused on advances in knowledge in the seventeenth century, emphasising the impact of the mechanical philosophy.[22] Although the preface claimed the book concerned "various aspects of medicine and the study of man" within the sciences, it does not comment much further on the topic, save for intimations within a chapter on mechanistic biology.[23] Thomas Kuhn's highly influential *The Structure of Scientific Revolutions* (1962)[24] similarly did not engage with the history of medicine but on developments within physics. Stephen Gaukroger's epic *Emergence of a Scientific Culture* (2006),[25] an account of the development of science between the

[17] Roy Porter, *Disease, Medicine, and Society in England, 1550-1860*, New Studies in Economic and Social History, 2nd ed (Cambridge ; New York: Cambridge University Press, 1995), p. 27.
[18] *The Western Medical Tradition*, pp. 1–3.
[19] Claude Quétel, *History of syphilis* (Baltimore: Johns Hopkins University Press, 1990), p. 75; Porter.
[20] Porter, p. 30.
[21] Porter, pp. 30–31.
[22] Richard S. Westfall, *The Construction of Modern Science: Mechanisms and Mechanics*, History of Science (Cambridge: Cambridge University Press, 1977).
[23] Westfall, p. vii. See also Chapter V: Biology and the Mechanical Philosophy, pp. 82-104.
[24] Thomas S Kuhn, *The structure of scientific revolutions.*, Second edition (Chicago: University of Chicago Press, 1970).
[25] Stephen Gaukroger, *The Emergence of a Scientific Culture: Science and the Shaping of Modernity, 1210-1685* (Oxford: Clarendon Press, 2006).

thirteenth and seventeenth centuries, aimed to show that the ostensible scientific revolution was not a revolution at all, but the gradual outcome of a society actively engaged in determining the nature of truth. Gaukroger did not include the history of medicine and medical knowledge. His method surrendered the notion that specific time periods were significant, emphasizing instead contemporary social, political, religious, and economic influences on the development of knowledge. This approach contrasted with traditional historiographies of science, which called attention to particular time periods as significant, for example the sixteenth century as the age of the scientific revolution.

Although recent studies of enlightenment science focus on the relationship between social forces and knowledge, medicine and specifically venereal disease, are seldom mentioned. Elliot's 2010 study of scientific culture toured "spaces" of knowledge in Georgian society: schools, institutions, homes, and gardens.[26] Case studies of specific places provided Elliot with tangible evidence of an enlightenment society, as he focused on social, intellectual, economic, and political relationships. Though Elliot studied the medical domain in relation to its use for gardens, his focus was on the space and not the discipline itself. In fact, "syphilis" is not mentioned at all. Additionally, Beales' 2005 study of the enlightenment praised the era for its political, scientific, and technological achievements, but echoed the twentieth century contention that the eighteenth century witnessed little in the way of medical advances. Indeed, "The only major advance of eighteenth century medicine," argued Beales, "[was] inoculation against smallpox".[27] In contrast to this sentiment, this thesis explores a case study that shows how knowledge about venereal disease was advanced through the work of eighteenth century surgeons and physicians challenging authoritarian views.

1.3 Problem statement

As such, there is a distinct gap in literature on the history and philosophy of science. This thesis addresses this gap by examining the history of scientific medicine, specifically knowledge about syphilis, in eighteenth century Great Britain. Historiography minimizes advances in medical knowledge made in the eighteenth century by focusing on the inefficacy of treatments, rather than on developments in medical theories and concepts. This thesis attends to this gap by examining a case study within venereology to

[26] Paul A Elliott, *Enlightenment, modernity and science geographies of scientific culture and improvement in Georgian England* (London; New York: I.B. Tauris, 2010) <http://public.eblib.com/EBLPublic/PublicView.do?ptiID=688278> [accessed 22 January 2013].

[27] Derek Edward Dawson Beales, *Enlightenment and Reform in 18th-century Europe*, International Library of Historical Studies, 29 (London ; New York : New York: I.B. Tauris ; Distributed in the U.S. by Palgrave Macmillan, 2005), p. 19.

demonstrate that physicians engaging in public debate significantly advanced knowledge of syphilis. Additionally, this thesis counters a historiographical trend that claims that French physician Philippe Ricord (1800-1889) was the first to distinguish syphilis from gonorrhoea in the nineteenth century. It uses historical sources to show that the nature of syphilis was debated throughout the preceding century and that the distinction was made before 1793. This thesis uses the epistemic concepts devised by Ludwik Fleck to establish that enlightenment ways of thinking positively impacted medicine. It therefore invites a reconsideration of the era, not as a dark age, but as a vibrant, dynamic, and rich period of scientific endeavour.

1.4 Argument

This thesis reaches these conclusions by building an argument that makes extensive use of primary source evidence, and Fleck's epistemology. This section provides a blueprint for the remainder of the thesis. The remainder of Chapter One describes the argument by outlining the ensuing chapters, before emphasising the significance of this study. It then examines the enlightenment as a period of intellectual history before discussing the theoretical framework, parameters and terminology.

Chapter Two examines the current scientific understanding of syphilis. This is important as it illuminates the complexities of diagnosing the disease based on symptoms alone. Moreover, it provides insight into just how remarkable it was for eighteenth century physicians to recognise the systemic disease as a single disease entity.

Chapter Three examines the origins, morality, treatment, and issues identifying the disease as key themes in the history of syphilis. Understanding these different themes and how they contribute to the changing concepts of syphilis provides the background and context for how the disease was understood in eighteenth century Britain.

As such, Chapter Three feeds into Chapter Four, which illuminates a debate within venereology about the nature of syphilis. Using primary sources as evidence, it shows that concepts of syphilis were multivalent and dependent upon the views of the treating physician. It argues, contrary to a dominant thread of historiography, that prominent physicians in eighteenth century Britain opposed the authoritative unicist view of London physician John Hunter and proposed instead a concept of syphilis that excluded symptoms of gonorrhoea. By making use of enlightenment tenets such as empiricism and reason, contemporaries such as Benjamin Bell were able to demonstrate that syphilis was a distinct disease entity, and as such, it responded to different modes of treatment.

Chapter Five is primarily philosophical and focuses on Ludwik Fleck's social epistemology. It contributes to this thesis by introducing the central concepts of Fleck's monograph with a view to later analysing how the conclusions of Chapter Four were made possible by enlightenment society generally. Fleck's epistemic concepts are inextricably linked to socio-historical tenets, and as such, they emphasise the achievements of the scientific community (the "thought collective") over individual achievements. As such, Chapter Five provides the basis for understanding how and why scientific inquiry of physicians debating the nature of syphilis contributed to the development of knowledge.

Chapter Six builds upon Chapters Four and Five. It utilises Fleck's epistemology to gain insights about how and why broader enlightenment characteristics can be seen within venereology of the period. Using Fleck's theory in this way has two important implications for the history of syphilis: first, it finds that Hunter, as an individual physician, ought not be held responsible for the stagnation of venereology until the nineteenth century; second, Ricord ought not to be revered as a pioneer in syphilography, since the concept of syphilis as distinct from gonorrhoea was expounded in the previous century. Chapter Six evaluates Fleck's concept of the "proto-idea" as a tool for historical analyses. It concludes by demonstrating how, with an adjustment to the definition, the proto-idea can enable a deeper understanding of the history of knowledge.

Chapter Seven concludes the thesis and reiterates the three primary contributions of this thesis to the history and philosophy of science, which are outlined in detail below.

1.5 Significance of this study

The value of enlightenment medicine resides not in its therapeutic techniques (which were generally ineffective at best or counterproductive and dangerous at worst), but in the ways that physicians handled medical puzzles and set about problem solving. The scientific thinking characteristic of the enlightenment is shown to have profoundly influenced medical knowledge. Focusing on this, rather than on therapeutic inefficacy, reveals different insights about enlightenment medicine. Instead of a dark age, a vibrant and rich era of scientific inquiry can be seen. The historiographical concern that "nothing new" occurred during this period of the history of medicine has helped to deter research in this area.[28] Therefore this thesis contributes to the comparatively under researched discipline of eighteenth century medicine. The focus of histories of syphilis tends to be on concerns about prostitution, religious notions of sin, or the inefficacy of treatment.

[28] Quétel, p. 76.

Showing how eighteenth century venereology contributed to the modern scientific concept of syphilis is an important contribution to the history and philosophy of science.

The central claims of this thesis

As such, this thesis contributes to the growing literature in this area in three ways. First, it demonstrates that syphilis and gonorrhoea were distinguished as two separate diseases by the eighteenth century — almost half a century before Ricord published his work on venereal disease. Second, by examining primary evidence from a debate about the nature of syphilis, it becomes clear that at least some features of enlightenment venereology were vibrant areas of scientific inquiry. This is in contrast to the prevailing notion of the period as a dark age in medicine. Third, this thesis uses Fleck's epistemic concepts to gain insights about the development of knowledge during this time. This is a novel application of Fleck's epistemology. Ultimately, it is concluded that, with a slight adjustment, Fleck's epistemic concepts are a powerful tool for analysis of medicine in the enlightenment.

1.6 The enlightenment

This section locates eighteenth century discussion about the nature of syphilis against a background of Enlightenment thinking. It provides the intellectual and temporal context for debate about the nature of syphilis, and points to the kinds of thinking that influenced medicine during this period.

What is enlightenment?

> *Enlightenment is the human being's emergence from his self-incurred minority*. *Minority* is inability to make use of one's own understanding without direction from another. This minority is *self-incurred* when its cause lies not in lack of understanding but in lack of resolution and courage to use it without direction from another. *Sapere aude!* Have courage to make use of your own understanding! is thus the motto of the enlightenment.[29]

Immanuel Kant's contemporary and well-worn depiction of enlightenment thinking captures the essence of the eighteenth century.[30] This sentiment, written in 1784, makes

[29] Immanuel Kant, 'An Answer to the Question: What Is Enlightenment?', in *Practical Philosophy*, ed. by Mary J. Gregor (Cambridge: Cambridge University Press, 2005), p. 17.

[30] Despite being frequently used by scholars, it does capture the spirit of the period. See James Schmidt, 'The Question of Enlightenment: Kant, Mendelssohn, and the Mittwochsgesellschaft', *Journal of the History of Ideas*, 50 (1989), 269–291 <http://www.jstor.org/stable/2709735>.

use of language in a way that demonstrates the self-aware characteristic of many enlightenment works. Indeed, by the end of the eighteenth century, verbs associated with *enlighten* were established across Europe. Though the German *Aufklärung* predominantly delineated a process of literal enlightenment, rather than intellectual,[31] the French *siècle des Lumieres* had both physical and intellectual senses of illumination. In the English language however this latter abstraction was identified within *illumination* by the end of the eighteenth century, while *enlightenment* came into popular usage only in the later nineteenth century.[32] Despite this, the term *enlightenment* is particularly useful as it conveys ideas and theories as they were understood during the eighteenth century.

The age of enlightenment

The enlightenment, known an era of fundamental change, is often contrasted with the authoritarian and superstitious views that are believed to characterize the medieval period.[33] Whereas Beales contended that the period is unmatched in terms of political change, and social, religious, and technological developments,[34] Elliot argued that scientific culture is a defining characteristic of the enlightenment.[35] This thesis is concerned with the intellectual movement that saw the self-conscious rise of empiricism, rationalism, and the ability to publicly counter conventional views. Against this background, aspects of medicine became publicly debated and knowledge was advanced by observation and rational inference.

Identifying the enlightenment with a particular, clearly delineated period of time within Europe disregards the complexities, disunity, and interconnectedness of dynamics across society. Somewhat arbitrarily, the period is framed within the eighteenth century though the boundary dates vary significantly between historians and philosophers. From the seventeenth century, empiricism and reason are increasingly used in science and medicine. The works of John Locke (1632-1704), Isaac Newton (1643-1727), and William Harvey (1578-1657) were particularly influential and this period marks the approximate origins of the age of enlightenment. To mark the end of the era, the revolutionary decade of the 1780s brings an identifiable close to the political scene of France. The fall of the *ancien régime* is frequently recognized as the culminating characteristic of enlightenment values. Thomas Munck argued instead that a more natural

[31] Thomas Munck, 'Enlightened Thought, its Critics and Competitors', in *A companion to eighteenth-century Europe*, ed. by Peter H. Wilson (Malden, MA: Blackwell, 2008), pp. 141–157 (p. 143).
[32] Munck, p. 143.
[33] M. J. Inwood, 'Enlightenment', *The Oxford companion to philosophy* (Oxford [etc.]: Oxford University Press, 2005).
[34] Beales, pp. 1–2.
[35] Elliott, p. 1.

ending to the era would be a few years earlier, between 1776-1784 with the deaths of several important thinkers.[36] David Hume (1776), Jean-Jacques Rousseau (1778), Denis Diderot (1784), Gotthold Ephraim Lessing (1781), and Voltaire (1778) died within this time frame. Since such intellectual figures cannot be properly appreciated in isolation from the context that conditioned their views, it is fitting that the close of the enlightenment fall near these dates. As Lester S. King claimed, theories cannot be properly understood if they are confined within a "temporal straightjacket".[37] Thus, for the purposes of this thesis, the enlightenment spans the late seventeenth century to the late eighteenth century.

Key themes of the enlightenment

Freedom, self-awareness, and public debates are key features of the enlightenment. As Kant and Voltaire indicated, intellectual enlightenment was a concept known to contemporary thinkers, and recognized as something to aspire to. Kant furthered his depiction by arguing that freedom was paramount, writing "For this enlightenment, however, nothing is required but *freedom*, and indeed the least harmful of anything that could even be called freedom: namely, freedom to make *public use* of one's reason in all matters."[38] Kant's public proclamation epitomized this notion of freedom. Cunningham and French have contended that secular values, reason, and traditional authority replaced the superstitious, divinely ordained explanations of the seventeenth century.[39] Though there are counterexamples to be found, these portrayals of enlightenment thinking are discernible in numerous medical discourses. Munck provided a similar sentiment, writing that recognizing the diversity of theories has allowed scholars to view the Enlightenment more as a process than as a specific movement.[40]

There are no overarching, absolute characteristics of enlightenment thinking, only general themes. Prominent rises in empiricism, rationalism, and a move towards secularization in

[36] Munck, p. 143.
[37] Lester S. King, *The Philosophy of Medicine: The Early Eighteenth Century* (Cambridge, Mass: Harvard University Press, 1978), p. vi.
[38] Kant, p. 18. Kant also wrote, "Everywhere there are restrictions on freedom. But what sort of restriction hinders enlightenment, and what does not hinder but instead promotes it? — I reply: The *public* use of one's reason must always be free, and it alone can bring about enlightenment among human beings; the *private use* of one's reason may, however, often be very narrowly restricted without this particularly hindering the progress of enlightenment. But by the public use of one's reason I understand that use which someone makes of it *as a scholar* before the entire public of the *world of readers*." Original italics.
[39] Andrew Cunningham and Roger French, 'Introduction', in *The medical enlightenment of the eighteenth century*, ed. by Andrew Cunningham and Roger French (Cambridge: Cambridge University Press, 1990), p. 1.
[40] Munck, p. 142.

explanation are clear, but arguments and theories against these methods are also prevalent. Straightforward conclusions about the nature of the enlightenment are not easily discerned. However, an extensive range of medical treatises was produced throughout the period and many of these adopted the emergent theories to explain the human body and its pathologies. Despite this, and in agreement with Roy Porter, it is possible to discern the concept of a medical enlightenment.[41] For this reason, it is naïve to argue that the eighteenth century produced nothing relevant to modern medicine.

1.7 Theoretical framework

This thesis uses the central concepts of Fleck's social epistemology to analyse eighteenth century theories about syphilis. The concepts, found in Fleck's monograph *Genesis and Development of a Scientific Fact*, were used because they served to exemplify the social influences and intellectual context of knowledge. Further, Fleck developed his epistemology by abstracting the central concepts from his own history of the concept of syphilis. In contrast to Kuhn, who used the history of physics as the basis for his epistemology, Fleck made use of the history of medicine. Because of this, Fleck's epistemic concepts are more relevant to the case studies presented in this thesis.

1.8 Parameters

The history of syphilis covers a diverse range of subjects. They include studies on the relationships between doctors and society, disease and morality, and the impact of science on medicine; they examine social, political, economic, technological themes, and religious influences. Frequently these histories contribute to our understanding of how society has handled health, sickness, and moral transgression. They also often provide insights about the ways in which medicine was practised, such as by whom, upon whom, and what theoretical doctrines informed treatment. The anatomical tradition gained insights into the wonderments of the human body by dissecting and analysing the parts before reflecting upon the whole. Such a fragmentary approach necessarily distorts, emphasising events that are but aspects of a wider and more complex setting. Simultaneously however it presents an opportunity to study an area that is otherwise only briefly discussed by survey texts. Taking this reductionist cue, this thesis focuses on one subject within the history of syphilis: what the origins of the modern concept of syphilis are. The scope is further limited by analysing the impact of a particular debate in eighteenth century Britain upon the development of knowledge about syphilis in the subsequent century.

[41] Roy Porter, 'Introduction', in *Medicine in the Enlightenment*, ed. by Roy Porter (Amsterdam-Atlanta, GA: Rodopi, 1995), p. 3.

Furthermore, this thesis focuses on the medical understanding of acquired syphilis in adults during the eighteenth century. The puzzle that congenital syphilis presented to enlightenment physicians will have to wait for a future study. Research presented here is by no means a comprehensive study of the theories that informed medical practice in and around the eighteenth century. Fleck's social epistemology is used as a conceptual frame through which to analyse the history of medicine during this period. Interest in his monograph has increased substantially in a number of fields in recent years. As such his philosophical articles are becoming more widely available. However, the theoretical aspects of this study are restricted to concepts as they are determined by Fleck in his *GDSF*. The 1979 English translation of this text was relied upon for definitions of his epistemic concepts.

1.9 Terminology

Syphilis has had a myriad of names relating to various political, social, and moral themes in its long history. The word itself did not exist in connection with the disease until the sixteenth century; in 1530 the physician Fracastoro published *Syphilis Sive Morbus Gallicus*, a poem about a shepherd boy named Syphilus who received the disease as divine punishment. Those who lived outside of France called it *Morbus gallicus*, or the "French Disease". It was also known as the "Neapolitan disease", the "pox" (or "Great Pox", in contrast to smallpox), and the "venereal scourge". The sixteenth century Spanish physician Ruy Dias de Isla called it *Morbo Serpentino*, or the serpentine malady.[42] During the eighteenth century, though the disease was widely referred to as syphilis, medical treatises continued to use the terms "pox", and "lues venerea" or simply "lues" to denote it. The enlightenment physician Benjamin Bell used the term "syphilis" interchangeably with these other terms in his *A Treatise on Gonorrhoea Virulenta and Lues Venerea*.[43] As debate over the nature of syphilis endured throughout the early modern period, the term "lues venerea" began to disappear from medical literature.

From the mid-eighteenth century there was a marked increase in the use of terms denoting like groups of symptoms such as gonorrhoea, syphilis, and chancre.[44] A central aspect of this thesis is the analysis of an eighteenth century debate over whether or not

[42] E. A. U., 'The History of Syphilis', *The British Medical Journal*, 2 (1945), 658 (p. 658) <http://www.jstor.org/stable/20350180> [accessed 9 October 2012].
[43] Benjamin Bell, *A Treatise on Gonorrhoea Virulenta and Lues Venerea (V1)*, A Treatise on Gonorrhoea Virulenta and Lues Venerea, 2 vols., 1793, I, p. 32 <http://books.google.co.nz/books?id=SjgUAAAAQAAJ>.
[44] Jon Arrizabalaga, 'Syphilis', in *The Cambridge World History of Human Disease*, ed. by Kenneth Kiple (Cambridge: Cambridge University Press), pp. 1025–1033 (p. 1031) <http://histories.cambridge.org/extract?id=chol9780521332866_CHOL9780521332866A196> [accessed 9 October 2012].

syphilis and gonorrhoea were the same disease. Like syphilis, gonorrhoea has historically had a range of names. In the eighteenth century it was known as "gonorrhoea virulenta". Blenorrhoea was the discharge associated with gonorrhoeal infection. In general, I have maintained the spelling of the suffix –rrhoea, meaning to flow (hence diarrhoea, gonorrhoea),[45] except where quoting US secondary sources necessitates using –rrhea.

I recognise that it is anachronistic to use the term syphilis when discussing the disease prior to 1530, and for periods when the disease was predominantly referred to by a different term. Arrizabalaga, Henderson, and French rightly point out that there remains a fundamental distinction between conceptions of *Morbus gallicus* as it was understood in the late fifteenth century, and the current scientific understanding of syphilis,[46] associated today with a bacterial cause, anti-biotic treatment, and a reduced social stigma.[47] While I have endeavoured to avoid anachronisms, for brevity and simplicity I have occasionally used the term syphilis in historical settings.

1.10 Conclusion

In summation, this thesis addresses a gap in literature by arguing that eighteenth century medicine was an interesting and vibrant era of scientific endeavour, rather than a dark age as commonly supposed. This contrasts with the dominant trend in historiography that argues against the notion of "enlightened" medicine by focusing on therapeutic efficacy. Instead, I argue that empiricism, rationality, and physicians challenging authoritative views are evident within enlightenment debates about the nature of syphilis. As such, eighteenth century venereology is an important contribution to modern medicine. Through this debate it will become evident that syphilis and gonorrhoea were demarcated in the eighteenth century. Thus, this thesis remedies the widespread claim that Ricord was a pioneer in syphilology. Fleck's epistemic concepts are used to provide insights about how and why broader enlightenment tenets are visible in early studies about syphilis. It will be demonstrated that Fleck's epistemology can be applied to the history of science as a useful tool for analysing the development of knowledge. The next chapter introduces the stages and variable symptoms of venereal syphilis.

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[45] Elizabeth Martin, *-rrhoea* (Oxford University Press) <http://www.oxfordreference.com/10.1093/acref/9780199545155.001.0001/acref-9780199545155-e-8530>.

[46] Jon Arrizabalaga, John Henderson and R. K French, *The Great Pox : the French Disease in Renaissance Europe* (New Haven: Yale University Press, 1997), p. 1.

[47] Arrizabalaga, Henderson and R. K French, pp. 1–2.

2. The current scientific understanding of syphilis

This chapter provides an encyclopaedia-type discussion of the current scientific understanding of syphilis. It covers biology, syndrome identification, the four stages of infection, and introduces the related diseases of yaws, pinta, and bejel. It does not cover congenital syphilis. This chapter is important as it familiarises the reader with syphilis as a distinct disease entity and therefore provides the basis for understanding the remainder of the thesis. Due in part to its range of disparate symptoms and close resemblance to other diseases, syphilis has a complex history. Indeed it has been exclaimed that, "There are few diseases whose history is so difficult to write concisely and fairly as that of syphilis."[48] As such, this modern understanding is vital to appreciating why syphilis was a difficult puzzle for early modern physicians, and why resolving it in the eighteenth century was such an achievement. To set the scene, this chapter begins with an overview of the current prevalence of the syphilis.

In recent years, global rates of syphilis infection have increased at an astonishing rate. Although the disease has been wholly curable since the advent of penicillin, and despite diminished rates of infection in most developed countries since the mid-twentieth century, syphilis has re-emerged as a significant threat to health. A *New England Journal of Medicine* article (2010) stated that syphilis "is now the most commonly reported communicable disease in Shanghai, China's largest city."[49] These words are remarkable given the elimination of the disease in China between 1960 and 1980.[50] The extent of this increase is revealed by the numbers; 9,480 babies, an average of more than one per hour, were born with congenital syphilis in 2008.[51] A similar trend is also visible in North America and Europe. Rates of infection have increased in Alberta since 1997,[52] while in

[48] E. A. U., p. 658.

[49] Joseph D. Tucker, Xiang-Sheng Chen and Rosanna W. Peeling, 'Syphilis and Social Upheaval in China', *New England Journal of Medicine*, 362 (2010), 1658–1661 (p. 1658) <doi:10.1056/NEJMp0911149>.

[50] In 1950s China, sweeping reforms of the sex industry meant the permanent closure of commercial brothels, and the instigation of routine treatment of syphilis for sex workers. Tucker, et al. state that "One decade after these sweeping changes took place, STIs were virtually unknown in China." p. 1660. See also, Zhi-Qiang Chen and others, 'Syphilis in China: Results of a National Surveillance Programme', *The Lancet*, 369 (2007), 132–138 (pp. 132–138) <doi:10.1016/S0140-6736(07)60074-9>; Liping Zhu and others, 'Maternal and Congenital Syphilis in Shanghai, China, 2002 to 2006', *International Journal of Infectious Diseases*, 14 (2010), e45–e48 <doi:10.1016/j.ijid.2009.09.009>.

[51] Tucker, Xiang-Sheng Chen and Peeling, p. 1659. Congenital syphilis is transmitted to the foetus during the later stages of pregnancy by a syphilitic mother.

[52] See: A. E. Singh and others, 'Resurgence of Early Congenital Syphilis in Alberta', *Canadian Medical Association Journal*, 177 (2007), 33–36 (pp. 33–36) <doi:10.1503/cmaj.070495>.

Northern Ireland, diagnoses of syphilis rose by over 50 per cent between 2007 and 2008.[53] Additionally, an outbreak of infectious syphilis in Sheffield between 2003 and 2005 notably paralleled mounting incidences of the disease elsewhere in the British Isles.[54] Such international trends are visible in New Zealand too; a report from 2005 aimed to raise awareness of the probable resurgence of syphilis in Auckland,[55] while a 2007 article established that Wellington was in the grip of an outbreak.[56] The following section discusses the bacterium and transmission.

2.1 Biology

Bacteria

According to current scientific understanding, syphilis is a chronic systemic disease caused by infection with the spirochete bacterium *Treponema pallidum* subsp. *pallidum* (henceforth, *T. pallidum*). In 1998 its newly sequenced genome revealed the syphilis-causing bacterium to be one of the tiniest prokaryotes at 1,138,006 base pairs long.[57] Comparatively, *Clostridium difficile*, the causative agent of a diarrhoeal disease, is approximately 4.4 million base pairs (Mb).[58] *T. pallidum* is a member of the anaerobic treponema genus, and closely related to the non-venereal diseases yaws, pinta, and bejel. Because *T. pallidum* is human obligate, it cannot be easily cultured *in vitro* and therefore comparatively little is known about its mechanisms of pathogenesis.[59] Once the bacterium has entered its human host however, serology and dark-field microscopy, along with the interpretation of symptoms and the socio-geographical context of the infected individual, provide an accurate diagnostic criterion for syphilis.

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[53] In 2007, 27 people were diagnosed with syphilis, compared with 63 in 2008. Although the numbers appear low, the recent increased rates of infection are high for a disease often perceived to be obsolete. '50% Rise in New HIV Cases in Year', *BBC*, 1 December 2009, section Northern Ireland <http://news.bbc.co.uk/2/hi/uk_news/northern_ireland/8388528.stm> [accessed 1 December 2009].

[54] Selena Singh, Gill Bell and Martin Talbot, 'The Characterisation of a Recent Syphilis Outbreak in Sheffield, UK, and an Evaluation of Contact Tracing as a Method of Control', *Sexually transmitted infections*, 83 (2007), 193–199 (p. 193) <doi:10.1136/sti.2006.022145>.

[55] Sunita Azariah, 'Is Syphilis Resurgent in New Zealand in the 21st Century? A Case Series of Infectious Syphilis Presenting to Auckland Sexual Health Service', *The New Zealand Medical Journal*, 118 (2005) <http://nzma.org.nz/journal/118-1211/1349/>.

[56] Ruth Cunningham and others, 'An Outbreak of Infectious Syphilis in Wellington, New Zealand', *The New Zealand Medical Journal*, 120 (2007) <http://nzma.org.nz/journal/120-1260/2680/>.

[57] C. M. Fraser, 'Complete Genome Sequence of Treponema Pallidum, the Syphilis Spirochete', *Science*, 281 (1998), 375–388 (p. 375) <doi:10.1126/science.281.5375.375>.

[58] David A. Norwood Jr and Jeffrey A. Sands, 'Physical Map of the Clostridium difficile Chromosome', *Gene*, 201 (1997), 159–168 (p. 159).

[59] Fraser, p. 375.

Transmission

Transmission of *T. pallidum* occurs largely through sexual activity, by direct contact with a lesion (chancre) on the external genitalia. The manifestation of the chancre is an initial sign of infection. The chancre can, however, be located internally in the vagina, cervix, perianally (in the anal canal), or in the mouth. In these cases, where the initial lesion is hidden within the body, it can go unnoticed or remain unrecognised as a symptom of syphilis infection. People who are unaware of their own infection can therefore transmit syphilis to their sexual partners. If the disease remains untreated during pregnancy, the foetus can contract congenital syphilis. In these cases, approximately one third of babies born will be free of infection; one third of pregnancies will end in miscarriage or stillbirth, and one third of babies born will be inflicted with congenital syphilis.[60] Symptoms of the disease can also resemble those associated with the human immunodeficiency syndrome (AIDS), amongst numerous other diseases. The lesions associated with primary and secondary syphilis can facilitate the transmission of the retrovirus that causes HIV/AIDS.[61] Left untreated, syphilis progresses through four defined stages (primary, secondary, latent, tertiary).

2.2 Syndrome identification

Primary syphilis

The first symptom of syphilis is the chancre, which occurs at the site of entry of the causative bacterium *T. pallidum*. The typical incubation period between initial infection and the development of the chancre is two to three weeks; however this period can range from between nine and ninety days.[62] Generally the chancre presents as a single round, firm, and painless lesion,[63] however there can also be numerous painful chancres present at the initial site of entry. If left untreated, the lesion(s) will heal spontaneously, usually within four or five weeks.[64] Because this primary lesion is typically insensitive and often located internally it is not always noticed. Even when it is recognised, it may be mistaken for a different ailment – a mouth ulcer, for example. The spontaneous disappearance of the lesion may lead the infected individual to assume that the infection has been resolved. In such cases, the disease will naturally advance to the second stage of infection.

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[60] P. French, 'Syphilis', *BMJ*, 334 (2007), 143–147 (p. 145) <doi:10.1136/bmj.39085.518148.BE>.
[61] P. French, p. 145.
[62] P. French, p. 144.
[63] 'CDC Factsheet: syphilis' <http://www.cdc.gov/std/syphilis/default.htm> [accessed 30 January 2013].
[64] The average time it takes for the initial chancre to heal is four to five weeks, but the range is between three and ten weeks. P. French, p. 144.

Secondary syphilis

Between four and eight weeks after the initial chancre, syphilis becomes a systemic infection. At this stage, a wide variety of symptoms are possible. The similarities of these symptoms to those of other diseases make diagnosis based on symptoms alone difficult. This secondary stage of the disease is characterised by a skin rash and mucous membrane lesions.[65] The rash can occur on one or more regions of the body. It may present on the palms of the individual's hands, the soles of their feet, or on their scalp; it is usually rough and reddish in appearance, but it can be so faint as to remain unnoticed. The rash can also present as papular, small pimple-like swellings that seldom ulcerate. Rashes associated with secondary syphilis can be atypical, and closely resemble rashes caused by other diseases; for example lymphadenopathy (an enlargement of the lymph nodes caused by viral or bacterial infection), malignancy (including leukaemia and lymphoma), and autoimmune diseases can all cause papular rashes very similar to those associated with syphilis.[66] A number of other diseases have symptomatology resembling that of syphilis. For example, the symptoms of primary and secondary syphilis also resemble Beçhet's syndrome, which is characterised by bucal and genital ulceration, skin lesions, and venous inflammation.[67] Lesions of the mucous membranes can ulcerate in the mouth, and appear wart-like on the genitalia. Also associated with secondary syphilis are a broad range of constitutional symptoms, including fever, malaise, hair loss, weight loss, headaches and muscle aches.[68] All of these symptoms eventually subside without treatment, usually within three to six weeks. If left untreated, the infection will then progress to the third stage.

Latent syphilis

At this latent (hidden) stage the disease becomes asymptomatic. Occasionally individuals with latent syphilis can experience symptoms resembling the secondary stage of the disease, although this is rare after a year and very seldom occurs after two years. This stage can persist for years, and although individuals with latent syphilis do not exhibit

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[65] 'CDC Factsheet: syphilis'.

[66] 'Lymphadenopathy', *Concise Medical Dictionary*, ed. by E. A Martin (Oxford; New York: Oxford University Press, 2010) <http://www.oxfordreference.com/views/ENTRY.html?subview=Main&entry=t60.e13394> [accessed 4 August 2010].

[67] 'Takayasu's Disease', *Concise Medical Dictionary*, ed. by E. A Martin (Oxford; New York: Oxford University Press, 2010) <http://www.oxfordreference.com/views/ENTRY.html?subview=Main&entry=t60.e14230> [accessed 6 August 2010].

[68] 'CDC Factsheet: syphilis'; P. French, p. 144.

signs of infection, and are no longer infectious, they still harbour the *T. pallidum* bacteria. Between fifteen and thirty-five per cent of people with latent syphilis go on to develop the final, tertiary, stage of the disease.

Tertiary syphilis

Tertiary syphilis usually presents between five and twelve years after the initial exposure to *T. pallidum*. Since the advent of antibiotics, syphilis rarely progresses to this stage, as medicines prescribed for other bacterial infections (a chest infection, for example) will also treat syphilis. However in previous centuries tertiary syphilis was significant cause of death and disability. This stage of the disease is predominantly expressed in three ways:[69] neurologically, by way of the cardiovascular system, and/or as granulomata (termed gummatous syphilis).

Neurosyphilis

Neurosyphilis involves the central nervous system, and usually affects the spinal cord or the brain, occasionally both. When the spinal cord becomes infected with *T. pallidum*, the syndrome is termed locomotor ataxia, or tabes dorsalis.[70] It is characterised by a gradual degeneration of the nervous system, difficulties co-ordinating muscle movements, and eventual muscular atrophy. When *T. pallidum* infects the brain the resulting syndrome is called "general paralysis of the insane" (GPI). This disease manifests in numerous ways, including dementia, dysarthia (the inability to correctly articulate speech), epilepsy, numbness, and blindness.[71] Each of these syndromes bears similarities to other maladies. This is especially true of GPI, which may resemble psychiatric illnesses.

Cardiovascular syphilis

Cardiovascular syphilis, which typically occurs between fifteen and thirty years after initial exposure to the bacterium, is exemplified by inflammation of the aorta. This can

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[69] P. French, p. 144.

[70] 'Locomotor Ataxia Noun', *The Oxford Dictionary of English*, ed. by Catherine Soanes and Angus Stevenson (Oxford: Oxford University Press, 2005) <http://www.oxfordreference.com/views/ENTRY.html?subview=Main&entry=t140.e44596> [accessed 4 August 2010]. Tabes dorsalis, latin, literally means 'wasting of the back'. See 'Tabes Dorsalis Noun', *The Oxford Dictionary of English*, ed. by Catherine Soanes and Angus Stevenson (Oxford: Oxford University Press, 2005) <http://www.oxfordreference.com/views/ENTRY.html?subview=Main&entry=t140.e77942> [accessed 4 August 2010].

[71] 'General Paralysis of the Insane n', *A Dictionary of nursing*, ed. by Elisabeth A Martin and Tanya A McFerran (Oxford [etc.]: Oxford University Press, 2008) <http://oxfordreference.com/views/ENTRY.html?subview=Main&entry=t62.e3522> [accessed 4 August 2010]; 'CDC Factsheet: syphilis'.

lead to a weakening of the aorta, the narrowing of the heart valves, or necrosis of the middle layer of the arteries. Each of these effects can in turn either cause heart failure, present as angina, or lead to an aortic aneurysm.[72] Such symptoms may not be recognised as tertiary syphilis since they resemble those diseases just mentioned, as well as Takayasu's disease — the symptoms of which include a dearth of pulses in the arms and neck as a result of obstruction of the arteries, syncope (fainting), temporary blindness, and paralysis of facial muscles.[73]

Gummatous syphilis

Gummatous syphilis is characterised by granulomatous lesions. These are composed of a mass of tissue, and arise as part of the immune system's response to pathogenic processes. They are most often observed when they involve skin or bone, but can occur in any organ. These granulomata, termed gummas or gummata when they arise as a result of syphilitic infection, generally occur between three and twelve years after the initial entry of *T. pallidum*.

2.3 Related diseases

The other members of the *Treponema* genus are yaws, pinta, and bejel (endemic, nonvenereal syphilis).

Yaws and Pinta

Yaws (*Treponema pallidum* subsp. *pertenue*) and pinta (*Treponema carateum*) are not considered to be sexually transmitted, but they are closely related to syphilis. Indeed, yaws and pinta bacteria are morphologically indistinguishable from *T. pallidum*, and the courses of the diseases progress through similarly defined stages. Yaws primarily occurs in children and is geographically prominent in the African, Asian, and South American continents, and in the Pacific Islands. It is a systemic disease and often involves symptoms similar to syphilis: fever, lymphadenopathy, lesions, anogenital condylomata, bucal and nasal ulcerations, with osteoperiostitis (inflammation of the bones and peristeum). As with syphilis, there is a period of non-infectious latency before individuals develop tertiary yaws.[74] This latter stage is determined by the appearance of subcutaneous nodules, a thickening of the skin on the palms of the hands and soles of the

[72] P. French, p. 145.
[73] E. A Martin, 'Takayasu's Disease'.
[74] Anthony Du Vivier, *Atlas of clinical dermatology* (Edinburgh: Churchill Livingstone, 2002), pp. 275–276.

feet, as well as the re-occurrence of cutaneous ulcerations.[75] Yaws and syphilis can, however, co-exist in the same geographic location.[76] Pinta also largely affects children and adolescents, but is primarily found in the tropical Americas. It is not a systemic disease since it exclusively involves the skin. Early indications of the disease are the development of painless papules, and then the development of lesions and de-pigmentation of the skin during the later stages.

Bejel (endemic syphilis)

Bejel (*Treponema pallidum* subsp. *endemicum*) is largely found in the Middle East. The causative agent of bejel, or endemic non-venereal syphilis, is also morphologically identical with its venereal counterpart. However, although bejel is not venereal and primarily affects children under the age of sixteen, its clinical resemblance to syphilis is noteworthy. Cutaneous lesions manifesting at the initial entry of the bacterium can signal early infection and can last up to four years. These are often in the mouth, indicating that the mode of transmission involves the sharing of drinking vessels and food. Other symptoms include, but are not limited to, generalised skin rashes, bone pain (caused by the onset of osteoperiostitis), and anogenital condylomata.[77] Like syphilis, the natural course of untreated bejel indicates a stage of latency within four years of contracting the disease, before the final stage. With the onset of late bejel, gummata appear and the nasal passages can disintegrate as a result of lesions of the nasal septum, palate, and larynx.[78]

2.4 Paleopathology

When searching for evidence of syphilis in the Americas and Europe before the fifteenth century, paleopathology and phylogenesis (biological evolution) play an important role. However several issues pervade these areas of scientific inquiry. First, *T. pallidum* is tiny, at approximately only one million base pairs of DNA long.[79] Second, there are barely any genetic differences between *T. pallidum* and other members of the *treponema* genus. One study suggested that the largest variation between yaws and syphilis can be found in the *tpr* gene family, which makes up less than two per cent of the total treponema genome.[80]

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[75] Du Vivier, p. 276.
[76] Rimantas Jankauskas and Susan Saul, 'On the Origin and Antiquity of Syphilis, a Comment on Baker and Armelagos', *Current Anthropology*, 30 (1989), 481–482 (p. 481).
[77] G. W. Csonka, 'Clinical Aspects of Bejel', *British Journal of Venereal Diseases*, 29 (1953), 95–103 (pp. 97–98) <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC1053870/> [accessed 26 November 2012].
[78] Csonka, pp. 99–100.
[79] Kristin N. Harper and others, 'On the Origin of the Treponematoses: A Phylogenetic Approach', *PLoS Neglected Tropical Diseases*, ed. by Albert Ko, 2 (2008), e148 (p. 2) <doi:10.1371/journal.pntd.0000148>.
[80] Harper and others, p. 2.

Some of the differences are so small that researchers are yet to discern the difference between human syphilis and certain strains of *T*. *pertenue* that are exclusive to apes.[81] An issue Grmek raised is whether or not the disease varies only in socio-geographical context and not biologically since electron microscopes cannot distinguish between the different bacteria.[82] This question provided a scientific line of inquiry for Ellis Hudson's historical analysis of treponematosis, a possible disease that is discussed in the next chapter. Although the genome for *T*. *pallidum* was sequenced in 1998, comparisons have proved extremely difficult due to another problem. Only seven known non-venereal strains of treponemal bacteria exist within the laboratory setting, and no *T*. *carateum* exists. Diagnoses of yaws and pinta are diminishing in places where they were formerly endemic, constraining possibilities for further research on their close relative, *T*. *pallidum*.[83]

2.5 Conclusion

This chapter has emphasized that syphilis can present as asymptomatic and that many symptoms resemble different diseases. Because of this, syphilis has been historically described as a Great Imitator. While symptoms common during the tertiary stage of disease can present as angina, dementia, and leukaemia, for example, they also correspond with Behchet's syndrome and Takayasu's disease. Moreover there are other bacteria from the *Treponema* genus that clinically and morphologically resemble venereal syphilis. Therefore, based on symptom identification alone, syphilis remains, even today, a complex disease to diagnose.

Reflecting upon the history of the disease, we can appreciate the puzzle that early physicians were confronted with as they treated patients with a range of disparate symptoms. The complexities involved in identifying the disease from symptoms alone have contributed to a quagmire of social, political, geographic, and scientific histories of syphilis. It is all the more remarkable that, despite difficulties of identifying the syphilis, eighteenth century physicians were able to isolate a disparate set of symptoms and recognise them as a single disease. Adding to this complex setting, the following chapter assembles key themes in the history of syphilis.

[81] Harper and others, p. 10.
[82] M. D. Grmek, *Diseases in the Ancient Greek World*, trans. by M. Muellner and L. Muellner (Baltimore: Johns Hopkins University Press, 1989), p. 135.
[83] Harper and others, p. 2.

3. Prominent themes in the history of syphilis

This chapter discusses four prominent and interconnected themes in the history of syphilis, including its origins in Europe, moral attitudes towards the afflicted, treatment, and the puzzle of diagnosing the disease. The chapter's purpose is both to establish a firm understanding about the ways in which the concept of syphilis has developed in Europe since the fifteenth century and to illuminate predominant historiographical themes. This chapter provides a historical basis for the remainder of the thesis and highlights different features of the developing concept of syphilis. The themes are inextricably connected. For example debates on the origins of syphilis involve politics and morality, while treatment has at times informed physicians of the nature of a disease. In light of this, this chapter condenses the disease's elaborate history by focusing on key aspects and points of controversy. It illuminates debate surrounding the assumed arrival of the disease on the European continent in the late fifteenth century and then advances through themes of morality, treatment, and syndrome identification. These themes were chosen for two reasons. The first is their enduring applicability to the history and historiography of the disease since from the 1494/5 outbreak to the twentieth century. The second is because they illustrate the complicated background against which eighteenth century physicians toiled to better understand syphilis; understanding the different themes that are associated with the concept of syphilis enables a deeper understanding of how knowledge of the disease developed over time.

3.1 The origins of the first outbreak in Europe

> That which did not happen in the old days is now common in these years of grace. Above all these [divine] punishments there has arisen a previously unheard-of, unseen, unknown to all mortals, a dreadful stinking, pimply, and disgusting sickness with which people are being severely stricken, the like of which has never before appeared on earth[84]

As this passage exemplifies, syphilis was a frightening and seemingly new scourge on humanity from the late fifteenth century. The complex and variable symptoms, described in the Chapter Two, meant that until relatively recently it was difficult for physicians to

[84] Merrill Moore and Harry C. Solomon, 'Joseph Grünpeck and His Neat Treatise (1496) on the French Evil', *British Journal of Venereal Diseases*, 11 (1935), 1–27 (p. 11) <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC1052964/?page=13> [accessed 28 November 2012].

distinguish syphilis from other diseases. As such, it was a formidable task for historians piecing together facts about when and where syphilis arose as a significant threat to health. This section focuses on controversies surrounding the origins of the first outbreak of syphilis on the European continent. It introduces historical evidence surrounding this event before discussing the Columbian and pre-Columbian hypotheses and problems associated with these as explanations of the emergence of syphilis on the European continent.

The disease first gained notoriety on continental Europe in the late fifteenth century. Ample written records from the period show that the disease broke out amongst the mercenary forces of the French king, Charles VIII, as they besieged the kingdom of Naples in 1495.[85] From the invading army, many of the inhabitants of Naples contracted syphilis. As physician and poet Girolamo Fracastoro wrote, the scourge "burst into Italy with the unhappy French wars and took its name from that people".[86] Similarly, the German scholar Ulrich von Hutten (1488-1523) described the origins of the first outbreak:

> It has pleased God, that in our time, Sicknesses should arise, unknown to our Forefathers, as we have Cause to surmise. In the Year of Christ 1493 or there about, this Evil began amongst the People, not only of *France*, but originally at *Naples* in the *French* Camp, who under King *Charles* were set down before that place, and where it was taken notice of, before it came elsewhere; upon which account the *French*, disdaining that it should be called of their Country, gave it the name *Neopolitane*, or the *Evil* of *Naples*; reckoning, it is before observed, a Scandal to them to have it called by that of the *French Pox*.[87]

Recognised as unprecedented at the turn of the fifteenth century, the disease disseminated throughout the continent when Charles VIII withdrew his mercenaries from battle. However, locating the origins of this first major outbreak does not account for how the disease came to exist on the continent in the first place. Several rival hypotheses attempt to account for this.

Columbian hypothesis

The first is the Columbian hypothesis, which claims that the causative agent of syphilis was brought to Europe as a consequence of Columbus' voyages to the New World. The

[85] Harper and others, p. 1.
[86] Girolamo Fracastoro, *Fracastoro's Syphilis*, ed. by Geoffrey Eatough, ARCA, Classical and Medieval Texts, Papers, and Monographs, 12 (Liverpool, Great Britain: F. Cairns, 1984), p. 39.
[87] Ulrich Hutten, *A Treatise of the French Disease*, trans. by Daniel Turner (London: John Clarke, 1730), p. 1 <http://archive.org/stream/demorbogallicotr00hutt#page/n3/mode/2up> [accessed 28 November 2012].

Columbian Exchange was the widespread exchange of flora, fauna, ideas, people, and disease between the New World and the Old World subsequent to the explorations of Christopher Columbus in 1492. The widespread devastation of indigenous populations due to the European diseases of smallpox, measles, cholera, and typhus are well documented.[88] Historians today reason the likelihood of the Old World receiving "at least one major disease" from the indigenous New World inhabitants.[89] This link between the Columbian voyages and the appearance of syphilis in Europe was made early in the sixteenth century.[90] Pondering the relationship between the New World and the arrival of a new disease, Fracastoro asked,

> what causes brought this unusual plague .... Surely it did not come to our world carried over the western sea, in the period after the chosen band, putting out from the Spanish shore, dared to attempt the main and the unknown expanse of the wandering ocean and to seek out lands set in another world? … Must we think then that because of commerce this contagion was imported to us[91]

In this passage exploration and commerce are cited as possible causes, but notably Columbus himself was not considered responsible for the induction of the disease during that early period. Recently, researchers in the field of paleopathology, the study of ancient diseases, have endeavoured to shed light on the Columbian hypothesis for the origins of syphilis.

Their findings suggest that the disease was endemic in the Americas before the fifteenth century. All treponemal diseases except pinta leave distinctive lesions on the bones of infected sufferers. The prevalence of lesions in the skeletons of an ancient civilisation can provide information about the nature of the treponematoses over time.[92] In the pre-Columbian Americas, there is paleopathological evidence of endemic treponemal disease dating back at least 7,000 years. While some studies hesitate to state unequivocally that the particular disease present was venereal syphilis (and not yaws for example), Rothschild et al. write that it is clear that "treponemal disease was present at the time of Columbian contact. The disease present was indeed syphilis. Columbus' crew clearly had the opportunity and means to contract and spread the venereal disease we now call

[88] Nathan Nunn and Nancy Qian, 'The Columbian Exchange: A History of Disease, Food, and Ideas', *Journal of Economic Perspectives*, 24 (2010), 163–188 (p. 165) <http://www.economics.harvard.edu/faculty/nunn/files/Nunn_Qian_JEP_2010.pdf> [accessed 28 November 2012].

[89] Stephen V. Beck, 'Syphilis: the Great Pox', in *Plague, pox & pestilence : disease in history*, ed. by Kenneth F. Kiple (London: Phoenix Illustrated, 1999), pp. 110–115 (p. 112).

[90] Beck, p. 111.

[91] Fracastoro, p. 41.

[92] Harper and others, p. 1.

syphilis".[93] Their findings were based on their examination of 536 human skeletal remains from geographic locations with historically documented Columbian contact, in what is now the Dominican Republic. Syphilis was found to affect between 6 and 14 per cent of the indigenous population.[94] Furthermore, in a later study analysing 769 human skeletons spanning 8,000 years, Rothschild confirmed that the bacteriological shift from the non-venereal yaws to the syphilis found in Europe occurred in the Mogollon region (present day Arizona).[95] Conversely, analyses of pre-Columbian human skeletons on the European and African continents show only isolated cases of treponemal infection.

Problems with the Columbian hypothesis

Problems with a comparative approach to discerning the origins of syphilis pervade paleopathological research. Harper et al. contend that such isolated cases are confronted with issues related to dating, epidemiological context and diagnosis; they are therefore unreliable as indicators of the existence of syphilis in the Old World before the fifteenth century.[96] Further, the development of traditions surrounding burial in pre-Columbian European societies may impede accurate findings. Paleo-osteological material from what is now Lithuania exemplifies these issues; analyses of over 400 skeletal remains found no evidence of syphilitic lesions from the first millennium. From the fifteenth to the eighteenth century, however, there is ample proof of syphilis after examining more than 4,000 human skeletons. Yet between the eighth and fourteenth centuries the burial tradition was cremation; thus research material is absent from this critical period.[97]

An impediment to the Columbian hypothesis is the absence of records of the disease from the original voyages. Notably neither Columbus[98] nor his physician Diego Álvarez Chanca[99] mentions a disease resembling venereal syphilis. Circumstantial evidence suggests that the crew had intimate relations with members of the indigenous population. Columbus wrote, "the [indigenous] men went out and the women entered, and sat in the

[93] Bruce M. Rothschild and others, 'First European Exposure to Syphilis: The Dominican Republic at the Time of Columbian Contact', *Clinical Infectious Diseases*, 31 (2000), 936–941 (p. 940) <doi:10.2307/4461341>.
[94] Bruce M. Rothschild and others, 'First European Exposure to Syphilis: The Dominican Republic at the Time of Columbian Contact', *Clinical Infectious Diseases*, 31 (2000), 936–941 (p. 936) <doi:10.2307/4461341>.
[95] B. Rothschild, 'Infectious Processes around the dawn of Civilization', in *Emerging pathogens : the archaeology, ecology, and evolution of infectious disease*, ed. by Charles L. Greenblatt and Mark Spigelman (Oxford: Oxford University Press, 2003), pp. 103–116 (p. 108).
[96] Harper and others, p. 2.
[97] Jankauskas and Saul, p. 481.
[98] See Christopher Columbus and Bartolomé de las Casas, *The Journal of Christopher Columbus*, trans. by Lionel Cecil Jane (London: Blond, 1968).
[99] Fracastoro, p. 12.

same way around them [crew members], kissing their hands and feet, fondling them… they asked them to stay there with them for at least five days".[100] One possible explanation for why Columbus did not mention syphilis in his records was he did not encounter the disease. However, reports of symptoms could have equally been quelled to maintain good terms with the explorers' financiers, the Catholic Monarchs, Queen Isabella I of Castile and King Ferdinand II of Aragon. This latter notion does fit in with the fact that Columbus also neglected to mention the potentially damaging loss of one of his ships, the *Santa Maria*, from his maiden voyage.[101] Columbus may not have been the most reliable of diarists, but there is nevertheless contemporary support for the view that the disease originated in the Americas.

Many people of that time believed the scourge was of New World origin. A popular and comforting belief held that God provided a cure wherever a sickness was endemic.[102] By 1517, treatment for the disease was reputedly found in a decoction made from the wood of the guaiacum, a tree native to the Americas. By extension, therefore, the malady must have originated in the New World. Guaiacum quickly developed an enduring reputation, despite its inefficacy. Imported primarily by the Fuggers, a merchant family from Augsburg, recognition of guaiacum as a cure flourished with the endorsement of Ulrich von Hutten. In 1519 he is reported to have thanked "Christ and the Fuggers when he thought he had been cured of the French Disease", before succumbing to his infection.[103] Interestingly, Alfred Crosby claimed that the Fugger family were initially amongst the most fervent proponents of a New World origin for the disease.[104] He adds that no definite link was made between Columbus' voyages and the appearance of the scourge until guaiacum became a viable import.[105] In terms of etymology, the most widely used terms to describe the disease in the fifteenth and sixteenth centuries were political: the "French Disease", "Neapolitan Disease", and "Castilian Disease"; there was no demonstrable link to the New World from these terms. Geoffrey Eatough supported this sentiment, writing that the Fuggers may have popularized the guaiacum "cure" in the first place. The family came to hold a trading monopoly over the wood[106] and it was therefore

[100] Columbus and Casas, pp. 55–56.
[101] Fracastoro, pp. 13–14.
[102] Fracastoro, p. 12.
[103] Roger French and Jon Arrizabalaga, 'Coping with the French Disease: University Practitioners' Strategies and Tactics in the Transition from the Fifteenth to the Sixteenth Century', in *Medicine from the Black Death to the French disease*, ed. by Roger French and others (Aldershot, Hants; Brookfield, Vt.: Ashgate Pub., 1998), pp. 248–287 (p. 259).
[104] Alfred W Crosby, *The Columbian exchange : biological and cultural consequences of 1492* (Westport, Conn.: Greenwood Press, 1972), p. 156.
[105] Crosby, p. 127.
[106] Fracastoro, p. 13.

in their best interests to promote its curative effects.[107] Despite its inefficacy, guaiacum remained a prominent treatment throughout the sixteenth century.

Pre-Columbian hypotheses

Opponents of the Columbian hypothesis argue from several positions and conclude that the disease was already established on the European continent in one form or another, and/or that the rise of printing technology spurred popular interests in the disease. They contend that the 1492 discovery of the New World played no role in the apparent first outbreak of syphilis in Naples three years later. Issues involving the distinguishing of disparate symptoms confronted early inquirers as much as it puzzled later researchers.

A second primary hypothesis claimed that syphilis was a socio-cultural manifestation of "treponematosis". This was reputed to be an age-old disease that was merely confused with other diseases prior to the French siege of Naples. This hypothesis was presented in the 1960s by American hygienist Ellis Hudson. He claimed that the treponema genus, variably causing yaws, pinta, bejel, and syphilis, was really a single "flexible disease which has changed to conform to man's social history. In this view environmental factors, including climate and man's social habits, have produced the four syndromes".[108] He contended that syphilis, both endemic and venereal, existed in Mesopotamia and Egypt from c. 6,000 B. C. E., and spread to the Mediterranean with human migration by 900-800 B. C. E., where it became largely associated with leprosy until the late fifteenth century. The distinction between the different manifestations of "treponematosis" was based on the external appearance and mode of transmission of the venereal scourge.[109] To elucidate, Hudson explained that there

> was a change in the treponemes' environment due to changes in human mode of life. The parasite had nothing to do with these changes. There was no change in the appetite of the treponema, no necessity for radical modification of its antigenic structure, no dramatic mutation into a new species.[110]

What was it then that changed?

Both Hudson and epidemiologist Aidan Cockburn argued that improvements in hygiene, the wearing of limb-covering clothing due to a cooler climate, and increases in concerns of modesty brought about a shift from general "treponematosis" to what became known

[107] Roger French and Arrizabalaga, p. 259.
[108] E. H. Hudson, 'Treponematosis and Man's Social Evolution', *American Anthropologist*, 67 (1965), 885–901 (p. 885) <doi:10.2307/668772>.
[109] Hudson, p. 887.
[110] Hudson, p. 895.

as venereal syphilis. This was why, according to this line of argument, slave children arriving from the New World suffering from treponemal infection were never considered to have the pox. In part, this was due to a fundamental difference in the socio-cultural identification projected onto them by fifteenth century Europeans. Because children are not sexually active, they did not contract the genital ulcers symptomatic of the disease in adult Europeans. Therefore they were not considered to have the same affliction as adult European syphilitics.[111] Environmental differences accounting for distinctions between yaws, pinta, bejel, and syphilis remained a popular theory throughout the 1960s.[112] This has since been rejected by Jankauskas and Saul, who opposed the notion of "treponematosis" as syphilis on the basis of studies demonstrating the co-existence of yaws and bejel as distinct disease entities within the same geographic location.[113]

A third hypothesis involving phenomena surrounding the 1494/5 outbreak contends that while syphilis was not a new occurrence, the literary and socio-political furore that surrounded the disease was. Syphilis was recognised as a new disease during a period when printing technology was increasingly accessible. Early commentators Fracastoro, Ulrich von Hutten, and Joseph Grünpeck[114] all wrote of a new scourge against humanity, spread initially by the French. Such was the commotion surrounding the rise of an apparently new disease that by 1588 at least 58 books had been published on the topic. Scholars have claimed that it was the proliferation and dissemination of texts about the venereal sickness that led to an assumption that the disease was of epidemic proportions.[115] Supported by Eatough, this claim relies on the increased popularity and accessibility of a Renaissance innovation, the printing press,[116] a technology that enabled discussion about the disease to take place amongst wider circles.[117] Similarly, Cockburn held that the timing of Columbus' voyages and the interest in the scourge were coincidental and not causal; both were the results of a transformation of societal values taking place during the Renaissance.[118]

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[111] Hudson, p. 887.
[112] 'World Forum on Syphilis', *Public Health Reports (1896-1970); Association of Schools of Public Health*, 78 (1963), 295–304 (p. 299) <http://www.jstor.org/stable/4591781>.
[113] Jankauskas and Saul, p. 481.
[114] Moore and Solomon, p. 11.
[115] Brenda J. Baker and others, 'The Origin and Antiquity of Syphilis: Paleopathological Diagnosis and Interpretation [and Comments and Reply]', *Current Anthropology*, 29 (1988), 703–737 (p. 707) <doi:10.2307/2743609>.
[116] Fracastoro, p. 12.
[117] Lewis Jillings, 'The Aggression of the Cured Syphilitic: Ulrich Von Hutten's Projection of His Disease as Metaphor', *The German Quarterly*, 68 (1995), 1–18 (p. 1) <doi:10.2307/408018>.
[118] Grmek, p. 139.

3.2 Associations with morality

Since the apparent advent of syphilis in the late fifteenth century, the disease has been strongly associated with moral transgression. The early history of syphilis is pervaded with allusions to divine retribution, with the disease commonly regarded as a consequence of such sinful acts as adultery and prostitution. In the twentieth century the concept of syphilis remained connected with notions of immorality, with researchers, not patients, under public intense public scrutiny in the aftermath of a decades-long experiment in Alabama on the natural history of the disease. This section analyses historical and historiographical associations between syphilis and morality.

Recognising the moral opprobrium associated with syphilis is central to understanding the history of the disease. Normative connections drawn between syphilis and immorality influenced how politicians and physicians dealt with the disease. An example of this can be seen by the following exchange in 1868 between Samuel Solly, Senior surgeon to St Thomas' Hospital in London, and the chairman of a committee appointed to inquire on how to reduce infection. Solly was asked by the chairman if he had considered the "best mode of arresting the progress" of syphilis in the community, the army, and the navy. Solly responded, "No, I have not; but I do not hesitate to say this, that I think if a good check could be found with regard to the Army and the Navy, it would be most desirable. With regard to the public, I see no reason for interfering at all." The chairman reacts, "Then you are rather an advocate for the perpetuity of the disease?" to which Solly answers, "I think it is intended as a punishment for our sins, and that we should not interfere in the matter. I think that if every young man knew that he could have intercourse without the danger of syphilis, there would be a great deal more fornication than there is."[119] Although views such as Solly have remained contested throughout the nineteenth century, they illustrate the way in which the disease was linked with sexual deviancy. It is this interconnectedness with ideals of morality that has been extensively researched by historians.

Additionally, much work has been done on the relationship between morality and attitudes to sexuality with respect to venereal disease. Owsei Temkin's "On the History of 'Morality and Syphilis'" especially made clear that the study of attitudes to sexuality affected the ways in which physicians dealt with the disease. He argued that these attitudes were paramount in understandings of syphilis, so much so that he claimed, "we need only inquire into the attitude of society toward marriage and sexual life to obtain a

[119] 'Minutes of Evidence. Q. 3897-3898', in *Report of the Committee Appointed to Enquire into the Pathology and Treatment of Venereal Disease, with the View to Diminish its Injurious Effects on Men of the Army and Navy Cd. 4031* (London: HMSO, 1868), p. 318.

lead to its [the medical community's] attitude toward, and its judgment of, syphilis."[120] Temkin's analysis of syphilis and morality is particularly striking. Shades of Marxianism and of Habermas' concepts of bourgeois society and the public sphere can be found within his work. He argued,

> The syphilitic endangers the community, and therefore the community has the right to defend itself against him. But those who evade society's regulations and defensive measures, and consciously bring harm, they are guilty of crimes against the body politic, and against them the state moves with force and retribution. Thus, unless all measures have been taken to counteract its menace, syphilis now appears in the final analysis as a crime.[121]

Within histories of the concept of infection, a topic aligned with both epistemology and the history of science, Temkin located a correlation between understandings of infection and notions of pollution and purity;[122] thus ideas such as infection, which seem in the first place to be associated with a scientific understanding, are shown to be just as concerned with morality. Following from this, Temkin perceived moral overtones amongst historical literature on diseases such as leprosy, plague, gonorrhoea, epilepsy, and insanity, which have conventionally been associated with notions of sin whilst also being recognized as contagious diseases.[123]

Syphilis remained inextricably linked with moral concerns throughout the twentieth century. Infamous in this respect is the Tuskegee syphilis study, which was based upon a previous Scandinavian study. Research undertaken in Norway between 1891 and 1910 demonstrated that more than half of patients with untreated syphilis were minimally inconvenienced. This experiment, undertaken by C. P. M Boeck, involved the deliberate withholding of treatments from 1,978 known syphilitics throughout the twenty year span of study.[124] The dubitable therapeutic value of mercurials was demonstrated (later it was apparent that the arsenicals that replaced them were equally as harmful), raising questions as to whether the syphilitic might fare better without the toxic treatments available. In the mid-twentieth century, to chart the course of untreated syphilis, the US health service led

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[120] Owsei Temkin, 'On the History of "Morality and Syphilis"', in *The double face of Janus and other essays in the history of medicine* (Baltimore: Johns Hopkins University Press, 2006), pp. pp. 427–486 (p. 474).
[121] Temkin, p. 483.
[122] Owsei Temkin, 'An Historical Analysis of the Concept of Infection', in *The double face of Janus and other essays in the history of medicine* (Baltimore: Johns Hopkins University Press, 2006), pp. pp. 456–471 (pp. 459–461).
[123] Temkin, 'An Historical Analysis of the Concept of Infection', p. 460.
[124] W. M. Cobb, 'The Tuskegee Syphilis Study', *Journal of the National Medical Association*, 65 (1973), 345–348 (p. 345).

a 40-year long experiment in Macon County, Alabama.[125] Between 1932 and 1972, treatment was deliberately withheld from 399 rural black syphilitic men, even after the efficacious and non-invasive penicillin had replaced mercurials and arsphenamines. Unaware of their infection, subjects were informed that they were being treated for "bad blood" and given free meals, medical care, and burial insurance as recompense. The Tuskegee Syphilis Study is now famous for its enduring impact on ethical considerations involving human subjects in its aftermath, and for fostering distrust between black American minorities and the US health service.[126] Thus, syphilis has long been linked with morality, though the associated stigma moved between both patients and physicians.

This section has emphasised the relationship between syphilis and morality. The earlier history of syphilis is widely known for its association with divine retribution for deviant acts, however this normative link with morality endured throughout the centuries. The following section is closely tied with this theme of morality, as Solly's affirmation about not treating the general public makes clear.

3.3 Treatment

The history of treating syphilis is as long and complex as the history of the disease itself. From the fifteenth to the twentieth century, physicians and quacks espoused numerous remedies. This section provides an overview of three types of treatment: mercurials, arsphenamines, and fever therapy. By 1943 penicillin became widely available rendering the disease wholly curable.

Quicksilver, as mercury was also known as, was the primary means of treating syphilis throughout the late fifteenth to the early twentieth centuries. It was administered in numerous ways, the prescribed delivery depending very much upon the physician's belief as to the cause of the disease. For example, iatromechanists believed that mercury travelled through blood vessels and cured the pox by atomizing particles of the disease and forcing them out of the body through the saliva. Because of this, iatromechanists injected mercury into the circulatory system.[127] Alternatively, iatrochemists applied mercury diseased sites believing that it neutralized the pox through a kind of chemical attraction.[128] In 1772, Andrew Duncan wrote that mercurial treatment "heals ulcers, removes swellings, alleviates pains, and cures eruptions. In short, the almost infinite variety of symptoms under which this disease makes its appearance may, by a proper

[125] Vanessa Northington Gamble, 'Under the Shadow of Tuskegee: African Americans and Health Care', *Americal Journal of Public Health*, 87 (1997), 1773–1778 (p. 1773).
[126] Northington Gamble, pp. 1773, 1775.
[127] Claude Quétel, *History of syphilis* (Baltimore: Johns Hopkins University Press, 1992), p. 84.
[128] Quétel, *History of syphilis*, p. 84.

application of mercury, be effectually eradicated from the constitution."[129] Side effects included violent vomiting, a strong laxative effect, sweating, and extreme salivation. Mercurials remained a common treatment for syphilis until the 1940s.

An arsenic-based treatment was developed early in the twentieth century. Discovered by Paul Ehrlich, the arsenical and its derivatives became the leading antisyphilitic medication until the 1940s with the advent of penicillin.[130] It was commonly known as 606, as it was the 606th arsenic compound studied that was effective against spirochete bacteria, but of sufficiently low toxicity to not harm the patient.[131] However, the treatment was notoriously difficult to administer; toxicity increased if Salvarsan was exposed to air. Dire side effects were common and included nausea, vomiting, diarrhoea, convulsions, and coma.[132] Whilst it could effectively treat primary syphilis, in the tertiary stage there was up to a 98.2 per cent serologic failure rate.[133]

Fever therapy was also used to treat syphilis. In 1927 Wagner von Jauregg received a Nobel Prize for successfully treating neuropsychiatric conditions by injecting patients with malarial blood.[134] Patients would have up to 12 fever-induced convulsions before remedial quinine was administered.[135] This relieved the malaria that halted the progress of syphilis in many cases. Malaria therapy was often used to treat patients suffering from GPI, though demand decreased with the introduction of penicillin.

3.4 Identifying syphilis

The symptoms of syphilis were historically identified with a number of unrelated diseases. As explained in Chapter Two, the symptoms resemble those of many other diseases. Historically, it was frequently confused with leprosy.[136] Leprosy had outward

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[129] Andrew Duncan, *Observations on the Operation and Use of Mercury in the Venereal Disease* (Edinburgh: A. Kincaid and W. Creech; T. Cadell and J. Murray, 1772), p. 20 <http://archive.org/stream/observationsonop01dunc#page/n5/mode/2up> [accessed 17 January 2013].

[130] Jeffrey S. Sartin and O. Perry Harold, 'From Mercury to Malaria to Penicillin: The History of the Treatment of Syphilis at the Mayo Clinic - 1916-1955', *Journal of the American Academy of Dermatology*, 32 (1995), 255–261 (p. 255).

[131] Rudolph H. Kampmeier, *Essentials of Syphilology* (Philadelphia: J. B. Lippincott, 1944), p. 65.

[132] Elizabeth Martin Tanya McFerran, *Arsenic* (Oxford University Press) <http://www.oxfordreference.com/10.1093/acref/9780199211777.001.0001/acref-9780199211777-e-635>.

[133] Sartin and Harold, p. 256.

[134] Sartin and Harold, p. 257.

[135] Sartin and Harold, p. 257.

[136] Kampmeier, p. 36. On this point Kampmeier, writing for physicians, clarifies: "Under some circumstances, syphilis may be suspected with no thought of leprosy, and thus the positive blood tests so frequent in leprosy might seem to confirm an erroneous clinical diagnosis."

symptoms broadly similar to a syphilis infection, but was transmitted neither sexually nor congenitally. Ulrich von Hutten presented an insight into how the French disease was understood in the sixteenth century:

> Sometimes the Disease transforms it self into the *Gout*; at others, into a *Palsy* and *Apoplexy*, and infecteth many also with a *Leprosy*; for it is thought these Diseases are Neighbours each to the other, by reason of some Affinity there appears between them; those who are seized with the *Pox*, frequently becoming *Lepers*, and through the Acuteness of the Pain, Men will shake and quiver as in a Fever.[137]

The puzzle that syphilis presented to early modern writers is clearly conveyed by von Hutten describing how the pox can become leprous.

Crosby placed culpability for this error on the notion that early medical knowledge did not differentiate between syphilis, gonorrhoea, and leprosy, and thus physicians were inclined to group similar symptoms or suspected modes of transmission as like diseases.[138] Frequently referred to as a venereal disease, Barker et al. cite references to 'leper whores', 'hereditary leprosy', and medieval descriptions of genital lesions indicating that symptoms of syphilis were being attributed to leprosy.[139] Recently, Old Testament accounts of leprous symptoms have been reassessed as symptoms of syphilis, the former a result of a mistranslation, according to Barker's team. They refer to Deuteronomy (28:27-8) writing that "Moses described punishment for disobedience as manifesting "emerods", scabs, itches that cannot be healed, madness, and blindness"; likewise, Job's symptoms of a genital lesion, body-covering boils, and failing sight are now reputed to be signs of syphilis, and not leprosy as previously thought (Job 16, 19, 30).[140]

Understandings of leprosy and syphilis remained closely entwined throughout the Middle Ages. In 1490 and 1505, Pope Innocent VIII abolished all leprosaria, resulting in thousands of sufferers returning to their homes.[141] Prior to their abolition, France and Germany had an estimated 10,000 leprosy communities, while there were approximately 200 in the British Isles between the thirteenth and fourteenth centuries. Baker et al. emphasise that the average leprosy home catered for around ten people, creating a

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[137] Hutten, p. 7.
[138] Alfred W. Crosby, *Ecological imperialism: the Biological Expansion of Europe, 900-1900* (Cambridge: Cambridge University Press, 2004), p. 349 [footnote 28].
[139] Baker and others, p. 707.
[140] Baker and others, p. 706.
[141] Charles C. Mann, *1491: New Revelations of the Americas Before Columbus* (New York: Knopf, 2005), p. 353.

sizeable influx of sufferers back into communities.[142] With physicians noting the stark similarities between these diseases, increases in the visibility leprosy with these abolitions may account for early "syphilis" epidemics during this period. Both Baker et al. and Eatough also make the point that as diagnoses of the "French Disease" became more widespread, diagnoses of "leprosy" became less common.[143] In terms of medieval medical knowledge, this is interesting because *Morbus gallicus*, the French Disease, embraced a wider range of symptoms than what is characteristic of syphilis today. This suggests that the terms either incorporated other diseases or that the causative bacterium has since evolved.[144]

A question of evolution?

Even by 1519 there were reports that the venereal scourge had decreased in potency. Ulrich von Hutten wrote that the disease was unrecognizable from its assumed arrival onto the European continent, adding that it took a little over seven years to lose its "fierceness".[145] He stated that,

> … truly when it first began, it was so horrible to behold, that one would scarce think the Disease that now reigneth, to be of the same kind. They had *Boils* that stood out like Acorns, from whence issued such filthy stinking Matter, that whosoever came with the Scent, believed himself infected. The Colour of these was of a dark Green, and the Aspect as shocking as the Pain itself, which yet was as if the Sick had lain upon a fire.[146]

However, Harper et al., whose recent work focuses on the phylogenesis of *T. pallidum* subs. *pallidum* claimed that strains of yaws bacteria from present day Guyana, South America, are the closest relatives to European venereal syphilis.[147] The diagnostic criteria between them are comparable. The chancre, ordinarily characteristic of venereal syphilis, is also an indicator of yaws, though it occurs in locations unrelated to genital organs and affects children. Despite these outward symptoms, differences between the bacteria and the lesions on skeletal remains are miniscule with regard to different strains of *T. pallidum*.[148] In light of this and evidence of ancient European strains of yaws, Harper and her team contend that *T. pallidum* subs. *pertenue* originated in Europe as a non-venereal infection. From there it spread to the Middle East and Americas with human migration.

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[142] Baker and others, p. 707; Fracastoro, p. 12.
[143] Baker and others, p. 707.
[144] Fracastoro, p. 12.
[145] Hutten, p. 4.
[146] Hutten, p. 3.
[147] Harper and others, p. 10.
[148] Harper and others, pp. 10–11.

Then, they argue, in the fifteenth century the syphilis bacteria returned to the Old World via Columbus' voyages; in response to cooler climates, improved hygiene, and sexual modesty, the disease became venereal, transmuting into the spirochete responsible for the subsequent outbreak, which was facilitated by political turmoil at the time.[149] Interestingly, paleo-osteological evidence from cemeteries in the British Isles (sixth to tenth century Cannington, and eleventh to fourteenth century Winchester) show lesions characteristic of treponemal disease in up to a third of the population. This suggests that a large proportion of the population was afflicted either by yaws or syphilis (difficulties in locating congenitally affected skeletons make it difficult to prove syphilis).[150] The main problem with this theory is the lack of available specimens. This is further compounded both by the possibility that there was an even closer, venereally transmitted relative of European syphilis than New World yaws,[151] and by the difficulty of certifiably locating syphilitic remains.

None of these three points supports the claims of Hudson and Cockburn; they serve to clarify the complexities of determining the nature of syphilis in early fifteenth and sixteenth century Europe. At this stage it must be emphasized that the question, "one disease or many?" in its various forms, is an enduring theme throughout the history of syphilis. Indeed, this question is of particular relevance to this study of eighteenth century medical knowledge as physicians debated whether syphilis and gonorrhoea were distinct diseases or a single venereal affliction.

3.5 Conclusion

By outlining key themes in the history of syphilis, this chapter has provided a firm foundation for understanding how the concept of syphilis developed over time. One of the prominent themes in the history of syphilis is determining the origins of the disease in Europe. The first section of this chapter established key points of controversy in this debate that has endured for half a millennia. Historically, issues associated with morality have influenced understandings of the disease, impacted patient treatments, and have remained an important theme in the history of the disease well into the twentieth century. Related to this is a third theme, treatment. Mercurial remedies were a chief means of treating syphilis until the early twentieth century when arsphenamines became popular, just prior to the public availability of that revolutionary pharmaceutical, penicillin. The final theme discussed in this chapter involves knowledge about syphilis. Historically, the disease was conflated with a number of other diseases including leprosy and gonorrhoea.

[149] Harper and others, p. 10.
[150] B. Rothschild, p. 113.
[151] Harper and others, p. 10.

In the eighteenth century a prominent debate in venereology centred on whether gonorrhoea and pox were the same disease. This aspect is of particular relevance to this thesis as later chapters make sense of this debate in its wider intellectual context. It is against this complicated setting that physicians in the eighteenth century toiled to better understand the disease. In light of this, the following chapter discusses an enlightenment debate about the nature of syphilis.

4. On the nature of syphilis: historiography, Bell, and Ricord

The eighteenth century has long been considered a dark age within the history of medicine. This is surprising given that this period falls within the enlightenment era (c.1680-c.1780). This chapter counters this assertion in two significant ways. Firstly, it examines a dominant historiographical trend that erroneously claims that syphilis was first recognised as a distinct disease entity in the nineteenth century. In the course of researching this chapter, I noticed the historiography and historical sources diverged on a particular point within histories of syphilis. This divergence involves the historiographical claim that French physician Philippe Ricord (1800-1889) pioneered the theory that gonorrhoea and syphilis were distinct disease entities, whilst stating at the same time that many physicians held this same view in the eighteenth century. This contradiction was seemingly uncritically perpetuated in secondary literature on the history of syphilis. As such, the first half of this chapter examines historiographies of the nineteenth century, with a particular focus on Ricord. Secondly, this chapter challenges the notion of a dark age in medicine by illuminating the vibrant and dynamic research made by physicians in this period to the understanding of syphilis. The primary evidence I present as a challenge to this notion is significant because eighteenth century Britain is seldom examined with respect to venereology as a science. Furthermore, studies of Bell's contributions to knowledge of syphilis are rarer. As such, the second half of the chapter studies Benjamin Bell as an eighteenth century physician who had demarcated syphilis and gonorrhoea by 1793, seven years before Ricord was born.

Terminology

In the eighteenth and nineteenth centuries the term “lues venerea” (and its shortened form, “lues”) were commonly used to refer to the disease now known as syphilis. “Blennorrhoea” and “blennorrhagia” were common terms in the eighteenth century, and referred to a copious discharge from the urethra that is now recognised as symptom of gonorrhoea. “Gonorrhoea virulenta” was the eighteenth century term for urethral discharge resulting from sexual intercourse, while “Gonorrhoea simplex” denoted a similar discharge, but without a sexual cause.[152]

[152] Benjamin Bell, I, pp. 426–430.

Historically, two main positions were argued. The "unicist" (or "monist") position maintained that the manifestation of symptoms associated with lues venerea and gonorrhoea were the result of a single venereal cause.[153] For clarity, it is important to note that even physicians who proposed this concept of venereal disease nevertheless used the terms gonorrhoea, chancre, and lues to describe certain symptoms. ("Gonorrhoea" for example, was used by Hunter to describe a local infection attributed to venereal disease.) The unicist position was the predominant theory regarding the nature of venereal disease in the eighteenth century, with prominent surgeons John Hunter and Jean Astruc amongst its proponents. The other position was "dualism",[154] which argued that the two diseases were distinct entities and not symptoms of a single venereal cause. Three key proponents of the dualist theory in the eighteenth century were Francis Balfour (*Dissertatio medica inauguralis de gonorrhoea virulenta* [Latin], 1767), Andrew Duncan the Elder (with O*bservations on the operation and use of mercury in the venereal disease*, 1772), and Benjamin Bell with his *Treatise on Gonorrhoea Virulenta and Lues Venerea* (1793).[155]

4.1 The debate

This section discusses the debate between unicists and dualists that took place in the eighteenth century, and its importance to the history of medicine. It is widely held that Ricord first recognised syphilis as a distinct disease entity in the nineteenth century. Ricord's accurate, dualist understanding of the two diseases is commonly contrasted with the unicist view of the prominent eighteenth century London physician, John Hunter (1728-1793). Hunter had great authority within the medical profession, and his "mistake" of conflating syphilis and gonorrhoea is frequently cited as the reason for an apparent stagnation in medical understanding of the disease in eighteenth century Britain.

However, other physicians writing in the enlightenment period opposed Hunter's view, arguing instead that the two groups of symptoms represented two different diseases. Benjamin Bell's work, *A Treatise on Gonorrhoea Virulenta*, *and Lues Venerea* (1793) directly opposed Hunter's views on syphilis and was published several years after Hunter's *Treatise on Venereal Disease* (1786). This confirmed the existence of a debate on the nature of syphilis in the eighteenth century. Surely if a contemporary of Hunter systematically opposed his position in a scientifically valid way, then the earlier

[153] Quétel, *History of syphilis*, p. 5.
[154] The terms 'unicist' and 'dualist' have been used to describe positions in a range of debates, on subjects such as gonorrhoea and syphilis, syphilis and yaws, and the mind-body dilemma. I have been unable to determine the ultimate origins of their use within this context of syphilis and gonorrhoea.
[155] Linda Evi Merians, 'Introduction', in *The secret malady: venereal disease in eighteenth-century Britain and France* (Lexington, K.Y.: University Press of Kentucky, 1996), pp. 1–12 (p. 6).

physician, not Ricord, was the pioneer? While I am not concerned with questions pertaining to who was the first to argue this, I am interested in better understanding the historiography and the debate that preceded Ricord, and then from this, to see if Fleck's concept of the proto-idea is applicable (this will be discussed in Chapter Six). This debate is significant since it demonstrates the extent to which achievements made by nineteenth century physicians are emphasised above those of the eighteenth century, perpetuating the notion that the latter was a dark age in the history of medicine. The next section elucidates the historiography surrounding concepts of syphilis in the eighteenth and nineteenth centuries.

4.2 Historiography: Ricord as a pioneer

Ricord is frequently cited as a pioneer in syphilography and as the first to distinguish syphilis from gonorrhoea. Contemporaries lauded his work as "genius" [156] and he continues today to be recognised for his numerous contributions to a scientific understanding of syphilis, including identifying the different stages of the disease. This section focuses on the frequent historiographical recognition of Ricord as the first to separate the symptoms of gonorrhoea from those of syphilis, finally proving the two diseases distinct. My purpose is not to argue that Ricord was incorrect, to find flaws in his work, or to dispute the apparent theoretical oversights he made.[157] Doing this would have the result earlier disparaged of reflecting upon history with respect to current knowledge. Rather, it is to examine the accounts of the concept of syphilis in the eighteenth and nineteenth centuries with respect to its demarcation from gonorrhoea. Note that the debate surrounding the nature of these diseases persisted throughout the eighteenth century until the mid-nineteenth century. Willcox illustrated examples of this in the mid-nineteenth century.[158] Oriel maintained that Ricord's historical significance

[156] Sir Erasmus Wilson, *On Syphilis; Constitutional and Hereditary: And on Syphilitic Eruptions* (Blanchard and Lea, 1852); Unknown, 'Dinner Given at Lyons by the Medical Profession to M. Ricord', *The Lancet*, 1 (1856), 368 (p. 368) <http://books.google.co.nz/books?id=jgwCAAAAYAAJ&printsec=frontcover&source=gbs_ge_summary_r&cad=0#v=onepage&q=368&f=false> [accessed 12 October 2012].

[157] Engelstein claimed that Ricord set the study of syphilis "back". But, back from what? Understandings of medicine change over time; reflecting upon history with the benefit of retrospect means indulging in anachronisms. She wrote: "The great Philippe Ricord, who did so much to advance the understanding of syphilis, also helped to set it back when in 1838 he denied the contagiousness of secondary lesions." Laura Engelstein, 'Syphilis, Historical and Actual: Cultural Geography of a Disease', *Reviews of Infectious Diseases, Oxford University Press*, 8 (1986), 1036–1048 (p. 1045) <http://www.jstor.org/stable/4453996 .> [accessed 9 October 2012].

[158] R. R. Willcox, 'Accidental Syphilis', *The British Medical Journal*, 1 (1948), 850–851 (p. 850) <http://www.jstor.org/stable/25363415> [accessed 9 October 2012].

"[lay] in the conclusive separation of gonorrhoea from syphilis".[159] Temkin stated that it was "Ricord, the greatest syphilologist of the nineteenth century, who finally separated gonorrhoea from syphilis".[160] This trend, of "playing up" Ricord's contribution while "playing down" the contributions of his eighteenth century forerunners, endured throughout the twentieth century as texts emphasised both the significance of Ricord and the nineteenth century to modern understandings of syphilis.[161] Over the past decade, Ricord has continued to be eulogised for this particular aspect of his expansive work, particularly within popular medical histories,[162] but also in academic literature.[163]

There is an alternative trend that nevertheless maintains Ricord's significance in this way; it argued that though Ricord was not the first to distinguish the diseases, he revived the theory after it lay forgotten for several centuries. For example in 1865 Norwegian physician J. L. Bidenkap wrote that the demarcation between gonorrhoea and syphilis,

> well known more than three centuries ago, will, amongst others, be found asserted in the writings of the old French surgeon, Thierry de Hery, and, more recently, in those of Boerhaave and other authors; but it seems to have been forgotten, until it was revived by Ricord.[164]

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[159] J D Oriel, 'Eminent Venereologists. 3. Philippe Ricord.', *Genitourinary Medicine*, 65 (1989), 388–393 (p. 389) <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC1194410/pdf/genitmed00054-0042.pdf>.

[160] Owsei Temkin, 'Therapeutic Trends and the Treatment of Syphilis Before 1900', in *The double face of Janus and other essays in the history of medicine* (Baltimore: Johns Hopkins University Press, 2006), pp. 518–524 (p. 519).

[161] See: Judith R Walkowitz, *Prostitution and Victorian society: women, class, and the state* (Cambridge; New York: Cambridge University Press, 1980), p. 50. See also: Ann La Berge, *Mission and method the early nineteenth-century French public health movement* (Cambridge, (N.Y.): Cambridge University Press, 1992), p. 263.

[162] Sheryl Ann Persson, *Smallpox, syphilis, and salvation : medical breakthroughs that changed the world* (Wollombi, NSW: Exisle Pub., 2009), p. 163; Holly Cefrey, *Syphilis and other sexually transmitted diseases* (New York: Rosen Pub. Group, 2002), p. 27; Perry Treadwell, *God's judgement? : syphilis and AIDS : comparing the history and prevention attempts of two epidemics* (San Jose: Writers Club Press, 2001), p. 29; Francois Boller and Julien Bogousslavsky, *Neurological disorders in famous artists 1.* (Basel [u.a.]: Karger, 2005), p. 34. Hayden's popular book does not even mention Benjamin Bell. See: Deborah Hayden, *Pox : genius, madness, and the mysteries of syphilis* (New York: Basic Books, 2004).

[163] Antoanella Calame, Bryan Gammon and Clay J Cockerall, 'Cutaneous Manifestations of Sexually Transmitted Disease in the HIV-Positive Patient.', in *Cutaneous manifestations of HIV disease* (London: Manson, 2010), pp. 181–208 (p. 182); King K Holmes, *Sexually transmitted diseases* (New York: McGraw-Hill Medical, 2008), p. 607; R. E. LaFond and S. A. Lukehart, 'Biological Basis for Syphilis', *Clinical Microbiology Reviews*, 19 (2006), 29–49 (p. 29) <doi:10.1128/CMR.19.1.29-49.2006>; Conner, Susan P., 'The Pox in Eighteenth-Century France', in *The secret malady : venereal disease in eighteenth-century Britain and France*, ed. by Linda Evi Merians (Lexington, K.Y.: University Press of Kentucky, 1996), pp. 15–33 (p. 31: ff, 11).

[164] J. L. Bidenkap, 'Remarks on the Unity of the Syphilitic Virus', *British Medical Journal*, 1865, p. 411. Thierry de Hery lived between *c*.1505-*c*.1599, while Herman Boerhaave lived between, 1668-1738.

This sentiment was also noted by Oriel, who claimed that, "Although early syphilographers had separated syphilis entirely from previously known venereal disorders, by the 16th century this had been forgotten."[165] The claims outlined here are all the more curious, given that Ricord himself repeatedly referred to the works of earlier physicians in his own *Traité*, and in personal letters, which have been widely published. Debates on the nature of venereal disease continued throughout the eighteenth century, centring on the polarized positions of unicism (or monism) and dualism.

Why is there an emphasis on Ricord?

Why are there such strong historiographical emphases on Ricord as being the first to distinguish gonorrhoea and syphilis, when many of his forebears endorsed the same view? I offer three possible reasons. The first is that research emphasis on nineteenth century medicine results in a downplaying of medical advances made in the preceding century. This is a reaffirmation of a critique earlier discussed in Chapter One. Approaching the history of medicine in this way tends to conceal the dynamic intellectual achievements of the eighteenth century; enlightenment medical achievements become obscured by a methodological approach favouring individuals as distinct from socio-political and economic factors. A second reason is more complex and involves the distinguished views expressed by John Hunter.

A celebrated London surgeon of Scottish origin and renowned unicist, Hunter championed the concept of gonorrhoea and syphilis as a single venereal disease; a view based upon an experiment he performed (debatably upon himself),[166] whereby a subject was inoculated with gonorrhoeal pus and subsequently developed symptoms of both gonorrhoea and syphilis. His experiment corroborated the results of a similar experiment performed by French physician Jean Astruc (1684-1766), and was arguably accepted medically and popularly upon this basis.[167] With hindsight, it is clear that the patient who provided the gonorrhoeal pus was also infected with syphilis. In terms of historical understanding, the perceived impedance to the growth of medical knowledge in this area

[165] J D Oriel, 'Eminent Venereologists 2. Benjamin Bell.', *Genitourinary Medicine*, 65 (1989), 323 –327 (p. 324) <doi:10.1136/sti.65.5.323>.
[166] Kampmeier states this explicitly: "By the famous experiment on himself in 1767, John Hunter beclouded the whole issue." However, the possibility of Hunter's self-experimentation is widely known and widely debated. See: Kampmeier, p. 112. Linda Evi Merians, p. 6. Additionally, for a brief overview of this debate and references to further sources, compare the following: Jay Gladstein, 'Hunter's Chancre: Did the Surgeon Give Himself Syphilis?', *Clinical Infectious Diseases*, 41 (2005), 128 <doi:10.1086/430834>; John J. Ross, 'Reply to Gladstein', *Clinical Infectious Diseases*, 41 (2005), 128 –129 <doi:10.1086/430838>.
[167] Linda Merians, *The Secret Malady: Venereal Disease in Eighteenth-Century Britain and France* (University Press of Kentucky, 1996), p. 5.

is attributed to this mistake in Hunter's experiment and his subsequent interpretation.[168] Hunter's unicist view prevailed throughout the eighteenth century.[169] It is seemingly the physician's notoriety and success in medical fields adjacent to venereology that buoyed his authority in this area. This also seems to be the case in historiography since literature so frequently cites Hunter's mistake before discussing Ricord's success. Importantly, however, contemporaries hotly contested Hunter's theory. One example is the work of Bell, discussed within this chapter. That opposing views gained acceptance only gradually,[170] does not detract from their being made in the first place. Even nineteenth century commentators recognised that Hunter's theory was not wholly accepted in his age.

A third reason for Ricord's pre-eminence in histories of syphilis is his emphasis on scientific methodology. He focused his efforts on the identity of blennorrhagia and chancre, the prevailing opinion being that they were of the same cause though different in their manifestations.[171] The physician himself wrote that he was "actuated by a love of truth, and by a sincere wish to promote the interests of science".[172] He believed that medicine could progress only by gathering empirical data, and by moving away from arguments that were based on the esteem of their originator. He made this clear: "Our science can only be fostered by experiments, and they alone have yielded those positive results which have annihilated all the arguments framed by hatred, jealousy, and falsehood."[173] Ricord's interest in observation and experiments as evidence for his theory is notable from his moving the emphasis away from patient statements. In fact, he wrote, "the statements of patients must be looked upon as of no value."[174] In reference to his predecessors, Ricord was adamant that facts be revered above all else.[175] His motivations are demonstrated by his vast undertakings at the Hôpital du Midi in Paris. Ricord

[168] Linda Merians, p. 5.
[169] Linda Merians, p. 5.
[170] Thomas Benedek, 'Gonorrhea and Chlamydia', in *Encyclopedia of pestilence, pandemics, and plagues*, ed. by Joseph Patrick Byrne (Westport, Conn.: Greenwood Press, 2008), pp. 230–233 (pp. 230–233).
[171] Philippe Ricord and Hôpital du Midi, *Lectures on venereal and other diseases arising from sexual intercourse : delivered in the summer of 1847 at the Hôpital du Midi, Paris*, trans. by Victor de Méric (Philadelphia : Barrington and Haswell, 1849), pp. 74–75 <http://archive.org/details/64650860R.nlm.nih.gov> [accessed 15 October 2012].
[172] Philippe Ricord and Hôpital du Midi, pp. 74–75.
[173] Philippe Ricord and Hôpital du Midi, p. 21.
[174] Philippe Ricord and Hôpital du Midi, p. 20.
[175] Philippe Ricord and Daniel M'Carthy, 'Course of Lectures on Venereal Affections Delivered at the Hopital Du Midi, Paris. Lecture I, March 21, 1843', *Provincial Medical Journal and Retrospect of the Medical Sciences*, 6 (1843), 123–124 (p. 124) <http://www.jstor.org/stable/25492036> [accessed 9 October 2012]. Ricord wrote: "It shall be my endeavor, in the course of these lectures, to avoid the moving sand of theory, and, also, too frequent reference to authors; our unchangeable *motto* shall be, 'Facts, not names.'"

employed the speculum to seek out concealed chancres and performed over 2,500 experiments on his venereal patients.[176] The speculum enabled Ricord to contribute to syphilography in a novel way by searching for "venereal accidents hidden in regions where no one before me had thought of looking for them."[177] It was during his time at the Midi where Ricord accomplished his "epoch-making researches." [178] From his experiments he was able to conclude, as others had concluded before him, that chancre and gonorrhoea were different diseases. Additionally, he recognized that secondary symptoms developed from the primary lesion.[179]

4.3 Philippe Ricord

Philippe Ricord was extraordinarily well known in his own time. Of French origin, he was born in Baltimore, educated in New York, and sailed to France at the age of 20 before embarking on a career in medicine.[180] Obituaries stated that patients travelled from across the world to see Ricord,[181] and that he "was the most popular medical man in the nineteenth century".[182] Ricord demonstrated irreverence for authority early on; [183] his internship at Hôtel Dieu was terminated after he wrote against his tutor Dupuytren. The latter, having claimed to have invented a procedure for an artificial anus, was challenged by Ricord who knew of the procedure's American origins. His report, entitled "A friend of Plato but a greater friend of truth"[184] indicates the extent to which Ricord prioritised methodology over medical authorities. Dupuytren's perception of Ricord's medical abilities was proved wrong over the course of his career. Ricord's penchant for witticisms and interest in challenging authorities and other enlightenment tenets is summed in his obituary below:

> As [poet] Heinrich Heine claimed to be the first man of his century on the ground that he was born on January 1, 1800, Philippe Ricord used to call himself the 'last folly' committed by the eighteenth [century]. It appears, however, that instead of coming to this great stage of fools 'on December 31st,

[176] Arrizabalaga, p. 1031. See also: 'Philippe Ricord, M.D.', *The British Medical Journal [Obituary]*, 2 (1889), 1070–1071 (p. 1071) <http://www.jstor.org/stable/20221382> [accessed 10 September 2012].
[177] Philippe Ricord and Hôpital du Midi, p. 20.
[178] J. D. R., 'Philippe Ricord (1800-1889)', *The British Medical Journal*, 1 (1940), 989 (p. 989) <http://www.jstor.org/stable/20316779> [accessed 9 October 2012].
[179] Arrizabalaga, p. 1031.
[180] Oriel, 'Eminent Venereologists. 3. Philippe Ricord.', p. 388.
[181] 'Philippe Ricord, M.D.', p. 1071.
[182] J. D. R., p. 989.
[183] See for example: Philippe Ricord and M'Carthy, p. 124.
[184] Oriel, 'Eminent Venereologists. 3. Philippe Ricord.', p. 388.

> 1799, at 11.45 p.m.,' as he used jestingly to say, he was actually born nearly a year later, on December 20th, 1800.[185]

Despite his interest in challenging authority, Ricord often referred to his forebears in explaining his own positions. He repeatedly referenced physicians who had argued, before him, that gonorrhoea and syphilis are separate. Though he acknowledged a dearth of peer acceptance of the dualist position in the preceding century, he also explicitly wrote of Bell and others.[186] In doing so, he made clear that his own conclusions were reached by physicians before him. Reviewing the debate that preceded him, Ricord wrote that

> Many years have not elapsed since the doctrine prevailed, that chancre and gonorrhoea are the same disease, differing only in form. Hunter maintained this opinion, and accounted for the difference of form by the difference of seat; but that these diseases are distinct in nature, and very different in importance, was first taught by Sigwart, John Clement Tode, and Dr. A. Duncan, Senior, and afterwards demonstrated by Benjamin Bell, in his Treatise on the Venereal Disease.[187]

Since Ricord implemented the uterine speculum as a standard instrument for assessing his female venereal patients, he was able to build upon and defend the theories of his predecessors in a novel way. As he himself wrote: "It is for not having recognized the *concealed* chancre that the doctrine of Balfour, of Tode, of Bell, and the great scaffold built upon the experiments of Hermandez, have very nearly given way."[188] The concealed chancre, a cause for dispute in cases with no overtly typical indications of syphilis, was noted by Ricord to exist on the internal sexual organs. Therefore, it remained unrecognizable to physicians unable to examine the cervix and vagina.

Even more surprising however is that Hunter, who has been denigrated in historiographical literature for the mistake that contributed to the perpetuation of debate

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[185] 'Philippe Ricord, M.D.', p. 1070.

[186] Philippe Ricord and M'Carthy, p. 123. He wrote, "Bell ably, I will say victoriously, defended Todd's views; but since that time most pathologists have again reinstated gonorrhoea, and been blinded by its unjust pretensions".

[187] Ph Ricord, *A practical treatise on venereal disorders : and more especially on the history and treatment of chancre* (Philadelphia : Haswell, Barrington, and Haswell, 1840), p. 10 <http://archive.org/details/64650950R.nlm.nih.gov> [accessed 14 October 2012]. Separate from syphilis is another sexually transmissible disease of which a symptom is the development of painful chancres: chancroid. This quotation refers, however to the "Hunterian chancre" which is the typical painless lesion associated with syphilis – named after John Hunter. See also: "This form alone constitutes the disease properly denominated Syphilis, and is that form vulgarly termed Chancre."Ph Ricord, p. 28.

[188] P. Ricord, 'Fifth Letter', in *Letters on syphilis* (Printed by D. Clapp, 1853), pp. 38–50 (p. 39) <http://books.google.co.nz/books?id=3NqT_yNs4TYC>.

on the issue, was revered by Ricord. Oriel wrote, "At the time of Ricord's appointment venereology was in a state of chaos, for which John Hunter was largely responsible."[189] However, Ricord himself lauded Hunter as the "prophet of syphilis" and publicly recognized the significance of the physician's work in laying the foundations for Ricord's own contributions. He wrote that Hunter "laid the grounds of that classification which I have adopted and, I believe, completed; for, I feel proud to state, there exists a resemblance between that great man's theories and mine that I consider myself as the mere executor of what he has planned."[190] In light of this and Ricord's ample referencing to predecessors, it seemed that he was able to bring together aspects of theories of syphilis with his own understanding to strengthen his position. Upon this basis then, Ricord's work surely ought to be regarded as being built on a substantive foundation supplied to him by his enlightenment forerunners.

4.4 Nineteenth century recognition of eighteenth century debate

The debate about the unicity or dualist nature of venereal disease was widely known before the publication of Ricord's *Traité*. In 1814, Irish physician Richard Carmichael demonstrated knowledge of Bell's dualist theory. This shows that contemporary physicians held Hunter's authoritative view in contention. Discussing the experimental side of eighteenth century medicine, Carmichael stated

> The experiments of John Hunter, which go to prove, that the matter of gonorrhoea will form chancre, and that the matter of chancre will reciprocally produce gonorrhoea, are directly contradicted by those decisive experiments detailed by Mr. Benjamin Bell, which were instituted by two gentlemen in Edinburgh, on their own persons, and witnessed by him and Doctor Duncan.[191]

Carmichael here demonstrated an awareness of Bell's experiments and the problems associated with the unicist interpretation of symptom development, a dominant but contested theory. Carmichael, a dualist, nonetheless reconciles Hunter's position by explaining the discrepancy between introducing gonorrhoeal discharge to a patient who then develops a syphilitic chancre:

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[189] Oriel, 'Eminent Venereologists. 3. Philippe Ricord.', p. 389.
[190] Philippe Ricord and M'Carthy, pp. 123–124.
[191] Richard Carmichael, *An Essay on the Venereal Diseases Which Have Been Confounded with Syphilis, and the Symptoms Which Exclusively Arise from That Poison* (Dublin: James Cumming and Co. Temple Lane, 1814), p. 75.

> It is exceedingly probable, that the matter of gonorrhoea introduced between the prepuce and glans, will always, as in the experiments related by Mr. Bell, produce gonorrhoea of these parts, unless, indeed the matter should happen to be applied to a crude or abraded surface, and then most probably, ulceration will follow, for even healthy secretions, applied to such a surface, is capable of exciting troublesome ulcers. Thus we are furnished with an obvious explanation of the mistake of those persons who inoculated the glans with the matter of gonorrhoea, and asserted that it produced a chancre.[192]

Furthermore, London surgeon Solomon Sawrey, expressed an alternative and much more definitive understanding of the debate. He wrote, "Whether [the practitioner] thinks with Mr. Hunter, that the matter of chancre and of gonorrhoea is the same, or with Mr. Bell, that they are caused by two distinct poisons – his practice, if at all consistent, will be much influenced by the opinion he espouses."[193] Though Sawrey ultimately adopted a unicist position, he assessed the works of his contemporaries and diverged with Hunter on some points. Even in the late nineteenth century, this early debate was recognised. This passage is from an obituary for Ricord:

> the whole question of the nature, causes, and treatment of these maladies was in a most unsatisfactory state of confusion, and that, notwithstanding the labours of Benjamin Bell (1793) and others many years before, tending to show that gonorrhoea was distinct from syphilis, all kinds of venereal disease were pretty generally looked upon and treated as though they were all due to the same cause.[194]

From these passages it is clear that the eighteenth century debate between adherents of the unicist and dualist positions was known in the nineteenth century. Further, it is evident that physicians were evaluating the work and experiments of their contemporaries and forerunners, as they forged their own positions within the debate.

Contemporary support for Ricord?

While history records that Ricord, not Bell, was the first to discern syphilis and gonorrhoea, an interesting question to ask now is: to what extent was Ricord's theory of the dualist nature of syphilis accepted by his peers? Ricord himself mentioned that his

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[192] Carmichael, p. 77.

[193] Solomon Sawrey, Benjamin Bell and John Hunter, *An inquiry into some of the effects of the venereal poison on the human body : with an occasional application of physiology, observations on some of the opinions of Mr. John Hunter and Mr. Benjamin Bell, and practical remarks* (London : Printed by E. Rider, sold by Lackington, Allen and Co. ... ; and J. Callow ..., 1802) <http://archive.org/details/inquiryintosomeo00sawr> [accessed 15 October 2012].

[194] 'Philippe Ricord, M.D.', p. 1071.

empirical methods were "vigorously attacked."[195] In 1852, a decade after the English translation of his *Traité*, there was still no agreement over the nature of syphilis in London. One physician, while acknowledging his French colleague as "genius", nevertheless remarked,

> The common result of the contact of the syphilitic poison with the mucous membrane of a sound person, is the production of an ulcer; but I believe, also, that its effect may, in some instances, be a purulent discharge, constituting a common Blennorrhoea, or Gonorrhoea. In these cases I further believe, and have satisfied myself of the fact, that constitutional syphilis will follow with as much certainty as if it were preceded by a chancre.[196]

From this, it can be seen that debate about the nature of syphilis endured long after Ricord's publication.

Historical understandings of syphilis have not remained static. Arrizabalaga wrote that since the publication of Ricord's work, the concept of syphilis was constantly reshaped until it reached its current scientific state today. [197] Despite historians and scientific writers emphasising Ricord as a pioneer in syphilology, it is clear that he was but one contributor in a debate that had endured throughout the preceding century. While modern historians recognise that Ricord's conception of syphilis resembled modern understandings of the disease, particularly with reference to his epistemological methodology (including the use of experiments, and the use of a speculum), he himself recognised the significance of Bell's work to his own views. Ricord's work can be seen then as an important contribution to an on-going debate that did much to support the dualist theory. However, it did not end the debate. Ricord was by no means the first physician to marshal powerful arguments and evidence in support of the dualist position.

Given Ricord's fame as the physician who finally distinguished syphilis and gonorrhoea, and given his repeated references to his predecessor Benjamin Bell, I ask why the latter has not been recognised in a similar way in historiography. There is no doubt as to Ricord's contributions to the understanding of syphilis. He advanced the notion of the indurated (Hunterian) chancre as a defining characteristic of syphilis;[198] with the benefit of hindsight and knowledge of the current understanding of syphilis, doctors today still recognize this chancre as an archetype symptom. In arguing that distinctions between gonorrhoea and syphilis were made in the preceding century, I do not mean to detract from Ricord's achievements. Rather, my view is that he was but one contributor in a

[195] Philippe Ricord and Hôpital du Midi, p. 20.
[196] Sir Erasmus Wilson. P. vi
[197] Arrizabalaga, p. 1032.
[198] This chancre typical of syphilis infection.

debate that had been unfolding for more than a century. Stating that the debate about syphilis did not end until the mid-nineteenth century, Arrizabalaga implicitly agreed with this sentiment.[199] To determine to what extent my claim is accurate, I examine a case study from the eighteenth century debate. An examination of Benjamin Bell's view of the nature of syphilis shows that he considered the two diseases to be distinct entities long before Ricord was even born.

4.5 Benjamin Bell and knowledge of syphilis in the eighteenth century

Benjamin Bell (1749-1806) is commonly referred to as the father of the Edinburgh Surgical School,[200] or as part of a "new breed" of scientific surgeons.[201] He was born into a farming and merchant family in Dumfries, Scotland, becoming apprenticed to a local surgeon after leaving school. In 1766 aged 17, he joined the Medical school in Edinburgh and in 1771 he became a Fellow of the Royal College of Surgeons. He developed his expertise in Edinburgh, London, and Paris working under prominent surgeons. Whilst in Scotland, Bell was taught by William Cullen, physician to philosopher David Hume and a central figure of the Scottish enlightenment,[202] and while in France, Bell studied under Antoine Portal. It was Cullen who was later to introduce Bell to John Hunter. On this encounter, Bell wrote to thank Cullen for his introduction: "I have had the pleasure of a most agreeable and at the same time the most useful acquaintance I ever met with; for there is scarce an article, either in physic or surgery, that Mr. Hunter has not something new upon."[203] In 1777, Bell published *Theory and Management of Ulcers* (later translated into French and German, reaching its seventh edition in 1801. By 1778 when Bell was appointed Surgeon to Watson's Hospital he had already developed a reputation as an insightful diagnostician and surgeon. His seminal work, the textbook *A System of Surgery* was published between 1778 and 1788 in six volumes. In this work, he highlighted the significance of pain management and advanced techniques to aid recovery following

[199] Arrizabalaga, p. 1031.

[200] Benjamin Ward Richardson, *Disciples of Aesculapius*, 2 vols. (London: Hutchinson and Co, 1900), I, p. 500 <http://archive.org/stream/disciplesofaescu02richuoft#page/500/mode/2up>; Alexander Miles, *The Edinburgh School of Surgery Before Lister* (London: A & C Black, Ltd, 1918), p. 48 <http://archive.org/stream/edinburghschoolo00milerich#page/46/mode/2up>. See also: IMC Macintyre, 'Scientific Surgeon of the Enlightenment or "Plagiarist in Everything": a Reappraisal of Benjamin Bell (1749-1806)', *Journal of the Royal College of Physicians of Edinburgh*, 1–2 (p. 174).

[201] Helen M Dingwall, *A history of Scottish medicine : themes and influences* (Edinburgh: Edinburgh University Press, 2003), p. 118.

[202] William Cullen was known primarily for his central works, *First Lines of the Practice of Physic* (1777) and *A Treatise of the Materia Medica* (1789).

[203] B. Bell, *The Life, Character & Writings of Benjamin Bell, by His Grandson, B. Bell*, 1868, p. 32 <http://books.google.co.nz/books?id=9EgBAAAAQAAJ>.

amputation. However, it is his *Treatise on Gonorrhoea Virulenta and Lues Venerea* (1793)[204] that I will focus upon. In this treatise he countered Hunter's unicist contention and distinguished syphilis from gonorrhoea.

Historiography of Bell

Historiographies of Bell typically describe him in one of two ways. The first recognises him as a pioneer of scientific surgery, the second as a progenitor to Ricord. Quétel indicated the latter, citing Bell's apparent autoinoculation of syphilis (and his resultant contraction of the disease, but notably not of gonorrhoea) as informing his dualist position.[205] Both Macintyre and Oriel have emphasised Bell's original contributions to venereology.[206] Lock, Last, and Dunea state that

> In Edinburgh, Benjamin Bell (1793) carried out inoculation experiments on medical students, showing that gonorrhoea and syphilis were different diseases, but, at last, Philippe Ricord in Paris in 1838 showed conclusively, by experiments on 667 patients in a mental hospital, that gonorrhoea and syphilis were different diseases.[207]

Some historiographical sources mention both Bell and Carmichael as having achieved the same breakthrough as Ricord, though without the widespread acceptance of their contemporaries.[208] It is evident then that Bell is known to scholars for anticipating the conclusions of Ricord. Macintyre claimed that "Bell was truly a son of [the Scottish] Enlightenment. A polymath, original thinker and innovator".[209] In light of the way Bell's work has been remembered, I was curious as to why his dualist theory has been overshadowed by Ricord's work, published almost half a century later. Perhaps Bell's *Treatise* (1793) was perceived to be erroneous in some way?

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[204] Oriel, 'Eminent Venereologists 2. Benjamin Bell.', pp. 323–324.
[205] Arsen P Fiks and Paul A Buelow, *Self-experimenters : sources for study* (Westport, Conn.: Praeger, 2003), p. 17.
[206] IMC Macintyre, 'Benjamin Bell (1749-1806)' (Royal College of Surgeons of Edinburgh Library and Archive, 2004), p. 2 <http://www.library.rcsed.ac.uk/docs/GD_70_Benjamin_Bell_(1749-1806)_wax_seal.pdf>; Oriel, 'Eminent Venereologists 2. Benjamin Bell.', p. 324.
[207] Stephen Lock, John M Last and George Dunea, *The Oxford companion to medicine* (Oxford [etc.]: Oxford University Press, 2001), p. 750 <http://www.oxfordreference.com/views/BOOK_SEARCH.html?book=t185> [accessed 14 October 2012].
[208] E. A. U., p. 658.
[209] Macintyre, 'Benjamin Bell (1749-1806)', p. 1.

Syphilis and gonorrhoea as separate diseases

Bell clearly stated that gonorrhoea and syphilis were separate diseases with different causes and different symptoms. He wrote as "proof of the difference of the contagions of Syphilis and Gonorrhoea, it may be remarked that no stage of pox has ever been known to induce Gonorrhoea, which surely would occasionally happen if the two diseases were of the same nature."[210] Again, that "Gonorrhoea is a local disease proceeding from a specific contagion and not necessarily connected with any other."[211] Moreover he argued that despite many physicians arguing that syphilis and gonorrhoea were one affliction, that "the symptoms of the two diseases are different is universally known."[212] He asked, if the "matter of Gonorrhoea were of the same nature [as that of Lues Venerea] why does it not in almost every instance enter the system and produce pox?"[213] That the two diseases were indeed distinct, Bell argued, seemed a straightforward matter of observation. Yet, Bell scathingly wrote, "As this is a strong argument in favour of the two diseases proceeding from different kinds of contagion, much ingenuity has been exerted by those who support the contrary opinion in endeavouring to account for it."[214] He then systematically accounted for the reasons why they are considered to be the same disease before arguing why these reasons are inadequate. Bell argued that such opinions to the contrary were "more ingenious than solid"[215] and set out to challenge the rationale provided by medical authorities on this issue through reason and empiricism.

Challenging Hunter

Bell was confronted by two problems. One of these was the unicist theory as espoused by medical authorities such as John Hunter, who also attempted to use empirical observation and experiment to verify their theories. Bell was well aware of this; his motivation rested in wanting to present his observations as they differed from the prevailing doctrine. In doing so he challenged the medical authority of Hunter. This was not easy. Bell wrote, "However ill founded an established opinion may be, if it has received the sanction of being generally adopted, we know how difficult it is to overturn it."[216] While Hunter himself acknowledged contemporary heterodox views of venereal disease he concluded that it was the same poison manifesting in different ways that ultimately caused

[210] Benjamin Bell, I, pp. 32–33.
[211] Benjamin Bell, I, p. 168.
[212] Benjamin Bell, I, p. 3.
[213] Benjamin Bell, I, p. 5.
[214] Benjamin Bell, I, p. 6.
[215] Benjamin Bell, I, p. 19.
[216] Benjamin Bell, I, p. 8.

gonorrhoea and chancre.[217] Hunter wrote, "It has been supposed by many that the gonorrhoea and the chancre arise from two distinct poisons; and their opinion seems to have some foundation when we consider only the different appearances of the two diseases and the different methods of cure."[218] However Hunter's position rested on his interpretation of experiments begun in 1767, whereby the subject (possibly Hunter himself) was observed over the course of three years. According to Hunter, "Two punctures were made on the penis with a lancet dipped in venereal matter from a gonorrhoea; one puncture was on the glans, the other on the prepuce."[219] Ultimately the subject contracted gonorrhoea and syphilis thereby seemingly demonstrating the unicity of the diseases.[220] Nonetheless, Bell argued that Hunter's view was not adequately founded.[221]

Bell faced a second problem; to him, the positions advanced by such authorities were demonstrably and incorrectly identified as the same disease. In his *A Treatise on the Venereal Disease* (1786) Hunter advanced the argument that the symptoms of gonorrhoea and syphilis comprised a single venereal disease, the result of having contracted a particular kind of poison. Underlying this aspect of Hunter's view is the concept that no two diseases can co-exist in the same parts of the body. He wrote, "It appears to me, beyond a doubt that no two actions can take place in the same constitution nor in the same part at one and the same time."[222] Directly refuting this, Bell discussed a current patient of his who was unfortunately afflicted with piles, condylomatous excrescences or wart-like growths (attributed to a venereal "taint"), abscesses and cancers of the anus.[223] Using his patients as case studies, he could demonstrate that various afflictions could in fact affect the same body part at the same time. In this way, Bell was able to disprove Hunter. Scathingly Bell stated,

> As all of these are obviously in existence at this moment upon the same parts, and as instances of other combinations of local diseases are occurring daily, it is with surprise and astonishment that I find much labour and ingenuity

[217] Hunter, John, *A Treatise on the Venereal Disease* (London: Sold at No. 13, Castle-Street, Leicester Square, 1786), p. 9.
[218] Hunter, John, p. 13.
[219] Hunter, John, p. 325.
[220] Hunter, John, pp. 324–327. At some stage of the experiment (possibly at the time of inoculation) the subject was infected with syphilis from an undiagnosed person.
[221] Benjamin Bell, *A Treatise on Gonorrhoea Virulenta, and Lues Venerea (V2)*, A Treatise on Gonorrhoea Virulenta, and Lues Venerea, 2 vols. (James Watson and Co., 1793), II, p. 33 <http://books.google.co.nz/books?id=lCFFAAAAcAAJ>. See also: "It has been said, that Gonorrhoea sometimes terminates in pox, and, therefore, that this of itself is a sufficient proof of the two affections being of the same nature." From Benjamin Bell, I, p. 6.
[222] Hunter, John, p. 2.
[223] Benjamin Bell, II, p. 100.

> employed to prove that this connection of diseases never takes place, and in a work too which does the highest credit to the author.[224]

Bell referenced Hunter's *Treatise* as the cause for his concern in a footnote. It was therefore clear to Bell through his observation and experience that more than one disease can affect the same body part at the same time. This opened the nature of venereal disease to inquiry in a different way from Hunter's presentation of it.

Bell's methodology

In separating gonorrhoea and syphilis, Bell relied primarily on his long experience as a physician and surgeon. This enabled him to advance his argument for the distinction of syphilis and gonorrhoea by presenting patient histories as evidence. Bell was reluctant to undertake numerous experiments because of the "anxiety and distress" involved in inoculating individuals with venereal diseases.[225] People suffering from syphilis have long been stigmatised by notions of immorality and the skin and bone deformations and mental afflictions of tertiary syphilis have contributed to the disease being seen as fearful. Although Bell recognized the importance of experiments to provide conclusive evidence, he was also aware that too few could leave the subject open to interpretation.[226] However, Bell did discuss the self-experiments performed by two men who inoculated their own urethras with matter taken from chancres and buboes. He recorded,

> some pain and irritation were excited, but no Gonorrhoea ensued; and, by fretting the skin of the prepuce and glans with a lancet, and rubbing the parts

[224] Benjamin Bell, II, pp. 100–101. See also this remark regarding Hunter's view that only one issue can affect a given body part at any one time: "a few instances, bearing some appearances of the contrary, are much more readily explained on the idea of the two diseases being produced by different kinds of contagion; and this may also be said of the few solitary cases that may be met with, of chancre being supposed to terminate in Gonorrhoea, and Gonorrhoea in chancre, and other symptoms of pox. We can more easily conceive that the same person should, in some instances, receive, and therefore be able to communicate, both kinds of contagion, than that the incident we are considering should be so seldom met with, were the opinion well founded, of the two diseases being originally of the same nature." Benjamin Bell, I, pp. 7–8.

[225] Benjamin Bell, I, p. 33.

[226] Benjamin Bell, I, pp. 33–34. Note this passage: "It has indeed been said, that chancres may be produced by insinuating the matter of Gonorrhoea beneath the skin. But experiments upon this subject are productive of such anxiety and distress, that they never have been, nor ever probably will be, repeated so frequently as the nature of it would require. Nothing, therefore, can be admitted from this argument; for, in order to avoid fallacy, and to give support to the opinion, these experiments would not only require to be conducted with accuracy, but to be numerous, and to be repeated on a variety of patients under every possible variety of circumstances; whereas we have heard of only a single experiment or two being made by an individual; and even these seem to have been made under the management of such as were strongly and obviously biassed in favour of one side of the question (*sic*)."

> with the matter of Gonorrhoea, slight sores were produced; but they never assumed the appearance of chancres, and they healed easily without the use of mercury.[227]

These two experiments were not definitive evidence for Bell, but supported his theory that individuals must have particular symptoms to communicate those symptoms to others.

As part of this line of argument, Bell reasoned against Hunter's theory by examining patient histories with reference to his own dualist theory.[228] Rather than the two diseases being one and the same, Bell held that an individual could simply be afflicted by gonorrhoea and syphilis at the same time. This contrasted with Hunter's argument that no two "actions" (diseases, issues) can affect the same part of the body at the same time. Bell wrote, "the patient will be found to have received the pocky contagion [syphilis] by communication with a diseased woman at the very time he laboured under Gonorrhoea."[229] In a case where Bell saw "a gentleman under cure, for a deep, foul chancre, altogether within the urethra," he observed that after several weeks gonorrhoea still did not manifest. When it finally did, it appeared to be a recent infection and on inquiry, his patient "candidly acknowledged that he had imprudently exposed himself, by having connection with a girl of the town, three or four days previous to the accession of these symptoms."[230] It is now known that this time frame falls within the typical manifestation of gonorrhoeal symptoms, which are two to five days.[231] Bell was able to interpret the manifestation of symptoms in a different way to Hunter by examining the origins of infection.

Moreover, Bell's theory bought the pragmatic concern of patient treatment to the fore. Since gonorrhoea and syphilis were separate diseases the typical mercurial cure for venereal disease was then open to inquiry. Bell was aware of this.[232] Observing the ways in which the two diseases responded differently to treatment contributed to Bell's conclusions. Bell knew, as others did, that the symptoms of gonorrhoea would subside regardless of treatment, whereas the symptoms of syphilis increase in severity without the

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[227] Benjamin Bell, I, p. 34.
[228] Bell also relies on inductive argument he present, premised upon the histories of syphilis and gonorrhoea showing the two diseases to have appeared at different times in the same countries, "and in some instances have remained distinct and uncombined for a great length of time." See Benjamin Bell, I, p. 35.
[229] Benjamin Bell, I, p. 15.
[230] Benjamin Bell, I, p. 23.
[231] 'Gonorrhea', *National Institute of Allergy and Infectious Diseases*, 2011 <http://www.niaid.nih.gov/topics/gonorrhea/understanding/Pages/symptoms.aspx> [accessed 30 January 2013].
[232] Benjamin Bell, I, p. 2.

application of mercury. He wrote, "[no] practitioner of experience [will] trust the cure even of the slightest chancre to any other remedy."[233] In practice then, physicians would treat gonorrhoea and syphilis differently while nevertheless not distinguishing them as separate disease entities. However as Bell stated, "Upon this evidence alone, of the method of cure of the two diseases being so essentially different, we might, I think, conclude that they are different in their nature, and that they proceed from different contagions."[234] From this it can be seen that Bell was taking into account the nature of treatment in addition to the ways in which the diseases naturally progress; he approached the issue via numerous lines of inquiry.

Additionally, Bell employed careful observation of the natural history of syphilis to support his claim that syphilis was a separate disease from gonorrhoea. His observations were based on his own experience as a physician and surgeon. He stated, "In pox, even the slightest sore never fails to throw matter into the system, while the most extensive affections proceeding from Gonorrhoea are so seldom found to injure the constitution, that I have never met with an instance of it."[235] To clarify Bell's argument here, even the mildest symptom of syphilis (pox) progressed to a systemic disease (then known as constitutional). This contrasted with gonorrhoea, as even the most virulent symptoms never manifested as a systemic disease. He also observed unusual situations where venereal diseases were not communicated to individuals in the typical way. One example of this was his observation that the "matter of venereal sores, when mixed with water used for washing them, has, in various instances, been swallowed by mistake; but we have no instance of pox being produced by it."[236] This is interesting as it demonstrates that Bell observed and recorded a range of situations where syphilis was at risk of being communicated to others.

4.6 Discussion

Macintyre argued that, in contrast to Hunter, "Bell was not a scientific surgeon."[237] He cited Bell's lack of experiments, ambiguity in his patient records, and that Bell did not describe new diseases in support of this claim. These criticisms seem overly harsh given the context of eighteenth century medicine. However, it is known that Bell was justifiably reluctant to perform experiments because of the anxiety they caused in patients. It is pertinent to remember that a cure for syphilis was not found until the twentieth century,

[233] Benjamin Bell, I, p. 42.
[234] Benjamin Bell, I, p. 42.
[235] Benjamin Bell, I, p. 25.
[236] Benjamin Bell, II, p. 9.
[237] Macintyre, 'Scientific Surgeon of the Enlightenment or "Plagiarist in Everything": a Reappraisal of Benjamin Bell (1749-1806)', p. 180.

and that aside from the aesthetic and moral concerns associated with the disease, mercurial treatment often had a severe impact on the welfare of the patient. That Bell was not willing to undertake the large number of experiments necessary to conclusively discern a distinction between the diseases surely should not count against his status as a pioneering dualist given the intricacies of his observations. Macintyre did state that Bell was both a keen observer and logical thinker,[238] and with Bell's career spanning over 26 years by the time he wrote *Treatise* in 1793, he was drawing upon a wealth of experience and case histories to support his view.

Ambiguity in Bell's writing is a problem. While Macintyre's article focused on Bell's *A System of Surgery* (1783-1788) this point can be applied to his *Treatise* too. On the cause of chancres appearing at different times on different individuals after syphilitic infection, for example, Bell wrote that

> we may suppose it to depend in some degree upon the acrimony of the matter, and this again on the matter being more or less diluted with serum, mucus, or pus. It may also in some measure depend of the state of the parts to which the matter is applied.[239]

While this statement is incorrect with respect to knowledge of syphilis today, it is also a vague explanation for why the initial chancre appears at variable times. This does not detract from acknowledging Bell as an enlightenment surgeon, however, in the sense that he made extensive use of reason and empiricism in his work.

Despite the ambiguities that at times burden his *Treatise*, his work often makes clear and precise statements supported with strong empirical evidence. In actuality, Macintyre's complaint that Bell did not describe new diseases is irrelevant to the recognition of Bell as an enlightenment figure who championed the correct, dualist theory of syphilis with powerful arguments based on careful observation and weighing of evidence. Bell challenged Hunter and others who conceived of syphilis and gonorrhoea as a single disease. He did this in a systematic way, outlining various points and stating in direct terms why the symptoms could not correspond to a singular disease. Further, Bell used reason and observation in conjunction with evidence from patient histories to support his views. Hunter was the authoritative figure of his day, and Macintyre noted this.[240] As such, it is all the more remarkable that Bell was able to challenge Hunter and methodologically corroborate his own theory with multitudes of empirical evidence.

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[238] Macintyre, 'Scientific Surgeon of the Enlightenment or "Plagiarist in Everything": a Reappraisal of Benjamin Bell (1749-1806)', p. 180.
[239] Benjamin Bell, II, p. 14.
[240] Macintyre, 'Scientific Surgeon of the Enlightenment or "Plagiarist in Everything": a Reappraisal of Benjamin Bell (1749-1806)', p. 179.

In order to refute the unicist doctrine, Bell: (1) directly challenged Hunter's argument; (2) made use of his experience and observations to present case studies demonstrating his argument; and (3) reasoned that the symptoms were characteristically distinct between gonorrhoea and syphilis and further, that the treatments differed to prove his dualist conception of venereal disease. These three aspects of Bell's work are widely recognized as important themes of enlightenment thinking. In light of this, Bell's work and the contributions of the enlightenment to knowledge of venereal disease deserve more recognition. Contrary to the scholars who credit Ricord with being the first to distinguish the diseases, it is clear that this aspect of his theory had already been espoused, by Bell, half a century before the publication of his *Traité*. Furthermore, the work outlined above by Bell provided just a sample of the wider debate that was taking place; Bell was one among several enlightenment figures who argued against the established doctrine and made use of empiricism and reason to advance knowledge of syphilis. Bell wrote:

> The opinion which I have ventured to support, of the difference between the matter of Gonorrhoea, and that of Lues Venerea, will no doubt be censured by many. They ought, however, to recollect, in matters of opinion, which cannot be proved by demonstration, that some uncertainty must always take place; and before censuring with severity the opinions which others may suggest, they should consider whether their own may not be equally liable to objection. To me it appears that the reasons which I have adduced in support of my opinion are very conclusive, but I shall make full acknowledgment of my error, if sufficient reasons shall ever be given to show that it is ill founded.[241]

So it can be seen that Bell was interested in setting forth his understanding of syphilis with empirical support.

4.7 Conclusion

This chapter has fulfilled two key aims of this thesis. Firstly, it elucidated and refuted a common claim in historiographical literature of syphilis in nineteenth century Europe. It argued that Ricord was not the first to distinguish syphilis and gonorrhoea, and presented historical evidence in the form of a case study demonstrating that Scottish surgeon Benjamin Bell made this distinction in 1793. Bell's publication clearly and systematically demonstrated that the diseases were indeed distinct and therefore required different modes of treatment. Furthermore, he made extensive use of reason and empiricism in his *Treatise* — methodological tenets characteristic of enlightenment science. As such, Bell's work presents as a challenge to scholars such as Oriel and Bidenkap, who hold Hunter

[241] B. Bell, *A Treatise on Gonorrhoea Virulenta and Lues Venerea*, A Treatise on Gonorrhoea Virulenta and Lues Venerea, v. 1, 1793 <http://books.google.co.nz/books?id=SjgUAAAAQAAJ> p. x.

responsible for the stagnation of knowledge about syphilis until Ricord's publication. Instead of stagnation, it is clear, there was lively debate on the matter. Secondly, this chapter has shed light on the history of syphilis in the eighteenth century. It argued that Bell's view should be considered an important progenitor to the modern scientific understanding of syphilis. Bell was, after all, famed in his own time for his contributions to surgery. In light of this, I invite a reconsideration of the eighteenth century, not as a dark age, but as the setting for vibrant and dynamic debates on the nature of syphilis. The next chapter examines the central concepts of Ludwik Fleck's social epistemology with a view to later using these concepts to analyse venereology in enlightenment Britain.

5. Ludwik Fleck's central epistemic concepts

A fact is a fact. It has neither genesis nor development.[242]

Contrary to the statement above, Ludwik Fleck's epistemological study into the history of syphilis demonstrates that facts are socially conditioned. The purpose of this chapter is to introduce and examine the central concepts of Fleck's *Genesis and Development of a Scientific Fact* (hereafter *GDSF*, 1935; 1979). The Polish bacteriologist, famed largely for anticipating Kuhn's influential work, developed an epistemology from his history of the concept of syphilis. Contingent as they are on socio-historical tenets, his concepts of "proto-ideas", "thought collectives", and "thought styles" show Fleck to be an early advocate of contextual accounts of the history of science. This chapter analyses these concepts with a view to later testing them against primary evidence from eighteenth century venereology. While it is clear that this discipline made important contributions to scientific medicine, Fleck's epistemic concepts are able to provide explanations for how and why this occurred. By emphasising the work of the collective, Fleck's epistemology can show that studies of syphilis at this time were part of wider scientific endeavour. As Fleck's epistemological concerns were prompted by his career in medicine, this chapter begins by outlining important aspects of Fleck's life experience. In doing so, it enables a deeper understanding of the rationale behind his seminal monograph, *GDSF*. It discusses the core concepts of his social epistemology, focusing on the thought collective, thought style, proto-ideas, cognition, and the harmony of illusions. These provide the basis of the conceptual frame utilised in the remaining chapters. This chapter concludes by pointing toward ways in which Fleck's concepts can be usefully applied to the history of science and medicine, particularly to the history of syphilis.

5.1 Fleck's life experience

Ludwik Fleck (1896-1961) was a Jewish bacteriologist from Lwów, Poland.[243] Early in his career, between 1920 and 1923, he assisted the biologist Rudolf Weigl, who

[242] James Bryant Conant in Thomas S. Kuhn, 'Foreword', in *Genesis and development of a scientific fact*, ed. by Thaddeus J Trenn and Robert King Merton, trans. by Fred Bradley and Thaddeus J Trenn (Chicago: The University of Chicago Press, 1979).

[243] In 1896 when Fleck was born, the city was called Lemberg and part of the Austro-Hungarian Empire. As the city fell under different rule within the complex political contexts of the two World Wars, the name changed variably. As part of Poland, Lemberg became Lwów; under Russian rule, and subsequent Nazi

developed the first effective vaccine against typhus using the midguts of infected lice. He headed the bacteriological and chemical laboratories in the State Hospital, Lvov, between 1925 and 1927 before spending a year working in Vienna.[244] Subsequently, Fleck returned to Lvov but was dismissed from leading the bacteriological laboratory in the Social Sick Fund in 1935 due to increasing anti-Semitism.[245] He was able to continue his research and by the early 1940s had developed an effective vaccine against typhus.[246]

While living in the squalid conditions of the Lwów ghetto,[247] Fleck developed an alternative diagnostic test for typhus, enabling early detection of the disease.[248] When prophylactic aid was not resupplied to the ghetto, Fleck developed an alternative to the Weigl vaccine using antigens found in the urine of infected patients. Importantly, as Weisz noted, while Fleck was collaborating scientifically with others living in the ghetto, the ghetto itself remained isolated from the larger scientific community.[249] In 1942, he was obliged to produce the vaccine for the use of the German armed forces. Fleck was transferred to Auschwitz concentration camp in 1943, then Buchenwald in 1944 where he remained preparing typhus vaccine under duress until the camp's liberation in April 1945.[250] Nazi forces in Poland killed both of Fleck's sisters and their families,[251] though he returned there to head the Medical Microbiology Department at the Curie Skłodowska University of Lublin.[252] Renowned as a bacteriologist before World War II, Fleck won numerous awards for original contributions to medicine, as well as earning international

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occupancy, the city was Lvov. It is presently Lviv, Ukraine. This tumultuous political setting significantly impacted Fleck's life and work.

[244] Thaddeus J Trenn and Robert King Merton, 'Biographical Sketch', in *Genesis and development of a scientific fact*, trans. by Thaddeus J Trenn (Chicago: The University of Chicago Press, 1979), pp. 149–153 (pp. 149–150). Trenn and Merton emphasize here that this period was "the heyday of the Vienna Circle" though to what extent Fleck was responsive to their logical positivism remains uncertain.

[245] Trenn and Merton, p. 150.

[246] See Eva Hedfors, 'The Reading of Scientific Texts: Questions on Interpretation and Evaluation, with Special Reference to the Scientific Writings of Ludwik Fleck', *Studies in History and Philosophy of Science Part C: Studies in History and Philosophy of Biological and Biomedical Sciences*, 38 (2007), 136–158 (pp. 146–147) <doi:10.1016/j.shpsc.2006.12.008>. Hedfors discusses the efficacy of Fleck's vaccines. She argues that Flec's vaccines were elaborate and inconsistent, in both preparation and efficacy, though they were likely developed under constraint in the context of Nazi occupation. For a defence of Fleck's research methods against Hedfors' claims, see: G. M. Weisz, 'Dr Fleck Fighting Fleck Typhus', *Social Studies of Science*, 40 (2009), 145–153 <doi:10.1177/0306312709348569>.

[247] Weisz, p. 146. Weisz notes that infection rates within the ghetto were almost 100 per cent, with a mortality rate of 30 per cent.

[248] Trenn and Merton, p. 151.

[249] Weisz, p. 146.

[250] Trenn and Merton, p. 151; Andrzej Grzybowski, 'Ludwik Fleck (1896-1962) and His Contribution to Dermatology', *Clinics in Dermatology*, 30 (2012), 663–667 (p. 664) <doi:10.1016/j.clindermatol.2012.04.001>.

[251] Trenn and Merton, p. 151.

[252] Trenn and Merton, p. 151; Grzybowski, p. 664.

recognition for his work on infectious diseases in the last decades of his life.[253] He immigrated to Israel in 1957, joining the Institute for Biological Research at Ness-Ziona. In 1961 he died as a result of a heart attack.[254]

5.2 Genesis and Development of a Scientific Fact

Throughout his career, Fleck published extensively on various aspects of medicine and science. He wrote or contributed to over 170 articles in fields as diverse as serology, experimental medicine, immunology, scientific methodology and philosophy of science, as well as bacteriology.[255] A selection of his publications, translated into English, can be found in Cohen and Schnelle's collection, *Cognition and Fact: Materials on Ludwik Fleck* (1986).[256] A significant impetus to the development of his epistemology was his innovative involvement in microbiology. Fleck contributed original approaches to the development of a vaccine for typhus, as well as his "exanthin reaction", an alternative diagnostic test for the same disease.[257] He established new ways to improve the reliability of the Wassermann reaction, a test for diagnosing syphilis.[258] His seminal work, the monograph *GDSF*, abstracting from a history of the concept of syphilis to a general philosophy of science, was completed in 1934. It was published the following year in Switzerland, due to anti-Semitic restrictions on publishing in Germany.[259]

GDSF opens with the question, "What is a fact?". Fleck's epistemology, which revolves around socio-intellectual and time-bound constraints, answers this self-imposed question. Fleck was dissatisfied with a perceived lack of critical self-analysis in science. In his view the discipline aimed to distinguish facts as ahistorical and independent of subjective interpretation while neglecting epistemological examination.[260] "Almost exclusively," Fleck stated,

[253] Trenn and Merton, pp. 151–152. See also: Weisz, p. 146.
[254] Trenn and Merton, p. 153. Grzybowski stated instead that Fleck worked in the Weitzman Biological Institute, in Rehovot, Israel. See Grzybowski, p. 664.
[255] Trenn and Merton, p. 150; Weisz, pp. 146–147.
[256] *Cognition and Fact: Materials on Ludwik Fleck*, Boston Studies in the Philosophy of Science, v. 87 (Dordrecht ; Boston : Norwell, MA, U.S.A: D. Reidel Pub. Co. ; Sold and distributed in the U.S.A. and Canada by Kluwer Academic Publishers, 1986).
[257] Trenn and Merton, p. 150; Grzybowski, pp. 664–665. Note that to ensure accuracy I cross-referenced the information found in Trenn and Merton's biography of Fleck in *GDSF* with Grzybowski's article. Grzybowski did not reference Trenn and Merton in his article.
[258] Trenn and Merton, p. 150.
[259] Trenn and Merton, p. 150.
[260] Ludwik Fleck, *Genesis and development of a scientific fact*, ed. by Thaddeus J Trenn and Robert King Merton, trans. by Fred Bradley and Thaddeus J Trenn (Chicago: The University of Chicago Press, 1979).

> [epistemology] regards the well-established facts of everyday life, or those of classical physics, as the only ones that are reliable and worthy of investigation… Moreover, we have even lost any critical insight we may once have had into the organic basis of perception, taking for granted the basic fact that a normal person has two eyes.[261]

I contend that a possible reason for this is that these kinds of facts maintained the distinction between reality and perception. Knowledge about objective reality was the aim of science, and the link between this and the perceiving, subjective human scientist was not examined; it was taken for granted that scientists could, in effect, observe reality.

To counter the predominance of epistemological considerations of the exact sciences, Fleck chose to develop his theory around a medical fact; he based his monograph on the Wassermann reaction and its relationship to syphilis, since it was more recent (recall, Fleck was writing in the mid-1930s) and less philosophically investigated than the typical exemplars of classical physics. Cementing his choice, he held that a "medical fact, the importance and applicability of which cannot be denied, is particularly suitable because it also appears to be very rewarding historically and phenomenologically."[262] The fact he chose was the Wassermann reaction as a blood test for syphilis. I contend that Fleck wanted a phenomenologically rewarding fact to emphasise his contention that epistemology does not sufficiently examine the relationship between scientific endeavour and the perceiving, subjective human scientist.

He advanced his epistemology in *GDSF* by working first from the history of the concept of syphilis. The phenomenological aspect is important for Fleck, I believe, because the history of syphilis is rife with moral stigma, fear associated with both contracting and treating the disease, and of course the many competing theories attempting to account for its symptoms. The impact of these on the perceiving human physician and the ways in which the disease was studied should be examined with respect to the science of the disease itself.

Contemporary reception

Accounts of the contemporary reception of Fleck's work are inconsistent. Trenn and Merton stated that the monograph was, "widely discussed in Poland, Germany, France,

[261] Fleck, p. xxvii.

[262] Fleck, pp. xxvii-xxviii. I see Fleck's choice of a medical fact as fundamental to his overarching ambition; his early mention of the significance of phenomenology to epistemology alludes to his later exposition on how perception impacts the development of scientific knowledge. He infers that this is partially because people are simply critically unaware of their own involvement in the determination of knowledge.

Italy, and Switzerland."[263] On the other hand, Sady contended that prior to World War II, only nineteen reviews of *GDSF* appeared, just one of which was published in a philosophical journal.[264] He claimed that subsequent to the War, Fleck's philosophy of knowledge was "completely forgotten."[265] An alternative view comes from Hedfors who wrote that "the monograph was highly questioned by Fleck's contemporaries in the natural sciences and his philosophy viewed as both untenable and obsolete."[266] The scope of this chapter does not permit a thorough rendering of the contemporary reception of Fleck's monograph, though it is worth noting that his lack of an academic position between 1922 and 1939[267] might have hindered interest. While this question remains open to investigation, the influence of *GDSF* in the years since the 1962 publication of Thomas Kuhn's *The Structure of Scientific Revolutions* (hereafter *SSR*) has increasingly been subjected to philosophical debate.

The popularity of Fleck's book in the English-speaking world began some years after Kuhn published *SSR*. In the preface of his seminal epistemological work, Kuhn acknowledged Fleck's influence. He stated that *GDSF* "anticipated many of my own ideas" and "I am indebted to them [*GDSF*, and a colleague's remarks] in more ways than I can now reconstruct or evaluate."[268] Fleck's monograph was published in English for the first time in 1979 (note that *SSR* was published in 1962); it was only in the 1980s that academic interest in Fleck's work began to flourish in the English-speaking world, despite Kuhn's comments more than a decade prior.[269] In recent years, Fleck's work has received ever increasing interest. Hedfors,[270] Lindenmann,[271] Mößner,[272] Sady,[273] and

[263] Trenn and Merton, p. 150.
[264] Sady, Wojciech, 'Ludwik Fleck', *Stanford Encyclopedia of Philosophy*, ed. by Zalta, Edward N. <http://plato.stanford.edu/archives/sum2012/entries/fleck/> [accessed 5 September 2012]. The rest of these, according to Sady, "were published in *medical* or popular journals and newspapers." My italics. Presumably Sady is regretting the lack of philosophical attention Fleck's monograph received in the lead up to World War II.
[265] Sady, Wojciech.
[266] Hedfors, p. 155.
[267] Grzybowski, p. 664.
[268] Kuhn, *The structure of scientific revolutions,* pp. vi-vii.
[269] One of the first German-language collections of Fleck's work was published in 1982, while the English-language addition was published in 1986. See Thomas Schnelle, *Ludwik Fleck, Leben und Denken : zur Entstehung und Entwicklung des soziologischen Denkstils in der Wissenschaftsphilosophie* (Freiburg: Hochschulverlag, 1982); Robert Sonné Cohen and Thomas Schnelle, *Cognition and fact* (Reidel, 1986). See also: Sady, Wojciech.
[270] Hedfors; Hedfors, E, 'The Reading of Ludwig Fleck, Sources and Context' (Stockholm: KTH, Philosophy and History of Technology, 2005).
[271] Jean Lindenmann, 'Siegel, Schaudinn, Fleck and the Etiology of Syphilis: a Response to Henk Van Den Belt', *Studies in History and Philosophy of Science Part C: Studies in History and Philosophy of Biological and Biomedical Sciences*, 33 (2002), 751–752 <doi:10.1016/S1369-8486(02)00018-3>; Jean Lindenmann, 'Siegel, Schaudinn, Fleck and the Etiology of Syphilis', *Studies in History and Philosophy of Science Part C:*

Löwy[274] have all published on Fleck within the last decade.[275] As Sady noted, Fleck was often recognised as "an unappreciated forerunner" of the theory espoused in Kuhn's *SSR*,[276] and it is this feature of Fleck's monograph that is usually the focus of academic interest.

It is immediately evident that Kuhn's philosophy of science resembles Fleck's in many ways. The first indications of this strong connection are in the opening pages of *GDSF*, which has a foreword written by Kuhn,[277] and again in preface to *SSR*.[278] There are striking similarities between the ideas in the two books. The "thought style" and "thought collective" of *GDSF* find close parallels in the Kuhnian "paradigm" and "scientific community" respectively. Other researchers have recognized these similarities.[279] Fleck

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Studies in History and Philosophy of Biological and Biomedical Sciences, 32 (2001), 435–455 <doi:10.1016/S1369-8486(01)00014-0>.

[272] Nicola Mößner, 'Thought Styles and Paradigms—a Comparative Study of Ludwik Fleck and Thomas S. Kuhn', *Studies In History and Philosophy of Science Part A*, 42 (2011), 362–371 <doi:10.1016/j.shpsa.2010.12.002>.

[273] Sady, Wojciech.

[274] Ilana Löwy, 'Ludwik Fleck on the Social Construction of Medical Knowledge', *Sociology of Health & Illness*, 10 (1988), 133–155 <doi:10.1111/1467-9566.ep11435448>; Ilana Löwy, 'Ways of Seeing: Ludwik Fleck and Polish Debates on the Perception of Reality, 1890–1947', *Studies In History and Philosophy of Science Part A*, 39 (2008), 375–383 <doi:10.1016/j.shpsa.2008.06.009>; Ilana Löwy, 'Historiography of Biomedicine: "Bio," "Medicine," and In Between', *Isis*, 102 (2011), 116–122 <doi:10.1086/658661>. Löwy uses Fleck's epistemology as a framework for her own research.

[275] Interestingly, the Stanford Encyclopedia has only had an article on Fleck since March 2012. In June 2012, the *Psychology Today* website published an article on Fleck. See: Krueger, Joachim I., 'Fleck Is Back: Before Popper, Kuhn & Feyerabend, There Was Fleck.', *Psychology Today*, 2012 <http://www.psychologytoday.com/blog/one-among-many/201207/fleck-is-back> [accessed 14 September 2012]. In 2005, Bruno Latour also recognised Fleck's importance to the social sciences. See Bruno Latour, *Reassembling the social : an introduction to actor-network-theory* (Oxford; New York: Oxford University Press, 2005).

[276] See: Sady, Wojciech. Additionally, Hedfors supports Sady's sentiment when she argues that the consideration of Fleck as having anticipated 'science studies' is the result of a large section of *GDSF* being neglected by scholars. See Hedfors, p. 155. Fleck's work regarding the Wassermann reaction has been extensively studied. See: Lindenmann, 'Siegel, Schaudinn, Fleck and the Etiology of Syphilis'. For an interesting rejoinder to Lindenmann's article, and for the author's subsequent response, see: Henk van den Belt, 'Ludwik Fleck and the Causative Agent of Syphilis: Sociology or Pathology of Science? A Rejoinder to Jean Lindenmann', *Studies in History and Philosophy of Science Part C: Studies in History and Philosophy of Biological and Biomedical Sciences*, 33 (2002), 733–750 <doi:10.1016/S1369-8486(02)00020-1>; Lindenmann, 'Siegel, Schaudinn, Fleck and the Etiology of Syphilis'.

[277] Kuhn, 'Foreword', pp. vii-xi.

[278] Kuhn, *The structure of scientific revolutions,* p. vii.

[279] Pickering, Andy, 'Genesis and Development of a Scientific Fact by Ludwik Fleck (Review)', *Contemporary Sociology*, 11 (1982), 321–322 <http://www.jstor.org/stable/2067139 .>; Siwecka, Sofia, 'Genesis and Development of the "Medical Fact". Thought Style and Scientific Evidence in the Epistemology of Ludwik Fleck', *Dialogues in Philosophy, Mental and Neuro Sciences*, 4 (2011), 37–39 (p. 38) <http://www.crossingdialogues.com/Ms-C11-04.pdf> [accessed 12 September 2012]. See also: Mary

and Kuhn are both interested in the role of a community of experts in the development of scientific knowledge,[280] and both make use of the psychological notion of the Gestalt-switch when analysing a changed "thought style" (Fleck) or "paradigm" (Kuhn).[281] As Mößner noted, they "arrive at the strong thesis that this social component significantly determines scientific research as it somehow defined the *world* the individual scientist is living in."[282] Thus, Fleck's central philosophical concepts are recognisably similar to Kuhn's central concepts, and are inextricably tied to socio-historical tenets. For this reason, Mary Ann G. Cutter labelled Fleck a contextualist, though this is not a term Fleck used to describe himself.[283] In many ways Cutter's term is a useful way to understand the central concepts of Fleck's epistemology as thought styles and thought collectives are contextual and time-bound. At this point it is pertinent to examine in detail the central themes in Fleck's *GDSF*.

5.3 Central concepts

Fleck complained that contemporary epistemology depended unquestioningly upon perception to acquire knowledge, and in doing so took the reliability of phenomenological features for granted. To perceive is to gain awareness of something by means of the senses, and this in part involves memory and interpretation of external stimuli.[284] Fleck lamented, "We have nearly ceased to consider [perception] as even knowledge at all and are no longer conscious of our own participation in perception. Instead, we feel a complete passivity in the face of a power that is independent of us; a power we call 'existence' or 'reality'."[285] External stimuli are features of objective reality, knowledge about which makes up the discipline of science. Fleck's concern is that scientists generally do not realise how much of their own experiences of reality

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Ann Gardell Cutter, *Reframing disease contextually* (Dordrecht; Boston: Kluwer Academic Publishers, 2003), p. 120, ff 3.

[280] Mößner, p. 362. Fleck states explicitly, "Cognition is [not] an individual process". This statement emphasizes Fleck's notion that scientific communities play a fundamental role in the development of knowledge; cognition arises when interacting with others. See: Fleck, p. 38.

[281] Mößner, p. 364. Kuhn notes this in his chapter, 'Revolutions as Changes of World View'. See Kuhn, *The structure of scientific revolutions.*, pp. 111–135. Fleck makes use of *Gestaltsehen* in his discussion of new discoveries, see: Fleck, p. 92.

[282] Ultimately, Mößner claims that there are essential differences between the central concepts of Fleck's and Kuhn's epistemologies, to the degree that they become incomparable. In this view, she argues against a majority of Fleck scholars, who at least hold that the respective concepts are similar. Mößner, p. 363.

[283] See Cutter.

[284] 'Perception', *The Oxford Dictionary of English (revised edition)*, ed. by Soanes, Catherine and Stevenson, Angus, Oxford Reference Online (Oxford: Oxford University Press, 2005), University of Canterbury <http://www.oxfordreference.com/views/ENTRY.html?subview=Main&entry=t140.e57612> [accessed 2 September 2010].

[285] Fleck, p. xxvii.

impact their knowledge about reality. To further elucidate this, I consider that Fleck was largely concerned with three key tendencies in contemporary epistemology.

As I understand them, Fleck's motivations for developing a socio-historical epistemology are largely founded in three primary concerns. There is an objective reality and it is the aim of science to obtain truths about it; as such the role of epistemology is to critique the methods used to establish independent, permanent facts.[286] (1) Society holds an uncritical attitude towards perception, and science offers a way of transgressing human subjectivity by providing the means to obtain objective knowledge of the world. Though there is a presupposed distinction between societal views and the objective world, epistemology is closing this gap by continually critiquing the scientific method. (2) Nevertheless, scientific endeavour necessarily involves interpreting empirical data phenomenologically. This is where Fleck's second concern becomes manifest. Acquiring new knowledge involves perception, but scientists are ordinary humans, so why should perception not be subject to the same epistemological investigations as scientific methodology? (3) Fleck's concerns then give rise to a third subject for investigation: how human understanding and interpretation of "reality" and "existence" impacts upon what becomes accepted as fact. Taking these concerns into consideration, as well as his own practical experiences as a physician, Fleck based his epistemology on a recent medical fact, the Wassermann reaction and its relation to syphilis. He chose this fact, because of its rich social, phenomenological, and historical aspects.[287]

However, I am concerned with the extent to which Fleck's epistemic concepts are applicable to my own case study of the concept of syphilis. Fleck stated that the concept of syphilis cannot be arrived at simply by utilising the observation and experiments of modern science,[288] but that aspects of the current scientific understanding of syphilis are to be found throughout history. Therefore, I will examine Fleck's concepts of the proto-idea, thought collective, and thought style. This will enable a detailed study on the history of enlightenment knowledge of syphilis in relation to these concepts in later chapters.

[286] Fleck, p. xxvii. This is a paraphrase.

[287] In *GDSF* Fleck stated that "I believe that the concept of syphilis is unattainable except through a study of its history. It has already been demonstrated that here that *Spirochaeta pallida* alone cannot define the disease. Syphilis is not to be formulated as 'the disease caused by *Spirochaeta pallida*.' On the contrary, *Spirochaeta pallida* must be designated 'the micro-organism related to syphilis.'", p. 21

[288] Fleck wrote: "It is also inadequate to define syphilis phenomenologically rather than conceptually, in the manner that animals and plants might be defined on the basis of their characteristics. For it is naïve to think that, although its historical development has been tortuous and complicated, we can arrive at the concept of the disease entity 'syphilis' simply and safely merely by using current techniques of observation and experiment", p. 21

Thought collectives

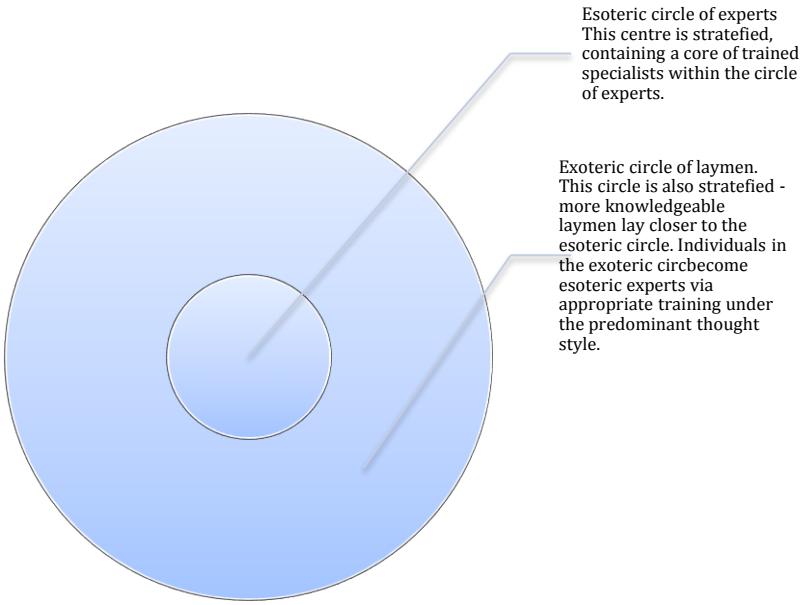

Figure 1: Thought collective. Adapted from Trenn and Merton's description in *Genesis and Development of a Scientific Fact* (Chicago University Press: Chicago, 1979), pp. 160-1.

The thought collective is an integral aspect of Fleck's social epistemology. The thought collective can be defined as a community of people engaged in intellectual interaction.[289] The diagram above demonstrates that specialists make up the core of the thought collective, while the peripheral layer is constructed of individuals in related fields and interested laymen. According to Fleck, a collective can exist when two or more individuals exchange thoughts. He observed, "a stimulating conversation between two persons soon creates a condition in which each utters thoughts he would not have been able to produce either by himself or in different company." [290] Through the communication of individuals ideas develop that otherwise would not have existed. This social interaction, by way of conversation, publication, co-operation, or controversy for example, is fundamental to the development of knowledge. Essentially it means, according to Fleck, that the thought collective contains far more knowledge than any individual. Therefore, according to Fleck, the value of the thought collective resides in its being intellectually richer than the sum of its individuals. Significantly, individuals belong to several thought collectives at the same time.[291] This aspect will feature

[289] Fleck, p. 39.
[290] Fleck, p. 44.
[291] Fleck, p. 45.

prominently in subsequent chapters. The way of thinking that governs the thought collective is called the thought style. The two concepts are inextricably linked and form the core of Fleck's epistemology.

Thought style

Essentially, the prevailing way of thinking about a subject is called the thought style. According to Fleck, the thought style acts as a kind of compulsive force upon individuals in the thought collective. Individuals are inducted into the thought style via their education. As such it is impossible for them to dissent from the prevailing way of thinking.[292] An example of this can be found in modern medicine, which Fleck maintained was a social activity. This aspect of the thought style is evident from the ways in which medical science is practiced today, for example: scientists and practitioners produce results that are analysed by the medical community, findings are communicated using standardized techniques, and journal articles are peer-reviewed.[293] The thought style and collective provide time-bound intellectual contexts for scientific facts.

Proto-ideas

Proto-ideas, or pre-ideas, are the scientifically unsubstantiated concepts upon which facts are later developed. Most established facts are linked to proto-ideas though these links cannot be proven, and the proto-ideas themselves are unscientific.[294] Fleck wrote that "Proto-ideas must be regarded as developmental rudiments of modern theories and as originating from a socio-cognitive foundation."[295] However vague the concept of the proto-idea, Fleck found numerous examples of them throughout modern science: atomic theory has proto-ideas from Greek antiquity;[296] notions of a spherical earth existed before a scientific expression, as did heliocentric cosmology; notions of living, invisible creatures that cause sickness were theorized before the concept of germ theory was developed.[297] Further, Fleck argued that the Wassermann reaction embodied the notion of "syphilitic blood", and this stemmed from the popular and centuries-old proto-idea of "impure blood".[298] Recall that even in the twentieth century, throughout the Tuskegee syphilis study, researchers informed subjects that they were being tested for impure, or "bad blood". Fleck stated, "Concepts are not spontaneously created but are determined by

[292] Fleck, pp. 40–41.
[293] Cutter, p. 108.
[294] Fleck, p. 23.
[295] Fleck, pp. 23–24.
[296] Fleck, p. 24.
[297] Fleck, p. 24.
[298] Fleck, p. 23.

their 'ancestors.'"[299] To summarize, the proto-ideas of scientific facts have endured throughout history and been supported in varying ways before they come to be substantiated by modern science.[300]

Fundamentally proto-ideas are not historically random concepts. It is not enough to take an established fact and search for just any related concept in history to label a proto-idea. This is because, though they do not necessarily resemble the modern fact of which they are an antecedent concept, early proponents believed them to be accurate and demonstrable in the thought style to which they belonged. As such, proto-ideas cannot be considered to be incorrect now, since that would mean removing them from their context (and thus the thought collective and thought style in which they developed).[301] By way of analogy, the adaptation of the Apatosaurus was suitable for it during the Jurassic period, just as a modern species of lizard is suitably adapted to its own environment. It does not make sense, however, to argue whether the Apatosaurus is "adapted" or "unadapted" when it is considered outside of its own environment.[302] Similarly, proto-ideas must be examined and evaluated within their own context.

Concepts in Gestalt psychology help to explain the position of proto-ideas in the development of knowledge. Proto-ideas function in a similar way to language. Just as words conjure images, thoughts, and other words, so proto-ideas can lead to further thoughts, associations, and images. Quoting the early Gestalt psychologist Wolfgang Metzger, Fleck wrote that *words* indicate "a transference of experience and objects to a material that can easily be molded and is always available. Linguistic reproduction was therefore originally not a precise assignment according to logic but imagery in the dynamic sense of geometry."[303] As with words, pre-ideas enable the transference of experience and imagery to a material that can then be forged into knowledge under a different thought style. Fleck furthers, "Words and ideas are originally phonetic and mental equivalents of the experiences coinciding with them."[304] Thus, pre-ideas are unscientific but can be found in scientific facts, and were considered accurate in the period in which they were utilised. They develop into current knowledge by way of transference of experience and imagery, as understood in Gestalt psychology.

[299] Fleck, p. 20.
[300] Fleck, p. 24.
[301] Fleck, p. 25. Given this, I will later examine my own notion that Benjamin Bell's theory of syphilis as a distinct disease entity can be construed of as a Fleckian proto-idea.
[302] This example is based upon Fleck's, see: Fleck, pp. 25–26.
[303] Fleck, p. 26.
[304] Fleck, p. 27.

Cognition

Fleck's understanding of cognition is fundamentally involved with his central concepts of the proto-idea, thought collective, and thought style. Foremost, cognition is necessarily a social activity; in fact, Fleck holds that it is "the most socially-conditioned activity of man, and knowledge is the paramount social creation [*Gebilde*]."[305] As such, it requires three components: the individual, the collective, and objective reality (knowledge about which is the object of science). These three factors interrelate; individuals together constitute a collective, and objective reality can be divided into historical periods defined by thought collectives.[306] But how then does cognition work as a social process? Fleck answers:

> Thoughts pass from one individual to another, each time a little transformed, for each individual can attach to them somewhat different associations. Strictly speaking, the receiver never understands the thought exactly as the transmitter intended it to be understood. After a series of such encounters, practically nothing is left of the original content. Whose thought is it that continues to circulate? It is one that obviously belongs to not to any single individual but to the collective.[307]

Ultimately, the thought collective has knowledge much greater than any individual could have.[308] However, the individual enriches the collective by following up the results of cognition, given its preconditions.[309] These preconditions, according to Fleck, "correspond to active linkages and constitute that portion of cognition belonging to the collective."[310] These results then correspond to what is experienced as objective reality.[311]

A harmony of illusions and the tenacity of systems of opinions

Fleck used the term "harmony of illusions" to refer to the period of time where any new information about a subject is made to fit, as it were, the prevailing thought style. The "tenacity of systems of opinion"[312] describes the persistence of the dominant theory in the face of evidence to the contrary. According to Fleck, "Once a structurally complete and

[305] Fleck, p. 42.
[306] Fleck, pp. 40–41.
[307] Fleck, p. 42.
[308] Fleck, p. 38.
[309] Fleck, p. 40.
[310] Fleck, p. 40.
[311] Fleck, p. 40.
[312] Fleck, p. 27.

closed system of opinions consisting of many details and relations has been formed, it offers enduring resistance to anything that contradicts it."[313] Essentially, the harmony of illusions and tenacity of systems of opinions form stages of the history of fact development.

5.4 Discussion and research questions

In this section I argue that Fleck's central concepts are useful to the study of the history of science and medicine, particularly to eighteenth century venereology. Increases in empiricism, rationality, and challenges to authoritarian views can be considered thought styles of the enlightenment age. These styles are evident in multiple thought collectives, including science, philosophy, and politics. For example, the rejection of authoritarian political regimes is evident in the Glorious and French Revolutions (1688, 1789-1799 respectively), while philosophers such as David Hume and John Locke wrote about empiricism. These themes are also evident in medicine, particularly in debate about the nature of syphilis (discussed in Chapter Four). The concept of the thought collective provides intellectual context; there is no unconditioned experience. Since individuals belong to more than one thought collective, it is easy to see how ideas from one collective can enter another by social interaction. Contrary to the notion that the eighteenth century was a dark age in the history of medicine, Fleck's concepts can explain how and why these broader themes can be found in medicine.

The concepts of the thought collective and thought style provide a time-bound intellectual context for the study of scientific facts. They explain the development of knowledge by providing the means of discerning "how" and "why" a fact came to exist. Because these concepts are based upon socio-historic tenets, they emphasize the achievements of the collective within a specific time period over the achievements of the individual. According to the Fleckian view, there is no unconditioned experience. As such the significance of the individual is reduced as they are only one participant in the broader thought collective. Cognition relies upon interaction with the thought collective. This feature of the thought collective can be used to effectively challenge the Great Forces approach to history. Because the individual's achievements could not have existed without the collective, it no longer makes sense to argue that a specific person was a pioneer, or the "first" to accomplish a scientific feat. A common claim in the history of syphilis is that Philippe Ricord was the first to separate the symptoms of the disease from those of gonorrhoea. According to the thought collective concept however, Ricord can be identified as one participant of many in a debate labouring under a particular thought style. Chapter Four uses primary historical evidence to illustrate this.

[313] Fleck, p. 27.

As it stands in *GDSF*, the proto-idea concept outlined by Fleck is a weak analytic tool. In Chapter Six I will argue that the links between proto-ideas and facts must be substantiated. Evidence of the relationship between them can take the form of a direct reference, a record of a conversation, a link to an institution, or an awareness of a theory. Requiring the link means that tracing the proto-idea becomes instrumental to analysing the history of a fact. Furthermore, this can add to epistemological analyses as it can provide tangible evidence about how a fact changes over time. I will argue that the modern concept of syphilis can effectively be traced, by these means, back to (at least) 1793 with Bell's publication.

The concepts of the harmony of illusions and the tenacity of systems of opinions are useful to the study of the history of science and medicine because they explain the enduring resistance to new theories, even in the face of strong supporting evidence. This can be seen in the elaborate ways that physicians attempted to explain Hunter's observations, as well as the differences between theory, practice, and treatments (using mercurials to treat the pox but not gonorrhoea, for example). Effectively, the harmony of illusions can explain how and why Hunter's view persisted until the publication of Ricord's treatise, and how and why even during the mid-nineteenth century Ricord's thesis was resisted by some physicians. Chapter Six discusses this in depth.

It is important to note that the conclusions of this chapter do not foreshadow the outcomes presented in the subsequent chapter. There are three reasons for this. First, as discussed in Chapter Four, Bell conceptualised syphilis as a distinct disease from gonorrhoea, and used empirical evidence to support this view, long before Ricord. I presented this as an argument against the dominant historiographical trend and therefore this claim was established in addition to the claims that are about to be made in the ensuing epistemological analysis. Second, while the positions outlined in Chapter Four provide background and context, they are examined in Chapter Six through Fleck's philosophical framework. Third, Fleck's own argument is largely based on a heuristic approach to the history of syphilis as it is presented since the fifteenth century in his *GDSF*. That is, his epistemological concepts were developed on the basis of his overarching history of syphilis. Since I am examining proto-ideas in terms of a specific time period in history — the enlightenment — and not as part of a heuristic approach as Fleck intended, it is yet to be discerned whether they can in fact be appropriately applied to history in this way. This last point will be tested against historical evidence to determine the extent to which Fleck's social epistemology can be used to examine the concept of syphilis in eighteenth century England and Scotland. The significance of Fleck's epistemic concepts is that they provide explanations for how and why enlightenment knowledge of syphilis developed during the period.

5.5 Conclusion

This chapter has provided an outline of the key concepts of Fleck's social epistemology. His philosophical concepts aligned with his life experience, as he endured the squalid conditions of the Lwów ghetto and then the Auschwitz and Buchenwald concentration camps. Developing an effective alternative vaccine for typhus whilst working within the isolated scientific community of the ghetto, I believe, encouraged Fleck to deliberate on social influences on science. His epistemology can provide insights into how and why broader social and intellectual themes can be found within scientific endeavour. The subsequent chapter brings these concepts to the fore as it tests whether Fleck's epistemology can be applied to British venereology in the eighteenth century.

6. Proto-ideas and enlightenment thinking

In light of historiographical reverence for Ricord's theory, the proto-idea concept is particularly interesting to the history of syphilis in the enlightenment. As Fleck wrote, "Every age has its own dominant conceptions as well as remnants of past ones and rudiments of those of the future".[314] Since Ricord is generally noted as a pioneer in nineteenth century syphilography, can Bell's earlier work be examined as a proto-idea to the concept of syphilis as it was presented in Ricord's *Traité*? Fleck stated that any concept, such as that of syphilis, must be examined within its own social and temporal frame. In his view, as understandings of disease changed over time, they cannot be considered correct or otherwise if examined independently of the context in which they prevailed.[315] Since proto- or pre-ideas have specific features they can be tested against historical evidence. This chapter explores in depth the proto-idea concept and examines Fleck's theory of the harmony of illusions with reference to debate on the nature of syphilis in the eighteenth and early nineteenth centuries.

As such, this chapter contributes to this thesis in three ways. Firstly, it examines the concepts of the proto-idea and harmony of illusions. Using these concepts, it then argues that Bell's theory is a proto-idea to both Ricord's understanding and to current scientific knowledge of the disease. Secondly, it examines the significance of enlightenment ways of thinking upon the development of knowledge within venereology. The central themes of enlightenment science are recognised as forming part of the prevailing thought style. As these themes are also evident within the study of syphilis, the enlightenment is seen to have significantly impacted the development of knowledge about venereal disease in this period. Thirdly, this chapter evaluates the proto-idea as a tool for historical analyses. It disputes the notion of a proto-idea as useful — on the basis of Fleck's definition alone — because his concept is too vague, and links between a pre-idea and a scientific fact cannot be demonstrated. Instead, I argue that the proto-idea has the potential to be a powerful analytic tool if the links between them and their corresponding facts can be substantiated. Strengthening the proto-idea in this way provides a firm foundation for applying Fleck's epistemic concepts to the study of the history of knowledge.

[314] Fleck, p. 28.
[315] See 'Chapter Five: Fleck's Central Concepts' for more information.

6.1 Proto-ideas

Proto-ideas are an important aspect of Fleck's notion of theory-development. A proto-idea exists only with hindsight and with reflection upon a different epistemological era. That is, the concept of a proto-idea involves knowledge from a historical context examined with respect to knowledge in a different, later time period. As such, Fleck argued that the concept of syphilis cannot be understood without reference to its history; this aspect of his epistemology relies on present-day facts about syphilis containing features of its history. Such features are proto-ideas. The most vivid example of this is the prominent early-modern theory that "bad blood" was involved with the disease now recognized as syphilis.[316] Fleck argued that this was a proto-idea of the Wassermann reaction, a blood test for syphilis. It was for bad blood that subjects of the Tuskegee syphilis study were informed they were being tested. For Fleck the concept of syphilis as encompassing the notion of bad blood endured for centuries and remained an important aspect of medical knowledge about the disease throughout the twentieth century. Further, it remained a colloquial term for syphilis at a lay level during this period. In this sense then the notion of bad blood exemplified the concept of the proto-idea. Fleck held that "Proto-ideas must be regarded as developmental rudiments of modern theories and as originating from a socio-cogitative foundation".[317] Particularly important are the social and intellectual origins.

Proto-ideas exist within particular thought collectives as part of particular thought styles, according to Fleck. As such they are tied to a given period in time. These factors mean that they are an important component of Fleck's historically founded social epistemology. Proto-ideas are not to be conceived of as wrong with respect to modern scientific thought since, using Fleck's terms, they are a socio-cogitative force and time-bound.[318]They were theories and ideas considered correct at a particular time by experts. For example just as present-day medical science makes use of clinical trials to determine the efficacy of new treatments, so was it sufficient for early-modern and modern physicians to utilize trial and error and experience to ascertain appropriate remedies.[319] In support of this, Fleck stated that, "Whatever is known has always seemed systematic, proven, applicable, and evident to the knower."[320] Conversely information that does not conform to the theories and knowledge of a particular context appears contradictory, unproven, and fanciful to

[316] See Chapter Three for more information on this topic.
[317] Fleck, p. 25.
[318] Fleck, p. 23.
[319] On discussing the nature of venereal disease, Sawrey remarked that there was debate on where the "poison" accumulated, for example if it was in the blood. See: Solomon Sawrey, Benjamin Bell and John Hunter, p. 3.
[320] Fleck, p. 22.

the thought collective, according to Fleck. To consider a proto-idea as wrong is to examine it against epistemological criteria to which it does not belong; furthermore this places an idea into a different thought collective and thought style from those that developed it. This presents problems of anachronism and therefore makes judgments of proto-ideas as incorrect inappropriate for historical analyses. This is the case with the historic medical knowledge that bad blood was involved with syphilis. The present day medical-scientific thought collective with its scientific style of thinking rejects the concept of syphilis as encompassing the notion of bad blood. By stating this, the bad blood concept is taken out of its historical context and is examined against current research techniques to which it does not hold up as fact. Nevertheless, the concept of the proto-idea remains interesting for its relationship to current scientific facts and it can be a useful tool for analysing the history of knowledge.

Within an accepted fact, social and historical developments can be seen in its proto-ideas, despite the assumption that facts are ahistorical and objective. Fleck wrote that, "The value of such a pre-idea resides neither in its inner logic nor in its 'objective' content as such, but solely in the heuristic significance which it has in the natural tendency of development."[321] According to Fleck, proto-ideas (probably) develop further by way of image association. As discussed in Chapter Five, Fleck elaborated upon this position by making use of theories within Gestalt psychology, specifically of Metzger who held that words denote "a transference of experience and objects".[322] The development of words and ideas are related, as Fleck contended, as "Linguistic reproduction was therefore originally not a precise assignment according to logic but imagery in the dynamic sense of geometry."[323] The words used to describe ideas conjure imagery within the mind. They become proto-ideas by their prompting inquirers to cogitate on epistemological issues with thoughts that include images of theirs and their forebears' experiences. The psychological impacts of proto-ideas are evident within the developments of new thought.

According to Fleck, "Words and ideas are originally phonetic and mental equivalents of the experiences coinciding with them. This explains the magical meaning of words and the dogmatic, reverential meaning of statements".[324] This quote exemplifies the relationship between proto-ideas and words. To use a relevant example, an eighteenth century physician cogitating upon the nature of syphilis might have recently read Hunter's view on this topic. Therefore the physician's thoughts would be influenced by the imagery conjured by his reading of Hunter's tome. Given the latter's authority, the

[321] Fleck, p. 25.
[322] Fleck, p. 26.
[323] Fleck, p. 26.
[324] Fleck, p. 27.

physician's problem solving would centre on working Hunter's theory into his own. Hunter's work therefore becomes a proto-idea to the physician's new work. Importantly, no aspect of the physician's own work must have too greater tension or be in conflict with the proto-idea, since it would then be resisted by the thought collective. This is actually demonstrated by the way that Bell's dualist theory did not gain currency. According to Fleck, alien epistemological systems or ideas outside of the accepted theoretical framework are resisted and recognized as contradictory or fanciful. Ideas that support the prevailing thought style are venerated. This is what Fleck termed the harmony of illusions.

6.2 A harmony of illusions: ingenious methods of resisting Bell's theory

An example taken from the case study of Bell's theory of syphilis illustrates the harmony of illusions. As examined in Chapter Four, by the late eighteenth century theories against the unicity of venereal disease were widely known. Bell's treatise, one example of many, was published in 1793. However inquiry into the nature of syphilis persisted, with agreement within the medical community remaining elusive.[325] In 1802 London physician Solomon Sawrey published a work that inquired as to the nature of venereal disease, bringing together the observations of Hunter and Bell and developing his own rationale.[326] Sawrey described himself as a keen advocate for truth, and aimed to present both sides of the venereal debate without recourse to a pre-formed opinion.[327] Obviously at the time of publication the prevailing view was of the unitary nature of gonorrhoea and syphilis. Sawrey's work examined Bell's theory as "a different opinion", though he deemed it significant enough to devote a substantial proportion of his work to it. Ultimately, however, Sawrey agreed with Hunter's position; after a series of patient histories, and relying heavily upon the assurances that patients were sexually monogamous despite also warning that patient testimonies can be unreliable, Sawrey observed that gonorrhoea could produce lues without chancre and vice versa.[328]

Sawrey could not completely agree with Hunter's theory yet simultaneously resisted affirming Bell's theory. Despite access to the same empirical methods as Bell, and

[325] Note the similarities between the concepts of Fleck's *GDSF* and Kuhn's immature or pre-paradigm science.
[326] Solomon Sawrey, Benjamin Bell and John Hunter.
[327] Though Sawrey later writes that he did in fact form a preconceived opinion – that he expected to find that gonorrhoea and syphilis were distinct. This makes no difference in terms of a Fleckian analysis, since he ultimately resisted the theory that challenged the prevailing system of knowledge within eighteenth century venereology.
[328] Solomon Sawrey, Benjamin Bell and John Hunter, pp. 14–15.

despite having a strong ambition to determine truth and resolve the enduring issues surrounding venereal disease, Sawrey, who had an ostensible openness to new theories, nevertheless ignored the epistemological problems he himself identified. "I submit that it is so rare [to find lues without gonorrhoea], that we cannot, in fair reasoning, say, that it has taken place in the frequent instances of gonorrhoea followed by lues without chancre."[329] As Sawrey stated, Bell's defence is "lame and ineffective".[330] This is because, for Sawrey, comparing gonorrhoea and syphilis made no sense. Gonorrhoea, he contends, is a local disease while lues results from "circulating fluid" becoming contaminated.[331] This historical example, taken from my earlier case study, supports Fleck's epistemological notion that theories that challenge the prevailing system are seen as untenable and contradictory. Thus Sawrey's *Inquiry* provides evidence of the ongoing antagonism between the existing thought style and competing theories.

The example above also vividly exemplifies features of Fleck's harmony of illusions and of the tenacity of systems of opinions. As explained in the previous chapter, Fleck stated that "Once a structurally complete and closed system of opinions consisting of many details and relations has been formed, it offers enduring resistance to anything that contradicts it".[332] The harmony consisted in actively and tenaciously recognizing the prevailing theory and rejecting differing opinions. This is shown by how Sawrey conceded the rarity of gonorrhoea becoming lues but nevertheless contended, with Hunter, that they were one and the same disease. Within this harmony of illusions, Fleck described five stages. As "stage" implies a linear progress, note that I have re-numbered them to simplify this aspect of Fleck's epistemology and to better represent what Fleck was describing.[333] (1) Any contradiction to the completed thought system appears implausible to the collective. (2a) "What does not fit into the system remains unseen"[334] or alternatively (2b) if an exception is seen, it will be concealed. Or, (2c) contradicting observations are persistently and laboriously explained until they fit into the system.[335] (3) There is no logic between concepts and evidence; in other words, individuals see what they want to see, and make sense of the world by any means so long as it adheres to the accepted thought style. These stages, where contradictions to the prevailing theory are

[329] Solomon Sawrey, Benjamin Bell and John Hunter, p. 14.
[330] Solomon Sawrey, Benjamin Bell and John Hunter, p. 25.
[331] Solomon Sawrey, Benjamin Bell and John Hunter, pp. 26–27.
[332] Fleck, p. 27.
[333] In translating from Fleck's original, Trenn and Merton have used the word "stage" to describe the phases of the systems of opinion. I have followed suit due to lack of a comparable translation. Note that Fleck described these stages using numbers in Chapter Two of *GDSF*, though his description of each point does not necessarily require these stages to occur in chronological order.
[334] Fleck, p. 27.
[335] Fleck lists these stages as distinct, however they can either occur at the same time, or not all occur, or occur in a different order.

persistently opposed in some way, are what Fleck named the tenacity of systems of opinion.

I argue that the staying power of the closed system of opinions represented by the unicist position of venereal disease in the eighteenth and early nineteenth centuries is a great example of the tenacity of systems of opinion. This is because, as Fleck stated,

> The self-contained nature of the system as well as the interaction between what is already known, what remains to be learned, and those who are to apprehend it, go to ensure harmony within the system. But at the same time they also preserve the harmony of illusions, which is quite secure within the confines of a given thought style.[336]

Bell argued that the unicist theory was maintained only by ingenious explanation.[337] Fleck's epistemic concepts show that these imaginative methods of maintaining the prevailing theory are actually examples of physicians furthering the harmony of illusions. The extent to which Bell's views were resisted can be seen to be examples of the tenacity of the system of accepted opinions on the matter.

Additional examples of the harmony of illusions can be seen again in the nineteenth century in Sawrey's publication. Sawrey acknowledged contradictions in the established system, but attempted to explain them in a way that suited the prevailing doctrine. Furthermore Ricord, on two decades of empirical syphilography, stated, "adversaries still raise objections, which I have a hundred times refuted".[338] In this instance, the tenacity of systems of opinions is seen to have endured for much longer than current scholars recognise since even Ricord faced opposition to both his scientific method (including his use of the speculum, for example) and his conclusions regarding the distinctness of gonorrhoea and syphilis. In this aspect, however, he relied upon Bell's work to support his own conclusions. To what extent then can Bell's work be seen to act as a proto-idea for Ricord?

6.3 Bell's theory and the tenacity of systems of opinions

Several facets of Bell's work suggest that his theory can be recognized as a proto-idea to Ricord's theory. I will now make a case that Bell's theory is a proto-idea to Ricord's theory by applying aspects of Fleck's epistemology to eighteenth and nineteenth

[336] Fleck, p. 38.
[337] Benjamin Bell, I, p. 19.
[338] P. Ricord, 'First Letter', in *Letters on syphilis* (Printed by D. Clapp, 1853), pp. 1–11 (p. 1) <http://books.google.co.nz/books?id=3NqT_yNs4TYC>.

century's understandings of syphilis. In the first instance, it is immediately clear that Bell's theory fulfils two of the necessary criteria of a proto-idea. The concept of syphilis as a disease without gonorrhoeal symptoms was, in Fleckian terms, the developmental rudiment not only to Ricord's concept of syphilis but also to the scientific concept of today. The other necessary feature of the proto-idea is that it originates from a socio-cogitative foundation. This is evident in Bell's case since he wrote in his preface that he was arguing against the established doctrines as put forth by a multitude of authors, including Hunter. His contemplation of symptoms and treatment as part of a debate on the nature of lues is a straightforward example of socio-cogitative forces at play in eighteenth century medicine.

Although Bell opposed the established system of opinions by his advancement of the dualist theory of venereal disease, he nevertheless provided an alternate interpretation of the nature of the diseases. As Fleck contended, "once a statement is published it constitutes part of the social forces which form concepts and create habits of thought."[339] In this way Bell's work contributed to the development of the syphilis concept both by providing imagery of a double disease, and the opportunity for socio-cogitative influence by publishing as part of a debate within the public sphere. I contend that this is particularly striking through a Fleckian perspective since the occasion of debate falls within an age recognized as the enlightenment; the social and intellectual forces that epitomize the eighteenth century (challenging authority, utilising reason and empiricism to obtain knowledge for example) were an integral feature of the thought style. It was acceptable to challenge the prevailing view and because of this, physicians reflected upon Bell's work as a legitimate medical opinion. In this sense, it makes no difference to the thought collective that Bell opposed the prevailing doctrine, since his ideas nevertheless entered the thought collective legitimately (in the sense that authority-challenging was acceptable) and therefore could prompt social cogitation in this way.

In further support of the notion of Bell's theory as a proto-idea is that Bell's methodology was considered sound; it was his interpretation of evidence that was primarily in dispute. This is significant because his work was acceptable in terms of what could be approved by the thought collective at a fundamental, methodological level. Experiments were frequently noted as a reliable method of garnering knowledge, though physicians frequently resisted them due to strong moral considerations. Bell, unwilling to carry out experiments on his venereal patients, stated that

> experiments upon this subject are productive of such anxiety that they never have been, nor ever probably will be, repeated so frequently as the nature of it would require… experiments would not only require to be conducted with

[339] Fleck, p. 37.

> accuracy, but to be numerous, and to be repeated on a variety of patients under every possible variety of circumstances….[340]

While Sawrey lamented that,

> To make experiments upon our fellow creatures, must be highly distressing, if we could obtain permission. I do not think the natural solicitude of a practitioner for the welfare of his patient, would permit him to follow up an attempt of this nature to a proper extent. We cannot measure the extent of such experiments! nor appreciate health! To the individual we can never be justified (*sic*). Besides, experiments of this nature are not altogether free from error.[341]

This ethical obstacle was circumvented in France by the 1830s. Ricord, at the Hôpital du Midi, was able to perform auto-inoculative experiments on over 2500 patients over a six year period.[342] Under these circumstances, Ricord's advantage was that to a significant extent early proponents on both sides of the debate recognized the importance of experiments, but were unwilling to undertake them due to moral considerations. With an ability to overcome this ethical barrier, Ricord had access to a methodological approach that was already superior to experience and observation of the natural history of the disease. This was his advantage over his predecessors, since Ricord's ability to perform numerous experiments meant his theory was able to gain currency by the thought collective.

In sum, the concept of the proto-idea can be applied to Bell's theory in several respects. He, along with other dualists, proposed a concept of syphilis that was distinct from gonorrhoea. This theory was established through the socio-cogitative forces surrounding enduring debate on this issue. Though Bell's theory was not wholly accepted during his lifetime, he did contribute to one side of a debate in which other venereologists supported his view or at least considered his view as a legitimate (not quack) challenge to then be opposed in further debate. In this way Bell contributed to the socio-cogitative forces acting on the thought collective. His methodology was not in contention but his interpretation was. I contend that this was a contributing factor to Ricord's later success. The dualist concept, having circulated amongst the thought collective for a half-century (and longer in consideration Bell's predecessors), was founded in empirical methods that were part of the eighteenth century medical thought style. Toward the mid-nineteenth

[340] Benjamin Bell, I, p. 33.
[341] Solomon Sawrey, Benjamin Bell and John Hunter, p. vi.
[342] Oriel, 'Eminent Venereologists. 3. Philippe Ricord.', p. 389. This is where discharge from a venereal patient was applied to a different region of that patient's body, with daily observations of any developing symptoms.

century both sides of the debate were known and Ricord was able to fulfil an experiment-based approach through the Paris hospital – a method inaccessible to his British forebears. In Fleckian terms, Bell's theory was clearly a rudimentary concept to that of Ricord's. Further, the enduring debate on the nature of syphilis exemplifies Fleck's notion of a socio-cogitative force. In these ways, Bell's concept of syphilis is manifestly a proto-idea to Ricord's theory, and even to the modern scientific fact of syphilis as a disease entity distinct from gonorrhoea.

Fleck's proto-idea concept adds to a revisionist interpretation of the eighteenth century history of syphilis. It provides a sound explanation for the strong resistance of physicians to Bell's theory, despite Bell himself being a medical authority. This resistance, the tenacity of systems of opinion, explains the enduring debate surrounding the nature of syphilis as physicians attempted to maintain a harmony of illusions.

6.4 The significance of enlightenment thinking about syphilis

Given the significance of socio-cogitative forces on the thought style, the question arises as to what impact the distinctive themes of enlightenment thinking had on how the concept of syphilis developed during the period. Note that the socio-cogitative forces feed into the style of thinking of a given collective which in turn impacts the thought style; it is not a cycle but a mutual process, according to Fleck. The enlightenment is recognised as the setting for several important social and intellectual themes (although, examples contradicting these broad enlightenment themes can be found as well). However, on the whole, it witnessed a widespread uptake of empiricist, rationalist, and authority-challenging modes of arguing. Furthermore, throughout this period, participants were acutely aware of the changes taking place around them. Recall Kant's aphorism, "Sapere aude!".[343] This link to the socio-intellectual climate means that Fleck's concepts can be usefully applied to this era.

The continuing rise of empiricism had a profound effect on eighteenth century knowledge of venereal disease. Bell recognised the importance of experiments but due to moral considerations relied upon the next best methodological approach: experience and observation. Sawrey wrote of a similar dilemma. Regardless of the interpretation of the evidence, experience, observation, and – importantly – experiments, were recognised as key to furthering knowledge in medicine. I argue that Bell's fame and epistemological

[343] Translated as "dare to know". See Stephen Priest, *Enlightenment Philosophy* (Oxford University Press) <http://www.oxfordreference.com/10.1093/acref/9780199264797.001.0001/acref-9780199264797-e-743>.

approach was an important aspect of the later acceptance of his theory, despite early resistance to his conclusions. Without a firm foundation in an empiricist method, it is unlikely that his 1793 publication would have had such an impact upon Ricord since the work would likely to have been considered as quackery in its time. Furthermore, this can be satisfactorily explained using Fleckian epistemological concepts.

Bell adhered to the thought style. By using experiments where he was able, and by documenting observations about his own patients, Bell made use of the accepted method of inquiry. Because of this, his work was assimilated into the thought collective, whilst his conclusions remained outside of the thought style. Bell's work was in public circulation, he rejected the authoritative view, and made use of methods of inquiry that were endorsed by the thought collective. As such, his work was actually characteristic of the prevailing thought style in many ways. As such, the social and intellectual forces of the enlightenment supported Bell's heterodox view and enabled his *Treatise* to be accepted as a legitimate part of debate surrounding the nature of syphilis.

While Fleck argued for the necessity of socio-cogitative forces in the development of knowledge, examples of this can be found throughout the enlightenment theme of authority challenging. The increase in publications refuting scientific authorities throughout the eighteenth century is well known. Scepticism and the ability to author one's own views were an integral feature of the Fleckian thought style throughout this period. A range of contrasting opinions within the medical community regarding venereal disease, despite the dominant unicist view, enabled debate to take place. This supported the socio-cogitative forces upon thinking to flourish, in the form of debate. Even with the closed systems of opinions established, supplementary observations and interpretations such as Bell's and Sawrey's continued to be published. Through the tenacity of the system of opinions, attempts were made to reconcile contradicting evidence with the accepted views. Sawrey's work provides an example of deliberating upon the debate. He wrote that "After observing these different opinions [of Hunter and Bell], it is necessary for a moment, to disregard both, to divest the mind as completely as possible of that prejudice to which human nature is so subject — to observe the course of experience, and diligently to seek truth".[344] He established himself as his own authority, sought to reconcile Bell's evidence with Hunter's theory, and ultimately concurred with the unicist position.

Using reason was integral to enlightenment ways of thinking. The concept of the thought style is an important aspect of Fleck's epistemology and indeed his own experience of the predominance of scientific thinking was an impetus for his developing it. In eighteenth

[344] Solomon Sawrey, Benjamin Bell and John Hunter, p. 3.

century venereology, interpreting evidence in different ways contributed to the advancement of the debate about syphilis. Sawrey, aware of the significance of reason, stated, "the venereal disease has been the subject of much medical reasoning and reflection. That practice alone is worthy of the name of *rational*, which is governed by physiological truths."[345] This quote further exemplified the way in which the socio-cogitative aspect of the debate was reflected in the thought style (incidentally it also demonstrates an isomorphism between medical and general ways of thinking). We can see that the key themes of enlightenment thinking are recognisable within the debate on the nature of syphilis; in Fleckian terms this way of thinking is the thought style. Therefore, bearing in mind that for Fleck, knowledge is a consequence of social forces, we can see that the impact of the enlightenment over the development of the concept of syphilis was significant.

6.5 Evaluation of proto-ideas for historical analyses

Fleck claimed that his pre-idea concept is of heuristic value, but to what extent is it a useful tool for a historical case study such as the early modern debate on the nature of syphilis? In actuality, the pre-idea concept as described by Fleck is not particularly useful for historical research as it stands. Recall that Fleck stated explicitly that links between the proto-ideas and their corresponding facts cannot be substantiated.[346] To strengthen the concept these links must be substantiated. Hindsight is crucial when examining the historical development of knowledge and since Fleck's epistemology is comparative, reflecting upon eighteenth century concepts with respect to those of the nineteenth century (or today) encourages anachronisms. The scholar must scour the history of medicine for proto-ideas that are found within facts of another era, but will find no proof of the relationship since, like the Apatosaurus out of its environmental context, no argument can be made as to the accuracy of the proto-idea and the links themselves remain unsubstantiated. There are times however when confirmed links between similar ideas can be perceived. We have this in our case study with authors, including Ricord, referencing their forebears. When the French physician acknowledges a theoretical predecessor in Bell, the latter's theory becomes a directly linked to the development of knowledge. Vital to the historical applicability of the proto-idea concept are its requisite features: that they must be accepted as fact in their own times; develop from socio-cogitative forces; and facilitate the transference of knowledge to the thought collective as indistinct imagery. Along with these features, however, a discernible link from the proto-

[345] Solomon Sawrey, Benjamin Bell and John Hunter.
[346] Fleck, p. 23.

idea to the fact makes the concept of a proto-idea considerably more useful from a historian's perspective.

Brorson made a similar criticism of the concept of the proto-idea by arguing that the notion of "continuity" weakened Fleck's constructivism.[347] He argued that the tenacity of the proto-idea necessitated the existence of some thoughts outside of the thought style. This can be explained using an example from my case study in Chapter Four to explain what Brorson meant: Hunter's theory that gonorrhoea and syphilis were a single disease remained popular throughout the eighteenth and early nineteenth centuries. Throughout this period and even after the publication of Ricord's *Traité*, Hunter's unicist view persisted. At some point, the increasing popularity of the Bell/Ricord interpretation forced the Hunterian view out of the thought style since it no longer corresponded with the prevailing doctrine. Some individuals continued to favour the declining view, however, and Brorson picked up on this grey area within Fleck's epistemology; that is, the problem of how an individual can remain as part of the thought collective whilst adhering to a theory no longer accepted in the thought style. On reflection though, Brorson's understanding of the thought collective is too narrow.

According to Fleck, "every individual belongs to several thought collectives at once."[348] Since the thought collective is composed of individuals, it is entirely conceivable that an idea within the thought style of a thought collective in an unrelated field might be transferred into a different thought collective and thought style; this can happen by way of the individual. At that stage the idea exists outside of the thought style, but within the thought collective by virtue of the individual member. It remains outside of the prevailing thought style until it gains acceptance by the collective. Furthermore, recall that a thought collective is comprised of an esoteric circle of specialists and a larger exoteric circle of interested laymen. It is straightforward enough to see how members of the exoteric circle can, for example, contribute ideas outside of the thought style given that they are not privy to the highly specialized knowledge of the esoteric circle, but understand information in a different and simplified way to the specialist.

The social constructionist concept of isomorphism provides an appropriate analogy here. In its broadest terms, "isomorphism" involves one feature of a society resembling others.[349] Wright and Treacher described this concept, arguing that types of medical knowledge, and the structure of that knowledge, corresponded with other features of a

[347] Brorson, Stig, 'Ludwik Fleck on Proto-ideas in Medicine', *Medicine, Health Care and Philosophy*, 3 (2000), 147–152 (p. 150).
[348] Fleck, p. 45.
[349] Paul J. DiMaggio and Walter W. Powell, 'The Iron Cage Revisited', in *The Sociology of Organisations*, ed. by Michael J. Handel (Thousand Oaks, 2003), p. 245.

particular society.[350] The very existence of debate, the epistemological issues that attracted eighteenth century physicians, the self-aware employment of rationality, and even the tension of physicians challenging orthodox medical theories (unicism about the nature of syphilis, for example) whilst resisting theories that were too divergent (such as dualism) are strong themes within the intellectual component of the enlightenment, and isomorphic to the broader socio-political and cultural climate. My postulate is that a proto-idea should, in addition to its basic features, be identifiably linked to a later idea. This reduces the potential for any preceding information to be termed a proto-idea on an ad hoc basis. It also strengthens the heuristic aspect of the proto-idea by providing the means to ward off Brorson's criticism concerning continuity. To this extent, Brorson's critique of the continuity factor of proto-ideas is not well founded.

A different issue however is the definition of the proto-idea. Given that Bell argued for a separation of the gonorrhoeal and syphilitic diseases, his theory can be construed as a proto-idea for Ricord. However, the concept of the proto-idea is sufficiently vague as to make it a questionable tool for analysis. This is because essentially any idea known to people at one time can be conceived of as a proto-idea to a fact known to people at a later time. With some imagination, the history of the knowledge of any fact could be traced back almost anywhere — recall the example of ancient atomism as the proto-idea for atomic theory today. Fleck raised this concern himself, stating that "sometimes a proto-idea could be found for a scientific discovery only through casuistry."[351] Given the heuristic nature of his work, does this not mean that there is room in Fleck's epistemology for sophistry and intuition? As long as links between proto-ideas and facts need not be substantiated, it remains too easy to find proto-ideas in history. That it can be difficult to determine an actual proto-idea and then also be problematic to argue against a specific idea as a proto-idea are substantial weaknesses in Fleck's epistemology. The criteria for proto-ideas needs some form of restriction on what can and cannot be termed a pre-idea to the fact under inquiry. A link in a text to a name, a footnote reference, or some indication that the author was part of a school of thought should be required, at least. In light of this, the usefulness of the proto-idea as an epistemic and even analytic concept is limited.[352] Altering the criteria that must be satisfied for an idea to count as a

[350] Peter Wright and Andrew Treacher, *The Problem of medical knowledge : examining the social construction of medicine* (Edinburgh: Edinburgh University Press, 1982), pp. 11–12.
[351] Fleck, p. 24.
[352] I think that, as I earlier described, having an identifiable link between a pre-idea and the knowledge to which it becomes a part, strengthens this aspect of Fleck's epistemology and reduces the ways in which any similar idea can be termed a proto-idea, whilst also reducing the intuitive tendencies that come with a heuristic view of knowledge development in history. To base an example upon one of Fleck's, to atomistic world does not equal syphilitic bacteria, this is not a proto-idea but could be conceived as one. Direct links would show that it is not, but I consider that intuition makes sense of this notion.

proto-idea, by requiring that links to the corresponding fact can be verified, would make the concept a much more valuable tool for historians of knowledge.

6.6 Conclusion

This chapter has argued that Bell's dualist theory is a proto-idea for Ricord's theory and therefore of the modern concept of syphilis. It demonstrated that the harmony of illusions, a central idea within Fleck's work, is vividly exemplified within the contexts of eighteenth and early-nineteenth century venereology. The chapter considered how key themes of enlightenment thinking contributed to the development of knowledge about syphilis, providing the intellectual and social impetus for physicians to assert their theories by way of public debate. It also argued that the concept of the proto-idea as it stands in Fleck's monograph, is too vague to be considered useful for historical analyses. Strengthening the criteria of proto-ideas by insisting that links between them and facts must be verifiable provides a stronger foundation for employing Fleck's epistemology in the study of the history of knowledge.

In the next chapter all of the key themes of this thesis are woven together to show how Fleckian concepts can be applied to the history of medicine and provide new insights into the development of knowledge.

7. Conclusions

In this thesis I have researched a debate about the nature of syphilis in enlightenment Britain. It is a received view in historiography that syphilis and gonorrhoea were recognized as separate diseases only in the nineteenth century. It has even been suggested that "nothing new" happened in the eighteenth century, and that this was a dark age before the dawn of modern medicine.[353] This thesis has challenged this view, focusing on enlightenment contributions to the field of venereology. It showed that the eighteenth century witnessed fertile and dynamic debate between champions of the rival unicist and dualist theories of syphilis. To some extent, given the liveliness of debate in other scientific endeavours during the enlightenment, this finding was anticipated.

My contributions to the interdisciplinary field of the history and philosophy of science are three-fold. First, I have challenged the historiographical claim that Ricord was a pioneer in venereology. I presented evidence that syphilis and gonorrhoea were recognized as distinct disease entities by Scottish surgeon Benjamin Bell in 1793, and that he presented compelling arguments for this theory. Second, by examining the wider context of this debate and shedding light on the influence of enlightenment thinking, I have contributed to the small but growing literature about eighteenth century medicine. Third, I have demonstrated that aspects of enlightenment medical thinking conform to Ludwik Fleck's theory about how scientific knowledge develops. This provided a novel application of Fleck's epistemology to an area of history he was less concerned with, given his interest in the Wassermann reaction (an early twentieth century innovation).

7.1 Syphilis and gonorrhoea as different diseases in the eighteenth century

Syphilis presented as a complex puzzle to enlightenment physicians. Chapter Two described the stages and variable symptoms, emphasising the similarities between syphilis and other diseases. Important themes associated with the history of syphilis were described in Chapter Three. Both of these chapters fed into Chapter Four, which examined a complex debate about the nature of syphilis in eighteenth century Britain. Historiographical claims that Ricord was the first to distinguish between syphilis and gonorrhoea were discussed first. Subsequently I proposed possible reasons why historians have overlooked Bell as an important contributor to the modern concept of syphilis. One of these reasons is simply that the nineteenth century is the focus of historical research to the exclusion of eighteenth century developments. A second reason is that, to the extent

[353] Quétel, *History of syphilis*, p. 76; Williams, p. 66.

that eighteenth century figures do receive any historiographical attention, this attention is focused primarily upon Hunter as a unicist and his mistaken understanding of syphilis, to the exclusion of his dualist rivals of the time. As a prominent and celebrated London physician, the significance of Hunter's opinion may have been overemphasised by historians; we know, for example, that public debate did take place, and that medical men of the time were openly challenging his theory of the unicity of syphilis and gonorrhoea. A third reason was that Ricord's methodology was more obviously scientific; he made use of the speculum in patient examinations mandatory for physicians working in his department at the Hôpital du Midi, in addition to his experimenting on hundreds of inpatients. However, I demonstrated that enlightenment physicians did observe experiments where they were able, but resisted them in general due to concerns for patient welfare. Syphilis, after all, was not curable until the twentieth century.

Chapter Four turned next to Bell and his methodology. Systematic observations of numerous case studies and rational interpretation were used by Bell to support his theory that syphilis and gonorrhoea were indeed two distinct diseases. His 1793 publication advanced his position. He also showed why the diseases also required different modes of treatment. Bell's theory was in public circulation, and contributed to the on-going debate about the nature of syphilis. Other physicians, such as Sawrey, used both Hunter and Bell's work to inform their own opinions. We know that nineteenth century physicians, including Ricord, were aware that this particular debate had persisted throughout the eighteenth century. While Ricord may have contributed to bringing the debate to a close, he certainly did not pioneer the idea that syphilis and gonorrhoea were distinct diseases. After all, it was 49 years after Bell's work that Ricord published his *Traité* (1842).

This finding remedies a gap in the history of syphilis. I have used primary source evidence to show that enlightenment physicians had largely resolved the puzzle presented to them by patients suffering from venereal diseases. Celebrated in his own time for his contributions to surgery, and even acknowledged by historians as the "father" of Scottish enlightenment surgery, Bell was an important focus for my case study. His contemporary fame and prominence as an enlightenment surgeon meant that it is easy to find peer reviews of his theory. In reading these reviews, it quickly became evident that his *Treatise*, which circulated among physicians in both Scotland and England, characterised enlightenment values while also clearly and self-consciously opposing Hunter's authoritative view. My second finding, outlined below, stemmed directly from this research.

7.2 Aspects of enlightenment medicine were vibrant and dynamic areas of scientific inquiry

The debate between Hunter and Bell, discussed in Chapter Four, revealed that eighteenth century medicine, specifically venereology, prioritised enlightenment values. Contrary to historiography that claims the era was a "dark age" for medicine, I contended that, at least where venereology is concerned, it was an important headwater of modern medicine. This notion was confirmed in Chapters Five and Six where by analysing the period through a Fleckian conceptual frame, the influence of enlightenment thinking on venereology was made clear. Some of the key characteristics of the period included the use of empiricism, rationalism, and challenging authoritative views. Fleck's concepts of the thought style and thought collective are useful in explaining how these enlightenment tenets came to be included in medicine. Bell's work was characteristic of the era, as he systematically refuted Hunter's theory of the unicity of syphilis and gonorrhoea. He was part of the thought collective, adhering to the scientific thought style that prevailed. It was also shown in Chapter Six that though his views were not accepted until the mid-nineteenth century, Fleck's harmony of illusions sufficiently explained the enduring resistance and increasingly imaginative lengths that physicians went through to maintain the dominant thought style. Fleck's epistemic concepts served to illuminate the vibrancy of venereology in the eighteenth century, and show the era to be an interesting, dynamic, and public area of scientific inquiry.

This finding helps to challenge the idea that the nineteenth century should be regarded as the dawn of modern medicine. The enlightenment has often been regarded as setting the scene for the modern world,[354] yet the same has not been argued in terms of the medicine of the era. Historiographical emphasis on therapeutic efficacy and the professionalization of the medical domain in the nineteenth century have resulted in eighteenth century achievements being overshadowed (see Chapter One). Chapters Four and Six illuminated some characteristic features of enlightenment thinking in venereology, and illustrated how those engaged in debate made use of such tenets as empiricism, reason, and public deliberation.

[354] William Bristow, 'Enlightenment', *Stanford Encyclopedia of Philosophy*, ed. by Edward N. Zalta <http://plato.stanford.edu/archives/sum2011/entries/enlightenment/> [accessed 26 January 2013].

7.3 Fleck's epistemic concepts can provide insights about the history of knowledge

Applying Fleckian epistemic concepts to the history of medicine provided novel insights about how the discipline was practiced. Fleck based his social epistemology upon the history of syphilis with a view to examining a particular twentieth century event, the implication of "bad blood" in the Wassermann reaction. Aspects of this were discussed in Chapters Three and Five. Though Fleck's epistemic concepts were devised particularly to show how non-scientific ideas came to be an integral component of a scientific test, his concepts can be used to examine different areas of the history of knowledge. Chapter Five described the key concepts of Fleck's epistemology, while Chapter Six examined them in the context of enlightenment Britain. Fleck's own history of syphilis only briefly touched upon this time period and he was primarily concerned with the notion of bad blood. However by showing how knowledge advanced through socio-cogitative reflection, and how physicians working in the enlightenment made use of particular methods of inquiry, Fleck's concepts emphasised the significance of the intellectual context of physicians working in eighteenth century Britain. In this way I was able to show that concepts within *GDSF* can provide insights about the history of knowledge.

By using Fleckian concepts, I have been able to show that eighteenth century medicine was an important precursor to modern medicine. As Chapter Five demonstrated, Fleck's concepts were largely considered a forerunner to Kuhn's influential philosophy of science. Over the past several years there has been increasing interest in Fleck's *GDSF* as an important social epistemology in its own right. Fleck's epistemic concepts are clearly defined and independent from his history of the Wassermann reaction. As such, his central concepts of the thought collective, thought style, proto-idea, and harmony of illusions can be freely applied to other areas within the history of knowledge. In light of this, I applied them to eighteenth century knowledge about syphilis. By using Fleck's concepts I could show that the current scientific understanding of syphilis can be traced back to the eighteenth century. The proto-idea was of particular importance in this respect (discussed in Chapter Six). Since the nineteenth century was so often considered the origins of modern medicine, my finding challenged this previous scholarship. Applying Fleckian concepts to enlightenment venereology emphasised the intellectual context and made it clear that eighteenth century venereology was rather an important contribution to modern medicine. Further, the concept of syphilis as it was understood in the eighteenth century provided the foundation of the modern scientific understanding of the disease.

The history of syphilis in eighteenth century Britain has been presented in a new light. Serious and deliberate scientific inquiry took place as physicians and surgeons attempted

to resolve the puzzle their syphilitic patients presented to them. Patients with a double venereal disease were the most perplexing. While many historians have claimed that the famed French physician Ricord resolved the issue by discerning that syphilis and gonorrhoea were two diseases in 1842, this distinction was in fact made much earlier. By using eighteenth century medical sources and Fleckian social epistemology, I have shown that the Scottish surgeon Benjamin Bell expressed this distinction in 1793. Moreover it was clear that the enlightenment tenets of empiricism, rationalism, and an ability to counter authoritarian views, pervaded venereology during this time. Instead of a dark age in medicine, this thesis illuminated vibrant public debate based upon empirical evidence and reason. As such, enlightenment medical knowledge was an important contributor to modern scientific medicine and should be re-considered by scholars in this light.

7.4 Further areas of inquiry resulting from this research

There are several exciting leads to further areas of inquiry resulting from this research. In the first place, a more in depth study of the contributions of eighteenth century venereology to modern medicine could prove a rewarding endeavour. This thesis marks the beginning of literature involving Fleckian interpretations of enlightenment venereology, and focused on one debate, examining a few of the physicians that were involved. However, by analysing the debate across a larger time scale, moving into the seventeenth century for example, it might be possible to show that the origins of the modern concept of syphilis can be traced further back in history. Similarly, delving further into how treatments influenced diagnoses of syphilis could shed more light onto how the disease was understood; Bell claimed that mercury treated syphilis but not gonorrhoea. Examining to what extent physicians relied upon retrospective diagnoses by treatment would be fascinating. Thus, widening the scope of this thesis and analysing more medical treatises and in a broader time period could reveal further insights about how the enlightenment contributed to modern medicine.

Additionally, focusing on knowledge contributions rather than therapeutic efficacy can potentially illuminate many more examples of scientific medicine in the eighteenth century. While my focus was on knowledge about syphilis, applying Fleckian concepts to other areas of medicine, such as infectious diseases or pathology in general, may emphasise other early developments. Since the history of medicine has so frequently focused on whether treatments worked or not, this aspect has been comparatively under researched. Analysing the eighteenth century in this way could significantly alter our understanding of medicine during that period. Further research in this area has real

potential to present eighteenth century medicine in a new light, as a major headwater of modern medicine.

Glossary

Condylomata. Raised growths on the skin, resembling warts, typically located in the genital region.

Dualist. Term to describe the view that there are at least two, not simply one, venereal diseases. In the eighteenth century this mostly referred to the contentious demarcation between gonorrhoea and syphilis.

Epistemology. Theory of knowledge. From the Greek, epistēmē (knowledge).

Pathophysiology. Physiological processes associated with disease.

Prokaryote. A microscopic, single-celled organism which has neither a distinct nucleus with a membrane nor other specialised organelles, including bacteria and cyanobacteria.

Proto-idea or pre-idea. An idea linked to a fact. A concept devised by Ludwik Fleck and used in comparative epistemology.

Serology. The scientific study of blood serum, especially with regard to the response of the immune system to pathogens or introduced substances.

Thought collective. A community of specialists. An epistemological concept devised by Fleck to demonstrate social influences on scientific endeavour.

Thought style. The prevailing worldview of particular thought collective at a particular time. An epistemological concept devised by Fleck.

Unicist. Term to describe the view that a variety of venereal symptoms can be ascribed to a single, venereal disease. In the eighteenth century, this most often referred to the gonorrhoea-syphilis debate.

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