

What factors influence Galen's development of a theory of black bile for his explanation of health and disease in the body?

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Abstract

Galen's theory of black bile is strongly influenced by his aim to bring together a wide range of material from the work of different physicians and philosophers that begins with Hippocrates. This has caused there to be a large amount of inconsistencies in his writing on black bile. There has been a tendency in modern scholarship either to try to resolve these inconsistencies or to ignore them completely. In many cases there has been an emphasis on the definition of black bile in the Hippocratic *On the Nature of Man* as the most important basis for understanding Galen's characterisation of black bile. My analysis will challenge this assumption concerning the dominance of *On the Nature of Man* for Galen's use of black bile in his explanation of health and disease in the body. I shall show that an investigation of the way that Galen characterises the physical properties and function of black bile reveals that it is better to understand his use of this humour in terms of his attempt to bring material from a wide range of authorities together to support the arguments that he presents in his treatises. Galen defines black bile as three distinct types of substance that differ in physical properties in order to account for the different ways that this humour is characterised and defined in the various medical sources that he draws upon. However, he is unable to produce a theory of black bile without inconsistencies relating to a number of issues that include such factors as his naming of the different forms of black bile and his concept of authenticity of texts in the Hippocratic Corpus. Galen's strategy is to make his audience believe that there is a comprehensive and well-defined theory of black bile that originates in the work of Hippocrates and was followed by certain physicians and philosophers afterwards. But in reality this is just a facade and Galen defines and uses black bile in many different and inconsistent ways for his arguments and refutations that cannot always be reconciled with the content of his sources.

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Research Question

The concept of black bile as a substance responsible for health and disease is an interesting topic in ancient medicine. The origin of black bile appears to have begun towards the end of the fifth century BCE, when it was defined as a fundamental substance in the body, alongside blood, phlegm and yellow bile in the Hippocratic *On the Nature of Man*. But, apart from this one treatise, black bile was regarded mostly as a residue, waste product or was completely ignored in the medical theories of many physicians and philosophers. Black bile might have remained a fairly insignificant substance in medical writing, if it was not for Galen's reference to the superiority of the four-humour system of *On the Nature of Man*, which raised the status of black bile as an important substance for the explanation of health and disease in the body. It is easy to understand why Galen would use blood, phlegm and yellow bile as fundamental substances in his theory of health and disease, as all three were considered by many physicians and philosophers to be essential in the understanding of how health and disease occur in the body. However, black bile did not seem to be as highly regarded in medicine and so required Galen to defend the use of this humour in his medical writing. Therefore, out of the four humours, black bile represents the greatest challenge for Galen, as he attempts to explain how this substance can be both an essential humour that keeps the body healthy, but also is the cause of the most deadly diseases. In addition, Galen's justification of the very existence of black bile provides an excellent insight into his polemical strategy for the refutation of the theories of his rivals, such as Erasistratus and Asclepiades.

There has been relatively little work done on the analysis of Galen's use of black bile across the large number of extant texts in the corpus. Most of the discussion in modern scholarship relates to Galen's characterisation of black bile in terms of his adoption and development of the four-humour system of *On the Nature of Man*. There is some acknowledgement that Galen has developed his black bile beyond this Hippocratic treatise, but no major analysis of the different ways that he describes the physical appearance and important qualities of black bile in his writing, or any comprehensive investigation of how black bile is produced in the body and its role in the cause of certain types of

disease. There is a recent study by Jacques Jouanna, which discusses some of the problems relating to potential inconsistencies in Galen's writing on black bile in different treatises. However, this does not fully explore the different ways that Galen characterises the physical appearance and qualitative faculties of black bile or the way that Galen explains the cause of some potentially terminal illnesses by black bile. Therefore, in the fields of scholarship on ancient medicine and the history of medicine, there are two main issues that need addressing in terms of Galen's presentation of black bile. Firstly, there is a tendency to either resolve or ignore any inconsistencies in Galen's account of black bile, which over-emphasises the importance of the four-humour system of *On the Nature of Man*. This approach does not take into account other important factors that influence Galen's writing on black bile. Secondly, the current scholarship does not provide enough analysis on Galen's definition and characterisation of different types of black bile in terms of the influence of his strategy to bring together a wide range of sources and how he uses black bile in different contexts in his treatises.

In this thesis, I propose to answer the following question: *What factors influence Galen's development of a theory of black bile for his explanation of health and disease in the body?* This will provide a more comprehensive analysis of the way that Galen defines, characterises and uses black bile in his writing. There are three main areas that I believe need to be addressed further to improve our understanding of how Galen uses black bile in his biological theory of health and disease. The first is to show that the common perception of the dominance of the four-humour system of *On the Nature of Man* is something that has been intentionally presented by Galen, but does not have as much of an influence on his characterisation of black bile, as he would like his audience to believe. Secondly, I will provide a more thorough analysis of the important physical and qualitative properties that Galen uses to define black bile and how this helps him to explain how this substance causes both health and disease. Thirdly, I am going to investigate how we should understand Galen's presentation of black bile in terms of the way that he manipulates the evidence he uses to support his doxographical and historical presentations, as well as his polemical arguments to refute the theories of his rivals. In addition, I will be analysing how Galen's view of the authenticity of texts in the Hippocratic Corpus may influence the way

that he presents black bile in his writing. One area that makes my research different is that I am going to investigate the way that Galen defines and uses black bile in relation to the specific context of the whole, or part, of a particular treatise. This is important, as there is evidence to suggest that apparent inconsistencies in Galen's definition and characterisation of black bile can be explained in terms of the specific argument he is addressing.

1 Introduction

1.1 Structure of the thesis

This introductory chapter is divided into two main parts. The first part is a literature review of the main modern scholarship from the domains of ancient medicine and the history of medicine. I have summarised these sources in terms of the analysis of Galen's presentation of the black bile humour within his biological theory of health and disease in the body. The order is roughly chronological, starting with some of the most important studies in the 1960s and ending with the most recent analysis of Galen's writing on black bile by Jacques Jouanna in 2009. These are the most significant works that contain analysis and information on the way that Galen characterises and uses black bile in his medical theory, rather than just a reference to the presence of black bile in a particular text. The aim of this literature review is to assess what research has been done into the description, characterisation and function of black bile within Galen's medical writing, along with the important factors that have influenced his work. The second part of the introduction contains information on the background and context of black bile in the various different medical theories created by physicians and philosophers from the fifth century BCE to the second century CE. This part of the introduction is further divided into a number of sub-sections, which provide information on various important aspects relating to black bile in ancient medicine. I start with a short section that defines what I mean by 'humoral theory' for the overall context of black bile being classified as a humour in ancient medicine. Next, I have included a summary on the question concerning the existence of black bile in ancient medicine, in relation to other humours, such as blood, phlegm and (yellow) bile, before it was characterised as a fundamental substance in the Hippocratic *On the Nature of Man*. This is followed by a section on the way that black bile is used in different medical theories in the Hippocratic Corpus and other sources produced by various physicians and philosophers. The next two sub-sections are on Galen's presentation of black bile within the context of the four-humour system of *On the Nature of Man*. Galen's strategy is to present black bile as part of this humoral theory that he attributes to Hippocrates himself. He then lists a number of

prominent philosophers and physicians, who he claims have followed Hippocrates' humoral theory in their own medical writing. We find that Galen has manipulated the content of the Hippocratic Corpus and the works of these philosophers and physicians to make it seem that this four-humour system has been used and developed by some important medical authorities in the several centuries after the fifth century BCE. Galen uses this in his polemical arguments to refute the theories that explain health and disease in the body that were used by his rivals, such as Erasistratus and Asclepiades.

In chapter two, I investigate Galen's explanation of how and why Hippocrates uses philosophy in his medical writing. Galen's view is that a physician must understand the importance of three areas of philosophy, logic, physics and ethics in medicine. We shall see in *The Best Doctor is also a Philosopher* that Galen presents Hippocrates as if he had been the first to use these parts of philosophy for medical practice. The aim of this chapter is to show how Galen's portrayal of Hippocrates as a physician-philosopher might help us to understand how he can present some of the Hippocratic treatises as being in agreement with the work of prominent philosophers, such as Plato and Aristotle. In particular, we shall see that this has an impact on the way that Galen writes about black bile. There are three main areas that are relevant to Galen's presentation of black bile. These are Galen's attempt to show agreement between Hippocrates and Plato on the tripartite division of the soul in *On the Doctrines of Hippocrates and Plato*, Hippocrates as the originator of all parts of element theory in treatises such as *On the Elements According to Hippocrates* and Hippocrates as a teleologist in *On the Utility of the Parts* and *On the Natural Faculties*. Galen's reference to the Hippocratic *On the Nature of Man* will be important for our understanding of how he can provide evidence for Hippocrates' use of philosophy, specifically in element theory. But, we shall see that other Hippocratic treatises are also important when Galen attempts to show agreement between Hippocrates and Plato on the subject of the tripartite division of the soul, and also for his claim that Hippocrates was a teleologist. In all these cases, we shall see how Galen manipulates the Hippocratic and philosophical sources in order to show agreement, but also that they provide information to help us understand how and why Galen is able to write about

black bile in the way that demonstrates a close alignment of the theory of 'Hippocrates' with that of Plato, Aristotle and other authorities.

In chapter three I will discuss the important issues relating to Galen's determination of the authenticity of the various treatises within the Hippocratic Corpus. At the beginning of this chapter there is a summary of what is currently known about the development of the medical texts attributed to Hippocrates, which were collected at the library of Alexandria starting in the late fourth century BCE.¹ There is some evidence to show that this collection of medical texts was read, commented on, glossed and edited by some of the most prominent physicians from the fourth century BCE up to the time of Galen in the second century CE. This is useful to provide a background on the general view of what the 'Hippocratic Corpus' actually was when Galen started to train as a physician. This will help us to understand how he approaches issues concerning the consistency of authorship of the different Hippocratic works. The main section of this chapter contains analysis of Galen's view of the authenticity of some of the texts from the Hippocratic Corpus on the basis of language and doctrine. I am only analysing the Hippocratic texts that I have used for my research, rather than including all the known treatises from the Hippocratic Corpus. My selection of Hippocratic treatises is based on two main factors. Some texts are chosen because they contain material on black bile or phenomena relating to this humour. Others are selected because they are important for some points of comparison with Galen's use of black bile in his medical writing, but do not actually contain material on black bile.² One particular aim of this chapter is to explain the reasons why Galen has identified the first part of *On the Nature of Man* as being written by Hippocrates, despite this treatise not being included in the list of best and most genuine Hippocratic works by earlier commentators. One consequence of selecting the humoral theory of *On the Nature of Man* as the best explanation of health and disease in the body, along with identifying other texts in the Hippocratic Corpus as being genuine, is that Galen is implying that there is agreement in terms of the four-

¹ See Vallance, 2000: 95-113.

² For more information on my selection of the most important texts from the Hippocratic Corpus that are quoted, referenced by Galen, or are potentially influential on his writing relating to black bile, see chapter 3 'Galen's opinion on the authenticity of the individual treatises in the Hippocratic Corpus', sections 3.2-3.4.

humour system on the basis of common authorship of these treatises. This causes two main problems for Galen in terms of his presentation of black bile. Firstly, there are the inconsistencies between the characterisation of black bile in *On the Nature of Man* and the other texts that he has identified as Hippocratic. This is particularly problematic in the treatises that do not contain any material on black bile at all. The second problem for Galen is that he needs to describe the physical form and properties of black bile and explain how this humour can both be beneficial to the health of the body and cause the most severe diseases. Galen cannot achieve this if he restricts himself to the content of *On the Nature of Man*. Therefore, he must draw upon the material on black bile in other texts from the Hippocratic Corpus, as well as other non-Hippocratic sources. We shall see that Galen has a strategy for this, which is related to the way that he engages with the arguments in individual treatises and how he manipulates his sources to make it appear that there is consistency between them.

There are three key areas that I want to investigate to understand the important factors that have influenced Galen's writing on black bile. Firstly, it is important to understand Galen's characterisation of black bile in relation to its physical appearance and the properties that explain how it functions as a humour in the body. Secondly, I will be investigating Galen's view on how black bile is managed in the body, from its generation from nutriment to its removal if it is potentially harmful to our health. Lastly, one of the most important areas for our understanding of how and why Galen uses the black bile humour in his medical theory is because it is responsible for a range of diseases, some of which are deadly, and so Galen provides detailed advice on how to produce correct diagnoses and prognoses on the illnesses caused by black bile. I have chosen seven of Galen's treatises for my detailed analysis of his writing on black bile. Firstly, there is the text that he wrote specifically on the black bile humour, called *On Black Bile (At. Bil.)*.³ This treatise contains information, not only on the physical description of black bile and its cause of different types of disease in the body, but it also has some examples of Galen's polemical argument

³ There has been some debate over whether *On Black Bile* can be considered as a genuine work by Galen. However, Jouanna reports that some studies into the Arabic sources on Galen's bibliographical works, *On My Own Books* and *The Order of My Own Books*, provide evidence that this was an authentic treatise by Galen. See Jouanna, 2009: 243-245.

against the work of Erasistratus relating to the importance of understanding the function of black bile in the body. Next, I have chosen the following three treatises: *On the Doctrines of Hippocrates and Plato (PHP)*, *On the Elements According to Hippocrates (Hipp. Elem.)* and *Commentary on On the Nature of Man (HNH)*. These are important sources, not only for Galen's justification for selection of the four-humour system of *On the Nature of Man*, but also because they contain examples of the way that Galen manipulates Hippocratic and other medical sources to show that Hippocrates was the originator of element theory in medicine. The treatises *On the Doctrines of Hippocrates and Plato* and *On the Elements According to Hippocrates* are particularly important for Galen's view that Plato and Aristotle followed the work of Hippocrates in terms of the use of qualities, elements and humours for their medical theories. In addition, I have chosen *On the Natural Faculties (Nat. Fac.)* and *On the Utility of the Parts (UP)* because they provide information on the reasons that Galen gives for his defence of the existence of black bile and its importance in explaining health and disease in the body. Finally, I have included *On Mixtures (Temp.)*, as it describes Galen's theory on how the mixtures of the elemental qualities explain health and disease in the body. In this treatise, the four humours are given a lesser role in the cause of health and disease. However, it contains some useful information on the production of 'black bile' from the action of heat on blood and yellow bile. Galen also says that *On Mixtures* is an essential book to read before moving on to more complicated works, such as *On the Elements According to Hippocrates*.⁴ These seven treatises are important for the specific details on Galen's characterisation of black bile in terms of its physical appearance, key qualities and function for health and disease in the body.⁵ But they also contain the context of Galen's presentation of black bile in different scenarios, such as agreement between the doctrines of Hippocrates and Plato or refutation of the theories of Erasistratus and Asclepiades. I believe that

⁴ For example, *Ars. Med.* XXXVII (I 407,8-408,8 K); *Hipp. Elem.* 9.32-35, CMG V 1,2, p. 136,13-23 De Lacy (I 489,2-16 K); *HNH*, I.34, CMG V 9,1, p. 44,3-10 Mewaldt (XV 83,1-10 K).

⁵ These seven Galenic treatises contain a large amount of material on his biological theory and his use of the black bile humour to explain health and disease in the body. They are important for my analysis, as they contain references to black bile in different forms, as an essential humour for health and a pathogenic substance that causes potentially deadly diseases. These texts also contain examples of Galen's terminology such as 'black bile' (μέλαινα χολή) and 'melancholic humour' (μελαγχολικός χυμός), which are important for our understanding of the way that he presents this substance, either as a single concept of a black bile humour, or as three distinct types of black bile.

analysis of the specific context that Galen is writing in provides essential information to understand the way that he characterises black bile. In addition to my main focus on the content of these seven treatises, I will be also referring to the content of a large number of other texts from the Galenic Corpus and other important sources.

These three areas will be covered separately in three chapters. In chapter four I will analyse Galen's characterisation of the physical and qualitative properties of black bile. This serves two purposes for Galen. Firstly, the physical structure and qualitative properties of black bile allow us to understand how it functions in the body, either to promote health by its nourishment of parts of the body that require the qualities it possesses, or to explain how it can cause harm to the body. The fact that black bile can be both an essential humour for our health and the cause of some very deadly diseases by its corrosive properties might be seen as a potential problem for Galen. However, we shall see that he resolves this issue by postulating three main types of black bile, one that is natural and ideal, one that is natural but non-ideal and another that is unnatural with specific properties that explain how it can cause severe injury to parts of the body. This system of three different kinds of black bile is important for us to understand how Galen can incorporate a wide range of sources, Hippocratic and non-Hippocratic, medical and philosophical, to produce a theory that can account for both health and disease relating to substances that are collectively named black bile. In chapter five I will investigate Galen's theory of how these different types of black bile are produced and managed in the body. Galen provides much more information on the removal of black bile than on its generation in the body. Therefore, there will be more analysis on the way that Galen defines the spleen as the organ that attracts and removes 'black bile' from the body. We shall see that Galen's explanation of the management of black bile depends on the context of his writing in a particular treatise. Chapter six will be on Galen's explanation of black bile as the cause of disease. At the beginning of this chapter, I will focus on Galen's writing about two specific types of disease relating to black bile. The first is the melancholy illness that by its very name has been associated with black bile in early medical theories. The second disease that I am going to write about is quartan fever. This illness is important, as it provides a useful insight into the way that Galen attempts to

demonstrate that Hippocrates was the first to associate this fever with black bile. I will then discuss the important issues concerning some more general aspects of black bile in Galen's aetiology of disease with reference to its potential to cause terminal illness in the body, along with his advice on how black bile can be correctly identified in the waste products evacuated from the body during illness. The analysis in these three chapters will not only show how Galen characterises and defines the function of the three main types of black bile, but also how the context of the particular treatise influences the way that he presents black bile.

1.2 Review of literature on Galen and black bile

One of the earliest and most influential works of modern scholarship on Galen's characterisation of black bile is Schöner's study of humoral theory in the 1960s. Schöner attempts to trace the presence of blood, phlegm, yellow bile and black bile in the work of the most important authorities on aetiology from the time of Hippocrates to that of Galen and afterwards. There is a general emphasis on Galen's presentation of black bile as being a development from the four-humour system of the Hippocratic *On the Nature of Man*. Therefore, black bile is shown to be one of the four humours of the body and has its own set of corresponding qualities and properties. Schöner summarises Galen's characterisation of black bile as being sharp and sour in flavour, 'cold and dry' in quality, and is associated with the cosmic 'element' earth, the spleen in the body, the season of autumn, the mature stage of life and the quartan fever. He suggests that Galen has gone beyond the four-humour system of *On the Nature of Man* by drawing upon a wider range of philosophical and medical theories. However, he does not provide any analysis of exactly which sources Galen has used and the reasons for the different presentations of black bile in his writing.⁶ Alongside this we also have the work of Klibansky, Panofsky, and Saxl on Galen's view of the cause of the melancholy illness. They refer to Galen's use of the term 'melancholic humour', which they say is one of the four humours, but that is different from the type of black bile that thickens and chills the blood. This characterisation of black bile is based on the content of Galen's *On Affected*

⁶ See Schöner, 1964: 86-93.

Parts, which they use to present Galen's theory of black bile in terms of two distinct types. One is a natural black bile that is thick and cold, which, as one of the four humours, can only cause harm in large quantities. The other type is diseased black bile that is not one of the four humours and is produced from the combustion of yellow bile. This kind of black bile always causes disease in the body.⁷ A little later Flashar, also writing on the topic of melancholy, uses the content of *On Affected Places* to discuss Galen's view of the cause of melancholy by black bile in three ways. The first cause is where black bile is generated from the blood in the whole body. The second process is when black bilious blood can be found only in the brain. Thirdly, melancholy is caused from the generation of gas in the stomach. Flashar does not believe that Galen has gone beyond the content of the Hippocratic Corpus or the Peripatetic works in his writing on melancholy. He points out that Galen refers to an association between black bile and a psychological mind set. But Flashar does not regard this as a fully developed doctrine relating to the one of the four temperaments, as at this stage there has been no formal development of a systematic naming of melancholic, choleric, sanguine and phlegmatic to characterise a set of psychological conditions. In addition, the later characterisation of the four temperaments differs from Galen's associations of psychological character with the four humours.⁸ At the beginning of the 1990s, as part of his analysis of the Hippocratic *Epidemics*, Langholf suggests that in the Hippocratic Corpus black bile does not really exist as a proper humour, unlike blood, phlegm, bile and water, except in *On the Nature of Man*. Langholf suggests that Galen circumstantially proved the existence of black bile as a distinct substance with reference to the function of the spleen and cites the content of *On Black Bile* as his evidence.⁹ The majority of the above analysis of Galen's use of black bile is either based on a development of this humour from the description found in the Hippocratic *On the Nature of Man* or its significance in terms of a specific illness such as melancholy. However, there is a general absence of comprehensive analysis of the importance of understanding Galen's characterisation of black bile in terms of its physical and qualitative properties to explain how it is responsible for both health and disease in the body.

⁷ Klibansky, Panofsky, and Saxl, 1964: 53.

⁸ Flashar, 1966: 105-109.

⁹ Langholf, 1990: 46.

Despite the often tight constraints in writing about the humours in a general history of medicine, there are cases where an attempt is made to provide a summary of the complexity of the humours in ancient medicine. For example, in Magner's *A History of Medicine*, we find a diagram that neatly summarises the Hippocratic four-humour system, with each humour associated with the four cosmic elements, qualities and temperaments. However, this does not represent the wider content of the Hippocratic Corpus on humoral theory very accurately. We find that black bile is characterised in terms of the content of *On the Nature of Man* and there is no attempt to discuss the different representations of black bile in the other Hippocratic treatises. When the discussion moves on to Galen and the humours, Magner again refers to the type of diagram produced by Schöner in the 1960s, which does not fully represent Galen's use of the humours in his writing.¹⁰ This type of generalisation cannot capture the difference between the various ways that black bile is characterised in the Hippocratic Corpus and the way that Galen uses black bile in his own biological theory.¹¹ The same kind of diagram is used by Seale to explain how the humours were used by Hippocrates and Galen to present medicine as a model of the relationship between the microcosm and macrocosm in the universe.¹² The problem is compounded further in a summary by Porter, who defines Greek medicine from the time of Hippocrates to Galen in terms of the relationship between the cosmic elements and the four humours. We are told that this is a flexible system that allows the four humours to be associated with the elements, qualities, the environment, time of life and the temperaments.¹³ Therefore, in the history of medicine, the explanation of Galen's development and use of black bile in his theory of health and disease is based on the characterisation of this humour as a development from the content of the Hippocratic *On the Nature of Man* and does not discuss the wider range of factors that have influenced Galen's writing on black bile. Further to this, both Magner and Porter discuss the importance of the spleen in terms of black bile in the body. We find that Magner describes the spleen as being responsible for

¹⁰ Magner, 1992: 71-73.

¹¹ The four humour system described in the Hippocratic *On the Nature of Man* is just one of a large number of theories that explain health and disease in terms of bodily fluids in the Hippocratic Corpus. See Nutton, 2005: 115.

¹² Seale, 1994: 11.

¹³ Porter, 1997: 9 and 56-58; 2003: 25-27.

converting food into black bile and Porter claims that the evidence shows that the spleen should be regarded as 'the seat of black bile'.¹⁴ However, there is no reference to exactly where the evidence comes from in Galen's writing to support these two points about the relationship between black bile and the spleen and no analysis to demonstrate that they represent an accurate account of Galen's theory of the origin and function of black bile in the body.

In 2000 Grant published a book of English translations of several Galenic works, including *On Black Bile*. Unfortunately, there is no comprehensive analysis or commentary on the content of this treatise. But, in one of his notes to parts of the text, Grant suggests that black bile did not really exist as a substance. Instead, 'black substances', such as dark urine from malaria, are the closest observation of this humour. Grant's view is that the concept of 'black bile' comes from observations of dark or black coloured substances found in the worst kinds of wounds or illness, such as what we find in congealed blood. However, Grant is following Langholf's analysis, which associates the concept of 'black bile' with discharges of black substances in faeces, vomit and urine.¹⁵ There are also examples of some studies on the importance of humoral theory in the history of medicine. For example, in Bynum's *The History of Medicine: A Very Short Introduction*, Greek humoralism is described as being the 'most powerful framework of health and disease available until scientific medicine in the 19th century'. Bynum's analysis does include a summary of the cause of epilepsy by phlegm in *On the Sacred Disease*. However, there is still the more general impression that the theory of the four humours was part of a development of a cohesive theory that starts with Hippocrates and is then developed further by Galen.¹⁶ This is the same type of history of the development of the humours that Galen was attempting to construct, when he lists the most authoritative sources that he presents as adopting the four-humour system of Hippocrates.¹⁷ More recently, Jackson has published a short book called *The History of Medicine*, which contains a summary of the importance of the four humours in ancient medicine. Hippocratic medicine is

¹⁴ See Magner, 1992: 91 and Porter, 1997: 60 respectively.

¹⁵ Langholf was mostly working with sources relating to black bile in the Hippocratic Corpus, rather than Galen's treatises. See Grant, 2000: 197 (note 1) and Langholf, 1990: 46-49; Nutton, 2005: 116.

¹⁶ Bynum, 2008: 9-15.

¹⁷ See section 1.3.4 below.

defined as being the explanation of health and disease in terms of whether the four humours are balanced or not. Different diseases are produced from the excess or deficiency of one or more of these humours. Galen is said to have confirmed or disputed some of Hippocrates' work on medicine and to have prescribed six 'necessary activities' for the preservation of health, which involved managing the humours in the body: moderation of the air and environment, correct regimen in terms of food and drink, sufficient and appropriate exercise, promoting evacuation of urine and faeces, the proper amount of sleep, and mental health.¹⁸ However, this analysis does not capture the issues concerning the diversity of the way the humours are presented in the large amount of medical theories produced over several centuries from the fifth century BCE onwards. In addition, there is still an emphasis on the dominance of the theory of the four humours from *On the Nature of Man*. Therefore, it does not provide any information on the importance of black bile in Galen's theory of disease or the way that he has characterised this humour in terms of a wide range of treatises from Hippocratic and other medical and philosophical sources. In these types of studies on the history of ancient medicine, there is a tendency to generalise the importance of the humours as a group, without any analysis of the role that individual humours play in the explanation of specific types of diseases. Therefore, we do not find any reference to the importance of black bile in its own right, as a physiological or pathological substance in the body.

Finally, a recent study by Jacques Jouanna provides a more comprehensive analysis of Galen's development and use of black bile. Jouanna investigates the question of the Galenic authenticity of *On Black Bile* and discusses some of the different ways that black bile is characterised in Galen's writing. Passages from *On the Natural Faculties* and *On Black Bile* are compared directly on their content in terms of black bile. Jouanna points out that the black bile in *On the Natural Faculties* has the qualities of 'cold and dry', which corresponds to the four-humour system in the Hippocratic *On the Nature of Man*. But he suggests that the black bile in the treatise *On Black Bile* deviates from this model, as it is

¹⁸ Jackson, 2014: 17-19 and 22.

produced in the presence of hot and dry qualities.¹⁹ Jouanna explains that the deviation in *On Black Bile* is due to a tension in Galen himself (*d'une tension chez Galien lui-même*), as he attempts to reconcile his characterisation of black bile with the content of *On the Nature of Man* and other sources, from the Hippocratic Corpus and other medical authorities. Jouanna asserts that Galen has emphasised the importance of the roasting of other humours at the expense of the traditional conception of black bile as a 'cold and dry' humour, which is found in his other treatises, such as *On the Natural Faculties*, *On the Doctrines of Hippocrates and Plato* and the *Commentary on On the Nature of Man*.²⁰ Jouanna suggests that Galen's characterisation of black bile from the burning of humours is an addition to his theory of the four humours, which he originally developed from the content of *On the Nature of Man*. Galen did this to incorporate the description of black bile from other Hippocratic sources, which he identifies as *Airs, Waters and Places* and some material from Rufus of Ephesus.²¹ It is the view of Jouanna that Galen was attempting to remain faithful to the four-humour system of *On the Nature of Man* and that he evokes the content of this treatise, even when he is presenting black bile in different ways in *On the Natural Faculties* and *On Black Bile*.

1.3 Galen and humoral theory

1.3.1 Humoral theory in ancient medicine

An understanding of the way that humoral theory was used in ancient medicine is paramount for my investigation into the importance of black bile as a substance that can explain the cause of health and disease in the body. Therefore, I am going to start by defining what I mean by a 'humoral theory', which applies to the theories where one or more 'humours' are postulated as being the explanation of health and disease in the body. The term 'humour' comes from the Greek term χυμός, which is the essential 'juice' in the body of

¹⁹ Jouanna asserts that the description of black bile in *On the Natural Faculties* is consistent with what he calls the 'founding treatise of *On the Nature of Man*' (*du traité fondateur de La nature de l'homme*), and that this is also Galen's description of black bile in *On the Doctrines of Hippocrates and Plato*. See Jouanna, 2009: 240-242.

²⁰ Jouanna, 2009: 246-247 and 250-252.

²¹ Hippocratic Corpus, *Aer.*, X (II 50,10-16 L); Rufus of Ephesus, frg. 70 (Pormann) = Ibn Sarābiyūn ibn Ibrāhīm, *Important Chapters on the Medicine of the Masters*, ch. 9, Rufus, *Case Notes* 5. See Jouanna, 2009: 254-255.

an animal.²² The content of literature on ancient medicine summarised above shows that there has been a tendency to define ‘humoral theory’ primarily in terms of the content of the Hippocratic *On the Nature of Man*, which sets out a theory of health and disease in terms of the mixture of four fluids, blood, phlegm, yellow bile and black bile. However, humoral theory is not limited to this narrow definition, as it encompasses any theory that explains health and disease in the body in relation to one or more humours that are defined in terms of qualities that give them various types of capacity, such as temperature, moisture content or flavour. It is the capacity of these ‘juices’ to affect the parts of the body that is used to provide an explanation of health and disease in a humoral theory. Therefore, the four-humour system of *On the Nature of Man* is only one type of humoral theory amongst many. We find this concept of a variety of theories that define health and disease in terms of different bodily fluids in the Aristotelian categorisation that defines the cause of disease in terms of two distinct types of substance. One is an element (στοιχεῖον), which is a fundamental entity in the body. The other is that diseases arise due to a residue (περισσώμα) that is a by-product of a process in the body, such as the action of heat on a substance.²³ This distinction is used in the *Anonymus Londinensis* to provide a doxographical list of the different theories attributed to a set of physicians and philosophers writing on medicine:

οἱ μὲν γὰρ εἶπον γίνεσθαι νόσους παρὰ τὰ περισσώματα τὰ γινόμενα ἀπὸ τῆς τροφῆς, οἱ δὲ παρὰ τὰ στοιχεῖα.

For while some have said that diseases arise because of the residues from nutriment, others hold that they are due to the elements.²⁴

It should be noted that this is not a universal theory of the way that substances in the body produce disease. Instead, it is the categorisation used in the

²² LS&J, 1940: 2013. The use of moistures (ὕγρα) was also important in ancient theories of health and disease. Therefore, there is no reason not to include theories that postulate health and disease in terms of moistures as being a type of humoral theory. See van der Eijk, 2001: 48.

²³ In Aristotle’s own theory, health and disease are explained in terms of the four cosmic elements (fire, air, water and earth) and qualities (hot, cold, wet and dry). Certain humours, such as phlegm, yellow bile and black bile, are reduced to being ‘residues’ that are produced during illness. Therefore, these humours are denied any active power to affect the body in the way that they are in theories such as the four-humour system in the Hippocratic *On the Nature of Man*. See pages 33-34 below and Nutton, 2005: 119.

²⁴ *Anon. Lond.*, IV,26-28, translation by Jones.

Anonymus Londinensis to discuss the various different types of aetiological theory available in the medical writing over a long period of time. If the humours are considered as elements, then they represent the fundamental substances in the body and have a physiological and pathological role in the explanation of health and disease in the body. The humours are primary substances in this type of theory and aetiology is determined by three factors: the identification of substances that are elements of the body; the way that these elements cause disease; and the explanation of how various diseases can be produced from these elements. However, if the humours are defined as residues from nutrition, or some other process in the body, they are produced from other substances in the body. In this context the humours are secondary substances and can have physiological and pathological functions as the cause of disease in the body. Disease could occur directly from the residues themselves, or these residues could produce harmful substances that then cause disease. Differences in diseases can be explained by the quantity, quality and location of the residues in the body.²⁵ Therefore, the humours may be characterised as either elements or residues in the body and this will be useful for understanding how different medical writers use black bile, as an element or a residue, along with the cases where this humour is not included at all in the explanation of health and disease in the body.

1.3.2 The origins of black bile in ancient medicine

There is evidence to suggest that the Hippocratic *On the Nature of Man* is an important treatise for the origins of the characterisation of black bile as a fundamental substance. Jouanna considers *On the Nature of Man* as ‘the foundation stone of the history of black bile’. He goes on to claim that the author of this treatise has invented a substance named black bile, associating it with autumn and a particular stage in a person’s life.²⁶ In this way, black bile is raised to be on equal terms to blood, phlegm and yellow bile, all of which have a clearer provenance as fundamental substances in the development of medical

²⁵ Manetti, 1999: 101 and 115.

²⁶ Jouanna, 2012b: 229-230.

theories.²⁷ For example, blood was thought of as an essential fluid in the body, as much in the ancient world as it is now. This is due to many factors, such as the flow of blood from wounds and the presence of blood in bodily fluids during severe illness. In the writings of Empedocles, blood is very important in the body, not only for reproduction and the growth and development of the embryo, but also because it is the substance in which all four ‘roots’ are perfectly mixed and, at the location of the heart, it is the agent of thought.²⁸ For the origin of phlegm as a substance that can affect our health, Craik references a passage from Homer’s *Iliad*, when the goddess Hera stirs up a storm from the sea; it carries bad phlegm (φλέγμα κακόν) that burns up heads and armour.²⁹ However, Lonie does not believe that Homer is describing phlegm as a proper humoral substance and suggests that the first time phlegm is presented as a humour is in Herodotus, who says that the Libyans cauterise the heads and temples of their children to prevent phlegm from flowing down from the head.³⁰ There is some variation in the characterisation of phlegm as a cold or hot substance in the body. For example in the Hippocratic Corpus, the content of *On Fistulas* and *On Internal Affections* suggests that phlegm is causing disease and pain in the body because it is hot.³¹ Further to this, in the Hippocratic *Places in Man*, phlegm is associated with the moist and hot.³² In contrast, in *On the Nature of Man* and *On Diseases I*, phlegm is clearly defined as a possessing the quality of cold.³³ This shows that there is a variation in the way that phlegm is described in terms of its innate quality of temperature and that the phlegm that is defined as cold and moist in *On the Nature of Man* is just one characterisation of this humour among many in ancient medicine.

²⁷ Muri’s opinion is that black bile is a *faute de mieux* and was required to make up the numbers to four to coincide with other phenomena, such as the four seasons and the paired qualities. See Muri, 1953: 27-28.

²⁸ Frg. 115 (Graham, 163) = Stobaeus, 1.49.53 (DK 31 B105) and frg. 117 (Graham, 168) = Theophrastus, *On the Senses*, I,10 (DK 31 A86). See Lonie, 1981: 293.

²⁹ This is a rare occurrence of phlegm in early Greek literature and it has been suggested by Craik that this may be an early analogy between phlegm being a moving fluid in the body and the deadly rush of water from the sea. Homer, *Il.* 21.334-337. See Craik, 1998: 99-100.

³⁰ Herodotus, IV.187; cf. Hippocratic Corpus, *Morb. IV*, IV (XXXV L) (VII 548,11-550,16 L). See Lonie, 1981: 277.

³¹ *Fist.* VII (VI 454,3-8 L) and *Int. Aff.* XXIV and XLVII (VII 226,23-228,5 and 282,3-6 L). See Lonie, 1981: 203; 278 and 281-282.

³² *Loc. Hom.* X and XLV (VI 294,1-10 and 340,14-342,3 L). See Craik, 1998: 15-16 and 138.

³³ *Nat. Hom.* 7, CMG I 1,3, p. 182,4-9 Jouanna (VI 46,9-14 L); *Morb. I*, XXIV (VI 189,19-20 L).

Another important substance for understanding disease in the body is bile. For the history of this substance, it is worth first turning to Homer for the use of the word bile in Greek literature. In the *Iliad*, bile is associated with anger. For example, Achilles in a rage says that his mother nourished him on bile (χόλος) instead of milk and this bile causes him to be irrational with anger.³⁴ This type of association between bile and irrational rage is also present within the Hippocratic Corpus. For example, in *The Sacred Disease* heat from the bile can cause a corruption of the brain, which makes a person mad, noisy and restless.³⁵ We can also find the use of bile outside the medical texts, such as a reference to bile in Thucydides, which he uses in his description of the plague of Athens.³⁶ Demont suggests that Thucydides understood some aspects of Hippocratic medicine, as he includes a reference to the vomiting of different kinds of bile, which provides a descriptive account for his readers, as well as being consistent with parts of the medical texts at this time, such as what we find in some of the treatises from the Hippocratic Corpus. Therefore, Thucydides aims to provide the proper medical details he requires in order to create a convincing and informative narrative for his readers.³⁷ In this way, we can see that blood, phlegm and bile have had a long tradition in the description of diseases and wounds in early poetic sources all the way down to the writing of the histories in the fifth century BCE. But in the case of black bile, it seems that there is an absence of material on this humour in ancient literature before the mid fifth century BCE.³⁸

1.3.3 Black bile as the cause of health and disease

One of the earliest sources on black bile comes from the Hippocratic *On the Nature of Man*, where it is characterised as a fundamental substance in the body, alongside the other three humours. Here we find black bile described as 'cold and dry', predominant in autumn, associated with ages between 25 and 42 and the production of quartan fever. Pain and disease occur when there is more

³⁴ Homer, *Il.* 16.240ff. See Lonie, 1981: 282.

³⁵ *Morb. Sacr.* XVIII (XV L) (VI 388,12-17 L).

³⁶ *Morb.* IV, XX (LI L) (VII 584,19-586,11 L); Thucydides, II.49.3. See Lonie 1981: 333; Jouanna, 2001: 294 (note 1).

³⁷ Demont, 2005: 275-276.

³⁸ The general consensus is that *On the Nature of Man* was written sometime in the last few decades of the fifth century BCE. See Craik, 2015: 212.

or less black bile than the proper quantity in the mixture, or when it becomes separated from the other humours.³⁹ However, black bile can be found in many other treatises in the Hippocratic Corpus. For example, in *On Places in Man* there is the following statement about severe wounding of the body:

Θανάσιμα τρώματα· ἐφ' ᾧ ἂν τινι κακῶς ἔχοντι χολὴν μέλαιναν ἀπεμέση, ἀποθνήσκει ὁ τὸ τρώμα ἔχων.

Mortal wounds: if it is any kind of a severe one and besides the wounded person vomits black bile, he dies.⁴⁰

Craik argues against an association between this black bile substance in *On Places in Man* and *On the Nature of Man*. Her view is that bile has become black and has transformed into a pathogenic substance, which is then observed as 'black bile' in the vomit.⁴¹ There is no actual explicit statement by the author of *On Places in Man* that bile is changed into black bile by some kind of process in the body. Instead, we are left with black bile appearing in the vomit of someone who has received a mortal wound to the body. The passage quoted above is the only reference to black bile (χολὴ μέλαινα), and we find that this substance is not given the same status as blood, phlegm and bile in this treatise. Therefore, we can say that this is a very different characterisation of black bile than we find in *On the Nature of Man*, as in *On Places in Man*, black bile is being described as a residue produced during the extreme wounding of the body. Another example is the use of black bile as an indicator of specific types of disease. This is found in *Epidemics VI*, where a black tongue indicates the presence of too much black bile in the body that could lead to illness.⁴² In other Hippocratic texts, we find that black bile is associated with different types

³⁹ *Nat. Hom.* 4-5; 7 and 15 CMG I 1,3, pp. 172,13-176,1; 182,4-186,12 and 202,10-204,21 Jouanna (VI 38,19-40,17; 46,9-50,13 and 66,10-68,16 L).

⁴⁰ *Loc. Hom.* XXXIII (VI 324,17-18 L), adapted from a translation by Potter.

⁴¹ Craik, 1998: 189.

⁴² *Epid. VI*, V.8 (V 318,5-8 L). See Schöner, 1964: 24-25. It is interesting that the author of *Epidemics VI* uses blood, phlegm, yellow bile and black bile here to demonstrate that different colours of the tongue can be linked to the presence of excessive amounts of these four substances. It is rare to find these four humours being discussed together like this in the Hippocratic Corpus outside *On the Nature of Man*. There is a similar case with diseases of the spleen associated with blood, phlegm, yellow bile and black bile in *Int.* (XXX-XXXIV, VII 244,6-252,16 L). In these two cases there is no other content in the texts to suggest that these authors were using the four-humour system of *On the Nature of Man*. I will be discussing Galen's use of these passages later, see chapter 4 'Galen's characterisation and physical description of the black bile humour', section 4.1 and chapter 5 'The cleansing of harmful black bile from the body', section 5.4 below.

of disease. In *Aphorisms*, dysentery that begins with black bile is reported to result in death, and in *On Diseases I*, black bile is said to be the cause of paralysis.⁴³ There are many other examples in treatises such as *Aphorisms*, *Epidemics I-VII*, *Regimen in Acute Diseases*, *On Internal Affections*, *On Affections*, *Koan Prognoses*, *On Diseases I-III* and *On Diseases of Women II*.⁴⁴ What we find is that there are differences between the Hippocratic treatises, with the black bile of *On the Nature of Man* being a distinct substance, which is different from what is presented generally as a harmful substance named 'black bile' in other treatises from the Hippocratic Corpus. In addition, there are many Hippocratic texts that refer to blood, phlegm and bile, but not to black bile. This is the case for treatises such as *Prognostic*, *On the Sacred Disease*, *On Nutriment* and *On Humours*.⁴⁵ When it comes to the illness known as 'melancholy', Jouanna suggests that the Hippocratic treatise, *Airs, Waters and Places*, is the earliest place in Greek literature to describe this disease in the context of the environment and the climate.⁴⁶ In other Hippocratic works, such as *Aphorisms*, we have melancholy being characterised in terms of emotional and physical problems.⁴⁷ However, there is no clear or consistent development of a theory of melancholy in the Hippocratic Corpus.

There are more examples of the use of black bile within different types of medical theory in the *Anonymus Londinensis*, which provides a doxography on the views of the cause of disease by various physicians and philosophers from the fifth and fourth century BCE.⁴⁸ For example, there is the theory of Dexippus of Cos, which calls phlegm and bile the residues of nutriment. These residues of nutriment can undergo changes through excess heat or cold to produce white

⁴³ *Aph.* IV.24 (IV 510,9-10 L); *Morb. I*, III (VI 144,15-16 L). See Schöner, 1964: 43.

⁴⁴ For more information on the black bile content of all of these treatises, see chapter 3 'Galen's opinion on the authenticity of the individual treatises in the Hippocratic Corpus', sections 3.2-3.4 below.

⁴⁵ These lists are not exhaustive and I will be discussing the content of some of the most important treatises from the Hippocratic Corpus in more detail in the chapter 3 'Galen's opinion on the authenticity of the individual treatises in the Hippocratic Corpus'.

⁴⁶ *Aer.* X (II 50,6-16 L). See Muri, 1953: 29; Schöner, 1964: 50-51; Jouanna, 2012b: 232.

⁴⁷ *Aph.* VI.23 (IV 568,11-12 L). See Jouanna, 2012b: 234-235.

⁴⁸ The text referred to as the *Anonymus Londinensis* is believed to have been written in the first century CE using Aristotelian sources. There are three sections, the first contains a number of medical definitions and the last section concerns theories of the digestion of food. However, the middle section is of importance here, as it contains a doxography of various theories of disease by a large number of physicians and philosophers. Analysis of this section has revealed that this material is derived either from the work of Aristotle directly or Meno (one of Aristotle's students). See Manetti, 1999: 96-100; Leith, 2015b: 483-484.

phlegm (λευκὸν φλέγμα) and black bile (μέλαινα χολή). In this humoral theory, phlegm and bile are physiological humours, which can cause disease when they are inhibited in some way in the body. Further to this, the alteration of phlegm and bile produce pathological humours, such as white phlegm and black bile, which are harmful to the body and cause disease.⁴⁹ Then there is the theory of Menecrates, which postulates that the body is made up of four elements, two that are hot (blood and bile) and two that are cold (breath and phlegm). When these elements are in harmony, the body is healthy, otherwise disease can develop. The changes that occur can produce red bile (πυρρά χολή) or black bile (μέλαινα χολή). Therefore, we have the humours, blood, phlegm and bile, as elements that produce pathological humours such as red bile and black bile. The various types of disease are explained by the movement of these physiological and pathological humours to different places in the body.⁵⁰ This is in contrast to the theories of other medical writers that do not include black bile. For example, Thrasymachus of Sardis, Philolaus of Croton and Petron of Aegina include blood, phlegm and bile among the residues that are responsible for causing disease in the body, but not black bile.⁵¹

This shows that in general, the four-humour system of *On the Nature of Man* is in no way the dominant humoral theory that describes the function of the humours for health and disease in ancient medicine. Its significance is that it offers a unique theory that postulates the fundamental nature of four substances, blood, phlegm, yellow bile and black bile that are characterised in terms of association with the four seasons and four stages of life. It is also important for the status of black bile, which is defined as an element of the body, as opposed to a pathogenic residue that is produced from the alteration of another substance. However, there are many other theories where one or more humours are considered to be fundamental substances that explain health and

⁴⁹ *Anon. Lond.*, XII,8-36. Large parts of the text are missing at this point and so it is difficult to understand the full meaning of Dexippus' theory in terms of the changes to phlegm and bile and any association with blood. See Manetti, 1999: 112.

⁵⁰ *Anon. Lond.*, XIX,18-XX,1. See Schöner, 1964, 75; Huffman, 1993: 294; Manetti, 1999: 117.

⁵¹ Thrasymachus of Sardis is otherwise unknown outside of the *Anonymus Londinensis* (XI,43-XII,8). See Schöner, 1964: 65; Huffman, 1993: 293 and 302; Manetti, 1999: 111-112; Nutton, 2004: 52 and 80; 2005: 117-118. For Philolaus, see *Anon. Lond.*, XVIII,8-XIX,1 and Lloyd, 1963: 120; Huffman, 1993: 5-6; 87-89, 291, 297-298 and 301-306; Manetti, 1999: 115-116. For Petron, see *Anon. Lond.*, XX,1-24 and Huffman, 1993: 304.

disease in the body, or alternatively as secondary residues produced during the action of heat or other effects in the body during illness. It is important to note that black bile is not always included in these theories, with phlegm and (yellow) bile being more common, alongside blood, as the substances that explain health and disease.

1.3.4 Galen's classification of physicians and philosophers as humoral theorists

In Galen's writing, we find that he emphasises the importance of the four-humour system of *On the Nature of Man* and identifies it as the humoral system created by Hippocrates.⁵² We find such statements in many of his treatises, such as *On the Elements According to Hippocrates*, *Commentary on On the Nature of Man* and *On the Doctrines of Hippocrates and Plato*.⁵³ Therefore, as black bile is one of these four humours, it has a high status in Galen's medical writing as a fundamental substance to explain health and disease in the body. We find this is the case when Galen discusses the four humours and refers to each of them as 'elements' of the body.⁵⁴ However, he does not just consider this four-humour system to be relevant to the medical theory of Hippocrates, he goes further to consider this humoral theory to be more universally adopted by some of the most prominent physicians and philosophers over a period of

⁵² In contrast, in the *Anonymus Londinensis* (XIX,2-18) Hippocrates is presented as postulating the cause of disease from gases in the body, which can be produced from the ingestion of food that is excessive, too varied or difficult to digest. The doxography here is not from just one Hippocratic text and Manetti suggests that it is based on the Hippocratic use of a term for 'food' (πρόσαρμα), which is otherwise not used in the *Anonymus Londinensis*. The author of *On the Nature of Man* is identified as Polybus, following Aristotle's view of authorship. See Manetti, 1999: 103-106 and 116-117. I will discuss the issues regarding the authorship of different parts of *On the Nature of Man* in detail later. See chapter 3 'Galen's opinion on the authenticity of the individual treatises in the Hippocratic Corpus', section 3.2.1 below.

⁵³ *Hipp. Elem.* 8.12-9.3; 11.1-3, CMG V 1,2, pp. 126,5-26; 140,15-142,1 De Lacy (I 479,16-481,10; 494,1-11 K); *HNH*, I.19, CMG V 9,1, pp. 32,10-33,21 Mewaldt (XV 59,1-61,12 K); *PHP*, VIII.4.1-7, CMG 4,1,2, pp. 498,17-500,2 De Lacy (V 671,11-673,2 K).

⁵⁴ Galen refers to these fundamental substances, collectively as the 'four humours' (τεσσαῖροι χύμοι). For example, see *PHP*, VIII.4.4, CMG V 4,1,2, 498,26-28 De Lacy (V 672,5-8 K). But this is not generally the terminology used in *On the Nature of Man*. There is only one reference to the term 'humour' in the fifteenth section of *Nat. Hom.* (15, CMG I 1,3, p. 204,12-14 Jouanna (VI 68,6-8 L)), where black bile is described as the most sticky of the humours (χυμός). Interestingly, this is in the part of *On the Nature of Man* that Galen considers as inauthentic. For more information, see chapter 3 'Galen's opinion on the authenticity of the individual treatises in the Hippocratic Corpus', section 3.2.1 below.

several centuries. We see this from the following passage in Galen's *On the Doctrines According to Hippocrates and Plato*:

οὐ μόνος δὲ Πλάτων, ἀλλὰ καὶ Ἀριστοτέλης καὶ Θεόφραστος οἱ τε ἄλλοι μαθηταὶ Πλάτωνός τε καὶ Ἀριστοτέλους οἱ τὸν περὶ τῶν χυμῶν λόγον ἐζήλωσαν Ἱπποκράτους, ὥσπερ γε καὶ τῶν παλαιῶν ἰατρῶν οἱ δοκιμώτατοι, Διοκλῆς, Πλειστόνικος, Μνησίθεος, Πραξαγόρας, Φυλότιμος, Ἡρόφιλος.

Not only Plato but also Aristotle, Theophrastus and the other followers of Plato and Aristotle emulated the reasoning of Hippocrates on the humours, as did also the most esteemed ancient physicians, Diocles, Pleistonius, Mnesitheus, Praxagoras, Phylotimus and Herophilus.⁵⁵

This list represents Galen's focus on Rationalism in relation to what he considers as the theory of the humours first proposed by Hippocrates himself. In this way, Galen regards Hippocrates as a Rationalist, just like the physicians Diocles and Mnesitheus.⁵⁶ This is not the first time this kind of association had been made, as we find that the first century CE physician Celsus includes Hippocrates and Herophilus among the Rationalist physicians. The Rationalist approach to medicine is, as Pellegrin defines, one which does not consider medicine to be based solely on manifest causes, such as indigestion or sunstroke. Instead, medicine should be based on knowledge about the changes at the level of the basic components of the body, such as tissues or the humours. However, at this level it is not possible to make direct observations, but hidden causes can be inferred logically from the symptoms observed.⁵⁷ It is within this context that Galen claims that some of the early medical authorities adopted Hippocrates' four-humour system in *On Black Bile*:

οἱ δὲ περὶ Πλειστόνικόν τε καὶ Πραξαγόραν καὶ Φιλότιμον ἐπὶ πλεῖστον ἐξεργασάμενοι τὸν περὶ τῶν χυμῶν λόγον ἔνια μὲν μοι δοκοῦσι χρησίμως διορίσασθαι τῶν ἀδιορίστως Ἱπποκράτει γεγραμμένων, ἔνια δὲ καὶ ψευδῶς ἀποφῆνασθαι.

Pleistonius, Praxagoras, Phylotimus, and their followers, working most diligently to the greatest extent on the theory of the humours seem

⁵⁵ *PHP*, VIII.5.24, CMG V 4,1,2, p. 510,1-5 De Lacy (V 684,17-685,4 K), translation by De Lacy. There is a similar listing in *Nat. Fac.* II.8; II.9 (II 117,8-12; 140,15-18 K).

⁵⁶ Nutton, 2004: 125-126.

⁵⁷ Celsus, *On Medicine*, Pref. 15 and 23. See Pellegrin, 2009: 669-670.

usefully to have determined some parts of the undefined writing by Hippocrates, some parts they have spoken out falsely.⁵⁸

Here we find that Galen is actually acknowledging that the content of some Hippocratic works can be brief and lacking in detail. We can see that Galen has made explicit statements that associate the work of Plato, Aristotle, Theophrastus, Diocles, Pleistonius, Mnesitheus, Praxagoras, Phylotimus and Herophilus with what he considers to be Hippocrates' four-humour system. This implies that these philosophers and physicians regarded each of the four humours as elements of the body, which explain the cause of health and disease. In particular, he is asserting that they consider black bile to exist as a fundamental substance in the body. But is Galen justified in listing these philosophers and physicians as adopting the four-humour system of *On the Nature of Man*?

Starting with Plato, the *Timaeus* provides a large amount of material on his theory of diseases.⁵⁹ In the *Anonymus Londinensis* there is a long section on Plato and his work on elements and the residues of the body in terms of health and disease. This content follows Plato's writing about the elements of the universe and the body, such as we find in his *Timaeus*.⁶⁰ In this work we find that, for Plato, the most fundamental substances are the four cosmic elements; fire, water, air and earth.⁶¹ Plato defines three separate categories for the cause of diseases in the body. The first type of causation is when the four elements,

⁵⁸ *At. Bil.* 4, CMG V 4,1,1, p. 71,9-12 De Boer (V 104,9-105,3 K). The Phylotimus named here is the same Phylotimus that was referred to in the passage from *On the Natural Faculties* quoted above. See Grant, 2000: 197.

⁵⁹ Lloyd refers to the question of whether this content on the cause of diseases in the *Timaeus* actually reflects Plato's view or whether it is actually the medical theory of someone else, with Philistion and Philolaus being named as possible sources. However, I agree with Lloyds' argument that the *Anonymus Londinensis* has clearly distinguished this theory as being by Plato from that of Philistion and Philolaus. In addition, even if Plato is drawing heavily upon these types of sources, it is important to understand how he presents the material in his writing. See Lloyd, 2003: 153; cf. Cornford, 1937: 333-341. For example, Plato's concept of a cause of disease relating to a restriction of air to move in and out of the body is similar to Philistion's ideas concerning air in the body. However, Plato's theory is different, as he adds phlegm and bile to air as the cause of disease. See Nutton, 2004: 116-118. In Galen's opinion, Plato is the author of the medical writing in the *Timaeus*, as Galen quotes sections of this treatise in some of his works and attributes them to Plato.

⁶⁰ Manetti points out that the language used by the *Anonymus Londinensis* is Aristotelian and refers to Plato's residues as being produced from nutriment. However, the processes that form the residues in Plato's theory of disease are more general than just from the action of digestion in the body. There is a similar distortion of Plato's theory in terms of his reference to pneuma. See Manetti, 1999: 115 and 119-120.

⁶¹ Plato, *Ti.* 32b; *Anon. Lond.* XIV,11-15 and 26-32; cf. Gal., *PHP*, VIII.2.21, CMG V 4,1,2, p. 494,22-25 De Lacy (V 667,3-6 K).

fire, air, water and earth are in excess, deficiency, or change into an unnatural state in relation to the proportion of the four qualities, hot, cold, dry and wet. The second category of causation of diseases occurs when there is a reversal of the natural process of nutrition in the body. In Plato's theory, the body is healthy when the homoeomerous parts of the body, such as the flesh and bone, are nourished by the blood, which provides the essential substances. However, diseases are produced when there is a breakdown of these parts into noxious substances, such as phlegm and bile, which are taken into the blood. Therefore, these two humours are residues from the decomposition of the homoeomerous parts of the body. The third type of disease is caused by pneuma, phlegm and bile. This is related to problems in the lungs when the pathways become blocked and restrict the movement of air to parts of the body. Black bile is mentioned briefly when it is said to cause problems when mixed with 'white phlegm'. It is referenced also in terms of a type of blood that is derived from black and acid bile, which in turn is associated with a substance in the body called 'acid phlegm'. Inflammations are said to be caused by the heat from bile, which involves the mixing of bile with blood, which displaces the natural fibrin in the blood.⁶² Therefore, in Plato's medical theory, health and disease in the body are dependent on the blending of the four cosmic elements, fire, air, water and earth. The humours appear as a secondary explanation of disease, but these are generated as residues in the body when decomposition occurs. This is very different from the four-humour system found in the Hippocratic *On the Nature of Man*, but this has not prevented Galen from listing Plato as following Hippocrates' theory of the humours. Galen attempts to justify this claim further in *On the Doctrines of Hippocrates and Plato*, where he quotes from the *Timaeus* and argues that Plato actually intended to write about the four humours, which we find in *On the Nature of Man*.⁶³ If we look at the different categories of Plato's theory of diseases in the *Timaeus*, the first type based on the four cosmic elements is not a humoral theory. But the second and third types, which refer to phlegm and bile in different forms as humours, can be considered to be a type of humoral theory, similar to that of Philolaus (see page

⁶² Plato, *Ti.* 81e-86a; *Anon. Lond.* XVII,11-XVIII,8. See Cornford, 1937: 334-340; Schöner, 1964: 63-64 and Lloyd, 2003: 154.

⁶³ *PHP*, VIII.4.24-35, *CMG V* 4,1,2, pp. 504,3-506,3 De Lacy (V 677,6-679,16 K); cf. Plato, *Ti.* 82c and *Anon. Lond.* XV,20-36. See chapter 4 'Galen's characterisation and physical description of the black bile humour', section 4.1 below.

28 above). However, it cannot be associated with the four-humour system of *On the Nature of Man*. Most significantly, black bile does not play a major role in Plato's explanation of the causes of disease in relation to blood, phlegm and bile.

The theory of disease of Aristotle is even further removed from the content of *On the Nature of Man*. Aristotle based his concept of the human body on three levels of composition. The primary level is the four cosmic 'elements': fire, air, water and earth. These are in turn formed from four basic qualities: hot, cold, dry and wet, which are more fundamental than other types of quality, such as density or texture. In *Generation and Corruption*, Aristotle pairs up the qualities into four compounds: hot and dry, hot and wet, cold and wet, and cold and dry. These four compounds are then associated with the four cosmic elements: fire, air, water and earth. So we then have fire being hot and dry, air is hot and wet, water is cold and wet and finally, earth is cold and dry. For Aristotle, fire and earth are the purest elements, whereas water and air are more mixed.⁶⁴ The second level of composition refers to the uniform parts of the body, such as bone and flesh. Finally, the third level is based on the non-uniform parts, which represent the hands or the face, etc.⁶⁵ Aristotle also discussed matters relating to medicine, as he considered this topic to be an important part of natural philosophy.⁶⁶ It was Aristotle's opinion that if any doctor wanted to theorise about medicine, he would be advised to draw upon philosophy.⁶⁷ Aristotle refers to blood, phlegm, yellow bile and black bile as 'residues' (περιττώματα), which are the waste products of bodily functions, such as the digestion of food.⁶⁸ In terms of his characterisation of the individual humours, Aristotle describes blood as being hot and wet, and sweet in flavour and red in colour. It is associated with the heart, which is the principal location of heat in the body.⁶⁹ In *On the Parts of Animals*, bile is said to be a residue and is hot like cinders and ash.⁷⁰ But more generally in this treatise, bile is not considered to be present in all

⁶⁴ Aristotle, *GC*, II.3, 330a30-b5 and 330b32-331a6. See Schöner, 1964: 66-67.

⁶⁵ Aristotle, *PA*, II.1 (646a12-24). See Leith, 2015b: 462-463.

⁶⁶ Pellegrin, 2009: 667.

⁶⁷ Aristotle, *Sens.* I, 436a19-20; *Resp.* XXI, 480b22-31. Nutton, 2004: 119; van der Eijk, 2005: 194.

⁶⁸ Aristotle, *HA*, III.2, 511b1-11. See van der Eijk, 2001: 48.

⁶⁹ Aristotle, *HA*, III.19, 520b10-33; *PA*, IV.2, 677a20-29. See Schöner, 1964: 68.

⁷⁰ Aristotle, *PA*, II.2, 649a25-26.

animals, and this absence of bile even extends to some humans, as we find that not everyone has bile in their body. In Aristotle's theory of disease bile and phlegm are considered to be waste products formed during or after illness. For example, Aristotle tells us that bile is not responsible for acute diseases in the body and as a residue it does not have a specific purpose.⁷¹ Black bile as a physical substance is only referred to once, which is in contrast to the many references to blood, phlegm and bile in Aristotle's extant writing. Therefore, contrary to Galen's statement, Aristotle did not in any way follow the content of *On the Nature of Man* in his writing about the role of the humours in health and disease. In fact, Aristotle's theory of disease is not based on a humoral theory at all.⁷² Aristotle never explicitly uses the term 'four humours', as Galen does, and we do not find them being collectively used to explain health and disease in the body. Galen's listing of Theophrastus as following Hippocrates' theory of humours is also unjustified, as the evidence suggests that Theophrastus adopted Aristotle's theory of the elements and qualities and so would probably have had a similar view about the function of black bile in terms of health and disease.⁷³

The concept of a 'melancholic' (μελαγχολική) constitution was important in the work of the Aristotelians in terms of the way that emotions and behaviour are produced by the physiology of the body. We find from Aristotle's writing that people with melancholic temperaments are prone to hallucinations. He refers also to black bile as a type of moisture (ύγρός), which can affect the sight of melancholic people. This black bile, being a cold substance, affects the heart and the area surrounding it, which is also the nutritive region in Aristotle's physiological theory.⁷⁴ In addition, the Aristotelian *Problemata* provides a large

⁷¹ Aristotle, *PA*, IV.2, 676b31-32; 677a25. See van der Eijk, 2005: 152. For more information on what this means to Galen's more comprehensive teleological view of the humours in the body, see chapter 2 'Galen's strategy for his portrayal of Hippocrates as a philosopher', section 2.5 and chapter 5 'The cleansing of harmful black bile from the body', section 5.3 below.

⁷² As van der Eijk points out, the only place where phlegm, yellow bile and black bile are found together in a single passage is *On the History of Animals*, where these three humours are listed alongside faeces as residues. In addition, these humours are not referred to as residues (περιττώματα) in the extant Hippocratic Corpus. See van der Eijk, 2005: 153; cf. Schöner, 1964: 67.

⁷³ Sharples, 1995: 10-16; 1998: 42-45; 56-58; 86-88; 113-116 and 119-121.

⁷⁴ For Aristotle on melancholics and hallucinations, see *Div. Somn.* II, 463b17-18 and 464a33-464b1; *Mem.* 453a19-21. For Aristotle on the effect of a moisture (black bile) on people with a melancholic condition, see *HA*, III.2, 511b10-11; *Somn. Vig.* III, 457a32-34. See van der Eijk, 2005: 141-143.

amount of material on the melancholic constitution and its association with black bile.⁷⁵ The effects of black bile in the body are subject to changes in temperature. Black bile is considered to be a mixture (κρᾶσις), which is defined by extreme temperature, either hot or cold.⁷⁶ For example, if there is some sudden event that can cause alarm, a person in whom the black bile mixture is very cold will become fearful, but if the black bile mixture is hot then there may not be any effect on the person's emotions. This is because the hot black bile in combination to the sudden external event has created a moderate state in the body.⁷⁷ Those who are considered to have melancholic constitutions are said to be more disposed than other people towards contracting melancholic types of diseases. But there is a positive side to being melancholic, as extraordinary men, in such areas as philosophy, poetry and politics, tend to have melancholic temperaments.⁷⁸ We also find a comparison between black bile and wine to explain how the melancholic constitution affects a person's mental state. For example, the effect of an excess of black bile in the body is similar to the changes of behaviour and mental state caused by wine, particularly wine that is dark in colour. There is a common problem of suicidal tendencies shared between those who drink wine and those suffering from melancholy. This is particularly dangerous for the young rather than the old, as the induced heat produced by wine or black bile is dispersed more naturally in older people.⁷⁹ It is the case, as van der Eijk points out, that we do not find the other humours mentioned here in terms of the proper humoral mixture of the body, as outlined in the Hippocratic *On the Nature of Man*. This suggests that the author of this

⁷⁵ This work is a collection of passages on different topics, which were originally attributed to Aristotle, but may actually have been written by later Peripatetic writers. See van der Eijk, 2005: 139.

⁷⁶ Pseudo-Aristotle, *Pr.* XXX.1, 953a30-b27; 954a13-b33; 955a14-a36. See Muri, 1953: 22; Schütrumpf, 2015: 357.

⁷⁷ Pseudo-Aristotle, *Pr.* XXX.1, 954b10-14. See Schütrumpf, 2015: 359.

⁷⁸ Pseudo-Aristotle, *Pr.* XXX.1, 953a10-20. Both Schöner and Flashar suggest that this is an example where melancholy is still considered to be a pathological disease of the type found in the Hippocratic Corpus. Therefore, the concept of melancholic temperament has not yet taken on its purely psychological status; it is still grounded in an explanation based on the physical black bile humour. Flashar associates the content of this part of *Problemata* with Theophrastus. See Schöner, 1964: 71-72; Flashar, 1966: 62-64; van der Eijk, 2005: 157. Cicero wrote in his *Tusculum Dispensations* that it was an Aristotelian idea that genius is firmly connected with melancholy (*Aristoteles quidem ait omnes ingeniosos melancholicos esse*). Cicero, *Tusc.* I.80. See Flashar, 1966: 67-68. Schütrumpf points out that there is the positive side of the effects of black bile to produce 'extraordinary men' (*Pr.* XXX.1, 953a12), but this is countered by an associated tendency to suffer from illnesses caused by black bile. See Schütrumpf, 2015: 361.

⁷⁹ Pseudo-Aristotle, *Pr.* XXX.1, 953a33-954a7. See Muri, 1953: 23; Flashar, 1966: 64-66; van der Eijk, 2005: 157-158; Schütrumpf, 2015: 358.

passage in the *Problemata*, like Aristotle, is not following the Hippocratic four-humour system of *On the Nature of Man*.⁸⁰ However, we do have information on black bile and the melancholic condition in both Aristotle's writing and parts of the Aristotelian *Problemata*. Whether this is a closely connected development of the relationship between black bile and melancholy from Aristotle to the writers of the *Problemata*, is still open for debate.⁸¹ However, it is clear that Galen is not justified in listing Aristotle and the Aristotelians as following the four-humour system of *On the Nature of Man*.

Next, we find Mnesitheus in Galen's list of humoral theorists, who was a mid-fourth century BCE physician. Mnesitheus did use both χυμός and χυλός to denote an important fluid in the body.⁸² However, there is not enough information from the fragments attributed to the work of Mnesitheus to determine whether he adopted the four-humour system of *On the Nature of Man*, or whether he was using a more general humoral theory to explain health and disease in the body. But, we can find more information about the medical writing of Diocles of Carystus, who was a physician from the fourth century BCE. There is evidence that Diocles postulated his theory of disease in terms of blood, phlegm, yellow bile and black bile. However, there is some difficulty in obtaining an accurate picture of exactly what he wrote and its relationship to the Hippocratic Corpus. For example, Pliny the Elder describes Diocles as 'second in age and in fame' (secundus aetate famaue) to Hippocrates.⁸³ Then, we find that in the *Anonymus Bruxellensis* there is a reference to Diocles as a 'follower

⁸⁰ Pseudo-Aristotle, *Pr.* XXX.1, 954a22-23. See Klibansky, Panofsky and Saxl, 1964: 29; van der Eijk, 2005: 159.

⁸¹ For example, van der Eijk has argued that there is not necessarily an inconsistency between Aristotle and the later Aristotelians, because Aristotle's view corresponds to the part of *Problemata* XXX.1, which describes the 'melancholic' as a deviation. In general, the difference between the two cases of Aristotelian 'melancholic' is related to Aristotle's approach when writing about medical issues, as he tends to miss out a lot of detail. This is in contrast to the content of the *Problemata*, where a lot more information is included. But overall there is evidence that the writer of *Problemata* XXX.1 acknowledges Aristotle's concept of the melancholic constitution. See van der Eijk, 2005: 161-167. In contrast, Schütrumpf, rejects the development of the content of *Problemata* XXX.1 on black bile and melancholy from that produced by Aristotle. This is based on analysis of the theoretical framework of *Problemata* XXX.1, which describes the mixture of black bile in terms of the extremes, rather than a balance of a perfect mean state between the extremes. Another factor is that Aristotle only considers black bile to be a residue of the primary substances in the body and so cannot have such an influence on our emotions and behaviour, as we find in *Problemata* XXX.1. See Schütrumpf, 2015: 368-376.

⁸² Frgs. 10-14 B (Bertier). See Nutton, 2004: 125; 2005: 118.

⁸³ Frg. 4 (van der Eijk) = Pliny the Elder, *NH*, XXVI.6.

of Hippocrates' (sectator Hippocratis) and that 'the Athenians call [him] a younger Hippocrates' (Athenienses iuniorem Hippocratem uocauerunt).⁸⁴ However, as van der Eijk points out, the statement about Diocles being a younger Hippocrates needs to be considered within the later context of the division of the medical tradition into separate schools. In this sense Diocles is being associated with Hippocrates within the Rationalist (or Dogmatic) school of medicine. Therefore, this is not strong enough evidence to say that Diocles was definitely a pupil of Hippocrates.⁸⁵ We also have the possibility of an association between Diocles and the content of the Hippocratic *On the Nature of Man* in terms of the four humours. In the *Anonymus Bruxellensis*, there is the following quotation attributed to Diocles:

Quoniam una atque eadem materies descendens per quosdam uiarum meatus uspiam flegma fiet, uspiam fel, id est cholera rubea, uspiam melancholia, uspiam sanguis, fit etiam semen ex nutrimine, id est ex cibo et potu, ex quibus et ipsi quatuor humores nutriuntur, et non specialiter sanguini seminis deputatur initium.

Since one and the same material in its descent through certain courses of the ducts sometimes becomes phlegm, sometimes bile, i.e. yellow bile, sometimes black bile, and sometimes blood, the seed too, arises from the nutriment, i.e. food and drink, from which also the four humours themselves obtain their nourishment, and the origin of the seed is not assigned specifically to the blood.⁸⁶

In addition, we find in a letter, possibly written by Diocles to a King Antigonus, that four different fluids in the body are said to increase at different times of the year. For example, in spring there is an increase in phlegm and the sweet (γλυκύς) serums (ιχώρ) of blood until the rising of the Pleiades. From the rising of Pleiades to the summer solstice brings on a red type of bile (πυρρά χολή). There are also the bitter (πικρός) serums of the blood produced at this time.

⁸⁴ Frg. 3 (van der Eijk) = *Anonymus Bruxellensis, On the Seed 2* (p. 209,9-10 Wellmann); frg. 4 (van der Eijk) = Pliny the Elder, *NH*, XXVI.6. See Flashar, 1966: 50; van der Eijk, 2000: vii; Nutton, 2004: 122.

⁸⁵ It is common to find Diocles referred to being second after Hippocrates, as we find in Pliny the Elder. This, as van der Eijk suggests, might be related to the 'lists' that he was drawing upon or to the fact that Diocles' fame had risen so far by this time. See van der Eijk, 2001: 7-9.

⁸⁶ Frg. 40 (van der Eijk) = *Anonymus Bruxellensis*, 1-8 (p. 208,1-213,14 Wellmann). According to van der Eijk, the authorship of this text is now considered to be uncertain. The references to the four humours are from the second chapter of this text and the form of direct speech implies that this may be a quotation from one of Diocles' (lost) works. See van der Eijk, 2001: 79-82; Schöner, 1964: 72; Nutton, 2004: 123; 2005: 117-118.

From the summer solstice to the autumn equinox there is the black bile (μέλαινα χολή). Finally, from the setting of the Pleiads to the winter solstice there is an increase in phlegm (φλέγμα).⁸⁷ There is also reference to ‘cold’ (ψυχρός) and ‘thick’ (παχύς) phlegm being the cause of apoplexy or paralysis.⁸⁸ There is also a passage in *Anonymus Parisinus*, about Diocles’ theory that ‘melancholy’ (μελαγχολία) is caused when black bile gathers around the heart, which can affect a person’s mental faculties.⁸⁹ We find also that Galen quotes a long passage from Diocles’ *Affection, Cause, Treatment* in his *On the Affected Parts*, describing a type of melancholy that relates to problems in the stomach.⁹⁰ However van der Eijk has noted that there is a difference between these two sources on Diocles’ theory of melancholy. In Galen’s quotation there is no mention of black bile being the cause of this malady and he comments that Diocles did not associate melancholy with mental illness.⁹¹ We have seen that Galen has made the case for Diocles’ adoption of the four-humour theory of *On the Nature of Man*, which he attributes to Hippocrates (see pages 29-31 above). This seems to suggest, as van der Eijk points out, that Diocles can be regarded as basing his explanation of health and disease in the body on a humoral theory that has some significant similarities to the content of *On the Nature of Man*. Some parts, such as the formation of semen that I quoted above, implies that Diocles does refer collectively to blood, phlegm, yellow bile and black bile in this particular case. However, the controversy surrounding the reliability of these sources, along with the lack of direct detail on Diocles’ use of humoral theory, means that it is not possible to determine whether Diocles fully adopted the

⁸⁷ Frg. 183a (van der Eijk) = (Dubious), Paul of Aegina, *Medical Excerpts*, 1.100.1-6 (CMG IX 1, vol. 1, p.68,25-72,12 Heiberg). The provenance of this letter is a complex issue, with a large number of versions of this letter produced with different attributions to both sender and recipient. This version by Paul of Aegina is considered by van der Eijk to be the closest to the original. However, the authenticity of this letter is still controversial. See van der Eijk, 2001: 352-358; Nutton, 2005: 117-118. See also Schöner, 1964: 73.

⁸⁸ Frg. 95 (van der Eijk) = *Anonymus Parisinus, On Acute and Chronic Diseases* 4 (p. 24,21-26,8 Garofalo) and frg. 102 (van der Eijk) = *On Acute and Chronic Diseases* 21 (p. 122,18-124,9 Garofalo). Both of these passages also refer to Praxagoras for this material on pathogenic nature of phlegm, when it causes obstructions in the body. Information on the exact details and authenticity of this source, *Anonymus Parisinus*, is like the *Anonymus Bruxellensis*, very uncertain. See van der Eijk, 2001: xv-xvii.

⁸⁹ Frg. 108 (van der Eijk) = *Anonymus Parisinus, On Acute and Chronic Diseases* 19 (p. 116,22-118,2 Garofalo). See Flashar, 1966: 50-54; van der Eijk, 2001: 214-215.

⁹⁰ Frg. 109 (van der Eijk) = Galen, *Loc. Aff.* III.10 (VIII 185,14-189,2 K).

⁹¹ It has been suggest by van der Eijk that these two sources may be talking about two different theories of melancholy in Diocles’ writing. However, van der Eijk points out that it is likely that Galen would have mentioned that Diocles wrote about two different theories of melancholy. See van der Eijk, 2001: 215-224.

four-humour system of *On the Nature of Man* or alternatively, like the physicians and philosophers in the *Anonymus Londinensis*, he was utilising different types of substances to explain health and disease in the body. However, van der Eijk has questioned whether Galen can be fully trusted as a source for information on Diocles relating to the four humours.⁹² It is certainly the case that Galen has been incorrect in his inclusion of Plato and Aristotle in his list of medical authorities that have followed Hippocrates' humoral theory. Therefore, in the absence of any direct conclusive evidence from Diocles' own writing, we would have to accept Galen's view of Diocles in terms of the four-humour system at face value.

There is clearer evidence for Galen's manipulation of the work of Praxagoras of Cos, and some of his students, in relation to the content of *On the Nature of Man*. Starting with Praxagoras himself, we find that he postulated ten different types of humour for his theory of health and disease in the body. He calls the humours of phlegm: sweet (γλυκύς), equally mixed (ισόκρατος) and vitreous (ύαλοειδής). Other humours are named: acidic (ὀξύς), caustic (νιτρώδης), salty (άλυκός) and bitter (πικρός). Then there are the humours that are named due to their colour, such as leek-green (πρασοειδής) and yolk-coloured (λεκιθώδης). Finally, there is one humour that is called corrosive (ξυστικός).⁹³ In *On the Natural Faculties*, Galen acknowledges the fact that Praxagoras has postulated ten humours, but explains it as an adoption of Hippocrates' system of four humours with a division into a range of species of humours to denote their different varieties.⁹⁴ This is an example of Galen's manipulation of material that is related to the humours, which he presents as being part of a systematic development of a theory of four humours that has continued after Hippocrates.⁹⁵ There is a similar case for Phylotimus and Pleistonius, two of Praxagoras'

⁹² See van der Eijk, 2001: 48 and 86-87.

⁹³ Galen counts blood as the eleventh humour of Praxagoras' theory: Frg. 21 (Steckerl) = Galen, *Nat. Fac.* II.9 (II 140,15-141,14 K). Cf. Frg. 22 (Steckerl) = Rufus of Ephesus, p. 165, 14 (Daremburg). See Nutton, 2005: 118.

⁹⁴ Galen, *Nat. Fac.* II.9 (II 141,4-8 K).

⁹⁵ Blood is not included among these ten humours, and Steckerl suggests that Galen has interpreted Praxagoras' ten humours as being a division of the phlegm, yellow bile and black bile of the four-humour system in the Hippocratic *On the Nature of Man*. But Steckerl argues that this interpretation by Galen may be a manipulation of Praxagoras' work and that Praxagoras may not have been aware of the Hippocratic four-humour system. See Steckerl, 1958: 9-10.

students. Both are thought to have adopted a similar humoral theory to their master, but Galen tells us that Phylotimus refers to a thick (παχύς), glutinous (κολλώδης) and cold (ψυχρός) humour that can be produced in the body by foodstuffs such as barley cake (μάζα).⁹⁶ However, Galen is not justified in aligning the work of Praxagoras, Phylotimus and Pleistonicus with Hippocrates' humoral system and from the evidence that we possess, we do not find black bile (or the other three humours) being referred to explicitly in the theory of disease of these three physicians.

We have seen that Galen also lists Herophilus, another student of Praxagoras, as following Hippocrates' theory of the humours.⁹⁷ In general, Galen was impressed with Herophilus' discoveries in anatomy and viewed them as confirming parts of what he considered to be Hippocrates' theory on the benefits of therapeutics. However, Galen criticised Herophilus for ignoring the importance of the elemental qualities, hot, cold, dry and wet.⁹⁸ There has been some debate on whether Herophilus can be considered as adopting the four-humour system of *On the Nature of Man*, or that he actually postulated a more generalised theory of disease. In his 1989 study of the work of Herophilus, von Staden argues against Kudlien's view that Herophilus was sceptical about the role of the four humours to explain the cause of disease in the body.⁹⁹ According to von Staden the material in Galen's *On the Doctrines of Hippocrates and Plato* and *Diagnosis of Pulses*, along with the Pseudo-Galen *Introduction and Commentary on On Nutriment*, provides unambiguous statements that Herophilus attributed health and disease to the four-humour

⁹⁶ *Alim. Fac.* I.12, CMG V 4,2, p. 234,1-3 Helmreich (VI 509,14-16 K). In Phylotimus' *On Food*, there are many references to the humours of different qualities described by Praxagoras: Athen. *Deipnosoph.* II.53; II.81; III.79. See Steckerl, 1958: 108-113 and 124-126; De Lacy, 1980: 689-690; Nutton, 2005: 118.

⁹⁷ Schöner, 1964: 61; Nutton, 2004: 127-131.

⁹⁸ Frg. T232 (von Staden) = Galen, *MM*, X 309,15-310,8 K; frg. T233 (von Staden) = Galen, *MM*, X 184,8-185,2 K; frg. T234 (von Staden) = Celsus, *On Medicine*, III.9; frg. T237 (von Staden) = Galen, *Ven. Sect. Er.* VI (XI 169,2-17 K); frg. T238 (von Staden) = Galen, *Ven. Sect. Er.* V (XI 162,18-163,6 K). Nutton, 2004: 135.

⁹⁹ Von Staden points out that Kudlien's argument primarily rests on the content of two sources, one is the Pseudo-Galen, *Def. Med.* 149 (XIX 391,1-4 K) and the other is Celsus, *On Medicine*, Pref. 14-15. Kudlien suggests that Herophilus adopted a theory based on moistures, not humours and that this was only in reference to therapeutic treatments. Von Staden counters this argument from the fact that the passage from *Def. Med.* refers to the followers of Herophilus, and that Celsus regarded the terms 'moisture' and 'humour' as interchangeable. See von Staden, 1989: 242-246; cf. Kudlien, 1964a: 7-8 and 1964b: 8. However, Nutton states that there is no clear evidence that Herophilus used the four humour system of *On the Nature of Man*. See Nutton, 2005: 118-119.

theory of *On the Nature of Man*.¹⁰⁰ In the case of black bile, there are only two sources that refer specifically to this humour. One is from Galen's *Commentary on Aphorisms*, which refers to the Herophilean Bacchius' (along with the Empiricists Heraclides and Zeuxis) reading of an aphorism that associates alvine discharges with black bile. The other comes from the pseudo-Galen *Commentary on On Nutriment*, where there is a claim that Plato is in agreement with Herophilus (among others) in his writing on black bile.¹⁰¹ Neither of these sources can be used as evidence for Herophilus' use of black bile in his theory of disease, as Galen's *Commentary on Aphorisms* refers to Bacchius, not Herophilus and the *Commentary on On Nutriment* just compares Herophilus' view of black bile with that of Plato, which as we have seen (see pages 31-32 above), hardly refers to black bile at all. In terms of the possibility of Galen being correct in listing Herophilus as someone who has followed Hippocrates' humoral theory, I agree with Leith, who has argued that Herophilus postulated the cause of disease from residues in the body, not from 'elements' of the body, which is how Galen describes the four humours. Therefore, it is more likely that Herophilus' aetiology of disease is closer to that of the Aristotelian view relating to the production of residues from natural processes in the body (see pages 33-34 above).¹⁰² On the basis of this point of view, I believe that Galen is not justified in including Herophilus in his list of authorities that have followed Hippocrates' theory of the four humours.

We have seen that most of the evidence points to the fact that Galen has manipulated the content of the writing on the theory of disease of the physicians and philosophers that he lists as following the four-humour system of *On the Nature of Man*. There is not one case where there is clear evidence that any of these authorities had adopted the system of the four humours. The aetiological theories of Diocles, Mnesitheus and Herophilus seem at first to offer some evidence for a four-humour system similar to that found in *On the Nature of Man*. But, in the case of Herophilus, I am in agreement with the arguments that he did not use the four-humour system of *On the Nature of Man*. When it comes

¹⁰⁰ *PHP*, VIII.5.24, CMG 4,1,2, p. 510,1-5 De Lacy (V 684,17-685,4 K); *Dig. Puls.* II.3 (VIII 870,8-18 K); Pseudo-Galen, *Int.* IX (XIV 698,16-699,2 K); *Hipp. Alim.* III.21 (XV 346,8-19 K). See von Staden, 1989: 244-245.

¹⁰¹ *Hipp. Aph.* VII.70, (XVIIIa 186,12-187,3 K); *Hipp. Alim.* III.21 (XV 346,8-19 K). See von Staden, 1989: 83, 244 and 312-313.

¹⁰² Leith, 2015b: 485.

to Mnesitheus, it is impossible to determine his position on the four humours, given the lack of information that we have on his medical theory. It is only the material on Diocles that could support Galen's inclusion of this physician in the adoption and development of the humoral system in *On the Nature of Man*. However, I am inclined to agree with van der Eijk's assessment on the unreliability of sources on Diocles' use of the humours such as those in the *Anonymus Bruxellensis*, the *Anonymus Parisinus* and Galen. The medical theories of Plato, Praxagoras, Pleistonicus and Phylotimus, indicate that there are different types of humoral theory being used. But these are not related to the four-humour system of *On the Nature of Man*. Instead, we find that the humours are regarded as types of residues that can cause disease due to the effect of different types of qualities at certain places in the body. This is significant for black bile, as this substance is more generally characterised as a type of physiological or pathogenic residue in the medical texts, with the notable exception of *On the Nature of Man*. Finally, humoral theory is not used in the writing of Aristotle and Theophrastus, which negates any association with the four-humour system of *On the Nature of Man*. This is a very damning analysis of any justification for Galen's production of list of philosophers and physicians in relation to the historical development of the four-humour theory of *On the Nature of Man* from the fifth century BCE onwards.

It is interesting that Galen did not include Rufus of Ephesus in his list of physicians and philosophers that adopted Hippocrates' theory of the humours, as at the beginning of *On Black Bile*, Galen names Rufus as an important source on matters relating to the effect of black bile in the body.¹⁰³ Rufus was a prolific writer and wrote works on various medical topics, but unfortunately only very little of his work has survived. The humours were an important part of his medicine, but from what we know of his writing, he has based his humoralism in relation to his practice of using therapeutic methods, rather than the type of physiological theory that we find in the Hippocratic *On the Nature of Man* or in Galen's writing. Rufus believed that first a doctor should try to identify disease by external manifestations in order for treatment to be tailored specifically to each patient.¹⁰⁴ When it comes to the cause of the melancholy illness, Rufus

¹⁰³ *At. Bil.* 1, CMG V 4,1,1, p. 71,12-14 De Boer (V 105,3-5 K).

¹⁰⁴ Nutton, 2004: 214-215; Pormann, 2008: 146-147.

made a distinction between two types of black bile. The first black bile is less harmful, particularly when it has settled in its mixture with blood. The second type of black bile is more harmful and is produced by the heating of yellow bile.¹⁰⁵ In addition, Rufus wrote about the association between black bile and the spleen, as melancholy was linked to an illness in the spleen and the treatment involves the purging of the ‘burnt’ substances in the blood.¹⁰⁶ Therefore, there might be some argument to suggest an affinity between the work of Rufus and the content of *On the Nature of Man*; but Galen chooses not to list this physician among his most important humoral theorists.

1.3.5 Galen’s polemic against those he considers to be opposed to humoral theory

In contrast to those that Galen considered to be Hippocratic humoral theorists, we also find that he was very critical of anyone who denied the importance or existence of the humours in terms of health and disease in the body. For example, in *On the Doctrines of Hippocrates and Plato*, Galen claims that Erasistratus rejected the idea of an association between the four humours and the four elemental qualities. Further to this, in *On the Natural Faculties*, Galen complains that Erasistratus is ignorant of the ‘genesis of the humours’ (περὶ τῆς γενέσεως τῶν χυμῶν), as he does not say anything plausible about this subject. In terms of bile, Galen admits that Erasistratus connects the presence of too much bile in the body as a cause of a type of jaundice. But here Galen points out that surely then it is important to know whether this bile has come from food that contains a large amount of bile or that this bile has been generated in the body by some process. Galen also accuses Erasistratus of a neglect of the humours in *On the Affected Parts* and *On Black Bile*.¹⁰⁷ More generally, in texts such as *On the Therapeutic Method*, Galen interprets

¹⁰⁵ For the reference to the first type of black bile: Rufus of Ephesus, F21 (Pormann) = ar-Rāzī, *Comprehensive Book*. For the more dangerous type of black bile produced from yellow bile: F11 (Pormann) = Aëtius, *Medical Books*, vi. 9. See Pormann, 2008: 5.

¹⁰⁶ Rufus of Ephesus, F66 (Pormann) = Ibn Sarābiyūn ibn Ibrāhīm, *Important Chapters on the Medicine of the Masters*, ch. 9, Rufus, *Case Notes* 1.

¹⁰⁷ *PHP*, VIII.5.25, CMG V 4,1,2, p. 510,5-8 De Lacy (V 685,4-8 K); *Nat. Fac.* II.8; II.9 (II 107,4-10; 113,14-116,8; 141,16-142,3 K); *Loc. Aff.* III.10 (VIII 191,12-14 K). In *At. Bil.* (5; 7; 8, CMG V 4,1,1, pp. 82,3-5; 85,19-20; 88,6-7; 91,24-25 De Boer (V 125,13-15; 132,5-6; 137,7-8; 144,2-3 K)), Galen says that Erasistratus believed that speculation on the humours was useless and wrote nothing about the origins of the humours. See Jouanna, 2006: 119.

Erasistratus' aetiology as being based on 'proximate elements', which are the uniform parts of the body. This includes substances such as blood, phlegm and yellow bile. It is not clear, as Leith points out, exactly what Erasistratus postulated in terms of the primary elements of the cosmos. But, it is likely that it may be similar to Aristotle's view of the qualities and elements (see pages 33-34 above).¹⁰⁸ However, we find that Galen refers to Erasistratus' view of the function of some of the humours in the body. For example, in *On Black Bile*, Galen reports that Erasistratus had written about the relationship between yellow bile and diseases, such as jaundice.¹⁰⁹ We find that Erasistratus acknowledged some aspects of the importance of the humours in medicine, considering them to be pathogenic substances that cause disease either by inhibiting the flow of other fluids in certain places in the body, or by being in excess.¹¹⁰ However, Galen reports that Erasistratus did not write anything about black bile, and denies that black bile is the cause of the melancholy illness or diseases, such as cancer and elephantiasis.¹¹¹ It is within this polemical context that Galen defends the existence, status and function of black bile to explain health and disease in his treatise *On Black Bile*.

Galen makes a similar criticism of the second century BCE physician, Asclepiades of Bithynia, in relation to his rejection of the four-humour system of *On the Nature of Man*. For example, in *On the Elements According to Hippocrates* and *On the Natural Faculties*, Galen attacks the corpuscular theory of Asclepiades, claiming that it is inferior to Hippocrates' theory because it cannot account for the purgation of the four humours.¹¹² Asclepiades developed a physiological theory, which proposed that certain fundamental particles, called corpuscles (ἄναρμοι ὄγκοι), travel through the body. The proper balance of these particles in the body promoted good health, but anything that might inhibit their movement could cause disease.¹¹³ In this theory, the invisible corpuscles

¹⁰⁸ *MM*, II.5 (X 107,3-14 K). See Leith, 2015b: 464-470.

¹⁰⁹ *At. Bil.* 5, CMG V 4,1,1, pp. 80,26-81,9 De Boer (V 123,8-124,4 K).

¹¹⁰ Nutton, 2004: 135-137; 2005: 118. Jouanna, 2006: 119.

¹¹¹ *At. Bil.* 5; 7, CMG V 4,1,1, pp. 80,26-82,7; 85,19-86,10 De Boer (V 123,8-125,17; 132,5-133,13 K).

¹¹² *Hipp. Elem.* 12.9-13.23, CMG V 1,2, pp. 148,5-154,10 De Lacy (I 500,16-506,7 K); *Nat. Fac.* I.13 (II 43,15-44,12 K).

¹¹³ Leith provides a summary of the debate in modern scholarship on the question of Epicurean influence on Asclepiades' theory. Vallance has argued for Asclepiades' theory being closer to that of Erasistratus than the Epicureans. In opposition to this, Pigeaud and Casadei assert the

can, at certain times, clump together and block the invisible pores throughout the body, which normally allow the passage of the corpuscles. Alternatively, if the corpuscles become abnormally separated, then the body experiences relaxation. There has been some suggestion that in Galen's writing about Asclepiades' theory of matter he associates Asclepiades with the Methodist school of medicine. However, Leith argues that there is no evidence that the Methodists postulated a doctrine relating to the 'void', which we find in Asclepiades' theory.¹¹⁴ What we find is that Galen opposes Asclepiades' theory of matter because he believes that it cannot explain how pain can be felt in the body.¹¹⁵ He also challenges Asclepiades concerning his views on the humours. For example, in *On the Natural Faculties*, Galen's view is that Asclepiades has disregarded what should be acknowledged as the true faculties in the body, and has developed an atomist theory, which fails to explain the most basic biological principles such as how blood is produced. There is further criticism of Asclepiades' ideas about the production of the humours. According to Galen, Asclepiades postulated that yellow bile is produced in the bile-ducts. In the case of drugs that purge humours, he also claims that Asclepiades believed that the humours are actually produced by the purgative drugs themselves. The outcome of this is that it does not matter which purgative drug is used for a treatment of any specific disease. This is because Asclepiades claimed that all purgative drugs will cleanse the body equally. One example given by Galen is the use of scammony to evacuate bile in the case of jaundice. In this case, Asclepiades' theory would predict that this drug will actually turn blood into bile, harming the body. But Galen says that many people have been treated successfully with this drug. He warns that those who follow Asclepiades' theory will eventually start distrusting their own senses, when they make observations

Epicurean influence on Asclepiades' theory. Leith observes that the situation concerning the content of Asclepiades' work cannot be explained by this polarised view. However, as Leith points out, the work of Polito shows that Asclepiades should be considered 'as an independent and innovative thinker'. This means that it is important to view Asclepiades' theory in relation to Epicurean atomism. Therefore, his association with this particular philosophical theory is more complex than it at first may seem. See Pigeaud, 1980: 176-200; 1981: 141; Furley and Wilkie (1984): 38-39; Vallance, 1990: 1, 10 and 123-130; Polito, 2006: 285-335; Leith, 2009: 284; 2012: 164-165.

¹¹⁴ *Caus. Morb.* 1; 7 (VII 1,1-2,14; 32,17-33,4 K); *SMT*, XI 783,7-12 K; *MM*, IV (X 267,14-268,6 K). See Frede, 1987: 272; Vallance, 1990: 57-58; Pellegrin, 2009: 676; Leith, 2012: 168-170.

¹¹⁵ *CAM*, VII.13, CMG V 1,3, p. 76,19-23 Fortuna (I 249,13-250,2 K). See Leith, 2009: 292. Galen constructs a similar argument against those he describes as atomists in *On the Elements According to Hippocrates*. See chapter 2 'Galen's strategy for his portrayal of Hippocrates as a philosopher', section 2.4.1 below.

in these types of cases.¹¹⁶ In addition to this, in *On the Elements According to Hippocrates*, Galen attacks Asclepiades on the inadequacy of his corpuscular theory to explain the purgation of the humours, as opposed to what he considers to be the best explanation in the Hippocratic *On the Nature of Man*.¹¹⁷ Again, as in the case of Erasistratus, Galen believes that it is necessary to defend the existence of the black bile humour (along with the other three humours) against rival positions that posit theories that deny either that black bile is not a fundamental 'element' of the body, or that it does not actually exist at all.

1.4 Summary

There are some important issues that relate to Galen's selection of the four-humour system of the Hippocratic *On the Nature of Man* as the best theory of how proximate elements can explain health and disease in the body. The first is that Galen is committed to the inclusion of black bile as a fundamental substance in the body. However, the survey of a number of different aetiological theories from medical writers both within the Hippocratic Corpus, and outside of it, reveal that, even when black bile is included in a theory of disease, it is not considered to be a fundamental substance in the body, as it is in *On the Nature of Man*. Galen goes further and associates this four-humour theory, not only with Hippocrates himself, but also with some of the most prominent physicians and philosophers of the fourth and third centuries BCE. In this way, Galen is attempting to support his claim for the superiority of the four humours, which is found to be unsubstantiated from the evidence that we possess. However, on

¹¹⁶ *Nat. Fac.* I.13 (II 39,4-43,15 K). I will be going into more detail about Galen's criticism of Asclepiades' views on black bile and the spleen in chapter 5 'The cleansing of harmful black bile from the body', section 5.3 below.

¹¹⁷ Galen tells us that Asclepiades' concept of nature, which is based on particles and pores, is contrary to all that is excellent in the art of medicine. In terms of the nature of purgative drugs, Galen says that Hippocrates and all subsequent physicians have learned about this phenomenon by experience and testing. Galen asks the question, if purging is only beneficial because it empties the body, then why not open a vein and bleed a person, whatever the ailment? So, Asclepiades is forced into his conclusion concerning purging because of the way that his particles and pores must operate in practice. There is the observation that when each drug draws out a specific humour, we find that further purgation is possible. According to Asclepiades' theory, during any purgation of the four humours, one of two things should have occurred; either the purging of a humour should cease, or only the first humour that is purged should be extracted. But neither of these is in agreement with observation. See *Hipp. Elem.* 12.1-2; 12.7-8; 13.16-19, CMG V 1,2, pp. 146,8-14; 146,23-148,4; 152,13-23 De Lacy (I 499,1-9; 500,5-16; 504,14-8 K). See also Pendrick, 1994: 227.

the contrary, it is clear that the four-humour system of *On the Nature of Man* is only one among a large number of humoral and non-humoral theories. This sets up a false status of black bile, as if it was one of the most important substances in the body in ancient medicine. This shows part of Galen's strategy to manipulate the writing of some of the key authorities in the past to support his arguments against anyone who is critical of Hippocrates and denies the importance of black bile in the theory of the cause of health and disease in the body. When Galen does this, he suppresses the fact that black bile is either characterised as a physiological or pathogenic residue, or is not actually mentioned in some of the medical theories at all. This applies both to a large number of treatises in the Hippocratic Corpus, but also to the many different types of theory of disease that have been produced by philosophers and physicians over several centuries, from the fifth century BCE onwards. The classification of black bile in terms of the content of *On the Nature of Man* provides its own explanation of disease from the mixture of the four humours. This means that black bile causes pain and disease in the body when it is either in excess or defect, or is separated from the overall humoral mixture. However, in *On the Nature of Man* there is very little information on the form and particular qualities of black bile (aside from it being 'cold and dry'). This leaves Galen with a problem of explaining how black bile can be responsible for diseases that have symptoms of pustules and corrosions of bodily tissue, if he only uses the description of black bile found in *On the Nature of Man*. We shall see that Galen overcomes this potential problem by expanding the characterisation of black bile beyond the content of *On the Nature of Man*. He does this by utilising information on black bile from a number of sources, such as other texts from the Hippocratic Corpus, material from Plato and Aristotle, and some of the physicians that he has named as following Hippocrates' humoral system. We shall see in the next chapter that Galen's commitment to the content of *On the Nature of Man* can be explain in terms of the way that he presents Hippocrates as a philosopher and the way that he uses the content of *On the Nature of Man* to support his argument that Hippocrates was the originator of all that was important in the field of qualities, elements and humours to explain health and disease in the body.

2 Galen's strategy for his portrayal of Hippocrates as a philosopher

2.1 Introduction

In the previous chapter, we found that Galen had chosen the four-humour system of the Hippocratic *On the Nature of Man* as the best explanation of the cause of health and disease. One of the ways to understand the importance of this specific treatise in Galen's work on the characterisation of black bile is to investigate how and why Galen portrays Hippocrates as a philosopher. In this chapter I am going to analyse the importance of philosophy for Galen's development of a biological theory that explains the cause of health and disease in the body. It is within this system that we can understand how he characterises black bile to explain health and disease in the body. I will start with the information on why philosophy is important in medicine from Galen's *The Best Doctor is also a Philosopher*, which will include a short discussion on the importance of logic for proof in medicine. I am interested in three aspects of Galen's use of philosophy in his writing about medicine in the context of the work of Hippocrates. Firstly, there are certain areas of his biological theory, relating to his writing on black bile, where Galen is dependent upon philosophers, such as Plato and Aristotle. Secondly, how Galen is able to show that Hippocrates was not only in agreement with the work of philosophers, such as Plato and Aristotle, in these particular areas of philosophy, but that Hippocrates was actually the originator of such work applied to medicine. Finally, I want to investigate which texts from the Hippocratic Corpus Galen selects for his evidence for Hippocrates' original work in these areas of philosophy. The Hippocratic *On the Nature of Man* is of particular interest to me, as it not only contains the material on black bile as one of the four humours, but is the basis of what Galen regards as Hippocrates' humoral theory, which he then claims was followed by several prominent physicians and philosophers over a long period of time. There are three main areas of philosophy, relating to Galen's development of black bile in his biological theory, which I am going to use for my analysis: the tripartite division of the soul, element theory and teleology. In each case I will set out how Galen uses the work of philosophers, such as Plato and Aristotle, as well as showing how he presents Hippocrates as

being the originator of the work in these three areas in medicine. I will also investigate which treatises from the Hippocratic Corpus Galen uses to support his argument concerning Hippocrates' pioneering work for these three cases. Overall, we shall see that Galen is very selective in his material from different sources and he can distort the true picture of where particular ideas come from. This is particularly pertinent when he attributes to Hippocrates ideas which cannot be found in the Hippocratic Corpus. Therefore, my aim in this chapter is not only to discuss the aspects of philosophical theories that are important for understanding Galen's presentation of black bile, but also to show some examples of where Galen has manipulated the content of sources, presenting Hippocrates as their originator, even when no such evidence can be found.

2.2 Galen and the importance of philosophy for medicine

If we look at Galen's writing, we find that he does not always have a positive view of philosophers. There are occasions where it seems that he attempts to distance himself from a group of people that he labels as the 'philosophers' (φιλόσοφοι). For example, in *On the Formation of the Foetus*, Galen asks if the 'philosophers' could tell him the identity of the 'divine creator'. In these cases of his negative attitude to the 'philosophers', it is not philosophy itself that he wants to distance himself from, but those that attach themselves to a particular philosophical school or doctrine, and who may spend too much time and effort asking questions that are not relevant to medicine, or that he believes are unanswerable.¹ Part of the attraction of philosophy to Galen is the ability to construct proper demonstrative proofs and he is critical of any-one, who identifies himself as a philosopher, but cannot apply this type of argument correctly. For example, in *The Diagnosis and Cure of the Errors of the Soul*, Galen names the Peripatetics, Stoics and Epicureans, as people who are unable to provide a proper demonstrative proof. He claims that the sort of argument that they commonly deploy is the same sort of dialectical proofs as used by professional orators.² There is a similar criticism voiced by Galen in *On My Own Books*, where he says that he had studied the logical theory of the

¹ Gal. *Foet. Form.* VI, CMG V 3,3, p. 92,5-6 Nickel (IV 687,14-15 K); cf. *Pecc. Dig.* II.7, CMG V 4,1,1, p. 68,4-18 De Boer (V 103,1-16 K). See Singer, 2015: 14-15.

² *Pecc. Dig.* II.7, CMG V 4,1,1, pp. 67,8-68,4 De Boer (V 101,12-103,1 K). See Chiaradonna, 2015: 63.

Stoics and Peripatetics, but was unable to use it to produce the necessary demonstrative proofs. In addition to these two philosophical schools, he also adds the Platonists as perpetrators of this inferior type of philosophical argument. Galen's concern here is that the followers of the different schools are not only in conflict with each other, but there is also conflict within the schools themselves and this is more so for the Stoics and Platonists, than the Peripatetics.³ This is part of Galen's overall strategy to present himself as independent of the main philosophical schools of his time, when he is writing about philosophical concepts or arguments. In this way he seeks to access the writing of Plato and Aristotle directly, without associating himself with the contemporary followers and schools of these two philosophers.⁴

Galen sets out his general view on philosophy and how it is essential to medicine in *The Best Doctor is also a Philosopher*. In this work, Galen complains that the aspiring doctors of his time have neglected training in certain philosophical disciplines, which he argues are necessary for proper medical practice. Galen makes it clear that he considers Hippocrates to be the first physician who has demonstrated the correct philosophical methodology for medicine. We find that Galen discusses the importance of particular philosophical areas, such as geometry, astronomy, the ability to distinguish between genus and species, and logical theory.⁵ Galen is concerned with the general lack of commitment to intellectual study in society, as he believes that the physicians working in the second century CE not only neglect this type of training, but also are critical of people that undertake it.⁶ Galen argues that a doctor must know all the parts of philosophy, which he defines as 'the logical, the physical and the ethical' (τό τε λογικόν, καὶ τό φυσικόν, καὶ τό ἠθικόν). The inclusion of ethics applies to the doctor's conduct in practising medicine, which should move him towards a more temperate lifestyle (σωφροσύνη).⁷ For

³ *Lib. Prop.* 11 (XIX 39,1-41,5 K). See Tieleman, 2008: 51.

⁴ Frede, 1987: 281-285.

⁵ Here Galen refers to genus (γένος) and species (εἶδος), which we also find in Aristotelian biological taxonomy. In this system genus is a grouping according a unique feature, such as wings, which are not shared by other groups. The species relates to the different forms within a genus group, such as birds have wings, or fish have fins. This can also be applied to different levels of generality. See Balme, 1987: 72.

⁶ *Gal. Opt. Med.* 1 (I 53,1-55,9 K).

⁷ *Opt. Med.* 3 (I 60,10-61,8 K). The division of philosophy into the three categories: logic, physics and ethics can also be found in Stoicism, but Galen is not advocating this philosophical

Galen, a doctor must not just acknowledge the importance of philosophy in medicine, but he must train hard in developing the skills from philosophy that are useful in medical practice, this is part of the ethical and serious attitude to knowledge that can only come through philosophy.⁸ Galen ends this work with the advice that ‘true followers of Hippocrates’ (Ἰπποκράτους ἀληθῶς ... ζηλωταί) should consider philosophy as ‘foremost’ (πρότερον), giving the overall impression of Hippocrates’ superior ability in philosophy and his deployment of it within the field of medicine.⁹ We can understand why Galen would highlight ethics as being important in Hippocrates’ writing, as he could point to various parts of the Hippocratic Corpus where he could show that best practice in terms of optimum regime for health are advocated. When it comes to ‘physical’ theory, we shall see later in this chapter that Galen attempts to align Hippocrates with the work of Plato in terms of the anatomical system of the ‘ruling part of the soul’ in *On the Doctrines of Hippocrates and Plato*.¹⁰ Further to this, there is also Galen’s defence of what he considers as Hippocrates’ theory of qualities, elements and humours, that he believed there is evidence for it in Hippocrates’ work.¹¹ But did Galen also associate Hippocrates with this type of logical methodology?

For Galen, the importance of logic in medicine was the ability to discover the truth. So we find in *On the Therapeutic Method*, Galen’s claim that logic can discern truth from falsehood. Here, Galen is referring to a methodology of logic, which can produce a demonstration. This is constructed from premises (accepted as being true) and by a process of deduction can provide a conclusion. This method, which Galen classifies as ‘demonstrative’ (ἀποδεικτική), is the standard for what he considers as proof that something is true.¹² This term is used by Galen many times to say that Hippocrates has proven something. For example, in *On the Elements According to Hippocrates*, Galen tells us that Hippocrates has proven that the fundamental element in the

school as the one to follow, or indeed any particular philosophical school. See Aetius, I, Preface 2 (LS 26A); Diogenes Laertius, 7.39-41 (LS 26B); Plutarch, *On Stoic self-contradictions*, 1035A (LS 26C).

⁸ Hankinson, 2008b: 210-211; Chiaradonna, 2015: 61 and Singer 2015: 9.

⁹ *Opt. Med.* 4 (I 62,16-63,4 K).

¹⁰ See section 2.3 below.

¹¹ See section 2.4 below.

¹² *MM*, II.2 (X 8,17-9,12 and 18 K); *Ord. Lib. Prop.* 1 (XIX 50,5-8 K). See Morison, 2008: 68-69.

body cannot be one in form and power and that the four qualities are the elements of all things in the universe.¹³ Galen emphasises Hippocrates' use of the demonstrative method, as he claims that Hippocrates developed a method that can determine the 'nature' of the elements, such as knowing if they are just one, or many, and identifying their particular characteristics. However, as Leith points out, a fully developed methodology of this type does not appear in *On the Nature of Man*, but it can be found in Aristotle's *Physics*.¹⁴ In this way Galen is manipulating the content of *On the Nature of Man* in order to create a 'history' of the development of this methodology to examine natural phenomena, which has Hippocrates as the founder, and then a later development by authorities such as Aristotle. We saw a similar strategy when Galen listed the physicians and philosophers that have followed Hippocrates' four-humour theory.¹⁵

Another example of Galen's discussion of the proper use of logic in demonstration is his refutation of the Stoic theory of the ruling part of the soul in *On the Doctrines of Hippocrates and Plato*. In this work, Galen is defending what he considers to be the correct tripartite body-soul theory by both Plato and Hippocrates against the cardio-centric model postulated by Aristotle, Theophrastus and Chrysippus.¹⁶ At one point, Galen argues against the Stoic theory that speech and respiration come from the heart, not from the brain. Here he criticises the Stoics for not applying the proper methodology to construct a logical demonstration based on sound premises.¹⁷ However, in contrast, Galen is more sympathetic to Aristotle, even though Aristotle agrees with the Stoics on the cardio-centric model of the ruling part of the soul. Galen explains Aristotle's position as a mistake because he used inferior empirical anatomical information, but he acknowledges that Aristotle has used two correct premises. Firstly, that considerable strength is required for voluntary action and

¹³ Gal. *Hipp. Elem.* 1.8; 10.1, CMG V 1,2, pp. 58,22-26; 138,15-18 De Lacy (I 416,9-13; 492,3-7 K); cf. Hippocratic Corpus, *Nat. Fac.* 1.2 (II 5,8-13 K). There are many other examples of Galen using the term ἀπόδειξις to report that Hippocrates has proven something important in medicine.

¹⁴ Gal. *Hipp. Elem.* 2.1-2, CMG V 1,2, p. 58,6-10 De Lacy (I 415,4-10 K); Aristotle, *Ph.* 1.2, 184,b15-22. See Hankinson, 2009: 233; Leith, 2015a: 215-216.

¹⁵ See chapter 1 'Introduction', section 1.3.4 above.

¹⁶ *PHP*, I, CMG V 4,1,2, pp. 64,15-19 De Lacy (Fragment from book 1). See Vegetti, 1999: 342.

¹⁷ *PHP*, II.5.1-97, CMG V 4,1,2, pp. 128,15-148,6 De Lacy (V 240,6-262,10 K). Morison explains that Galen attempts to refute the Stoic position based on a criticism of their use of logic in terms of ambiguity of language. Galen considers three different versions of the Stoic argument by Zeno of Citium, Diogenes of Babylon and Chrysippus, but focuses more on Zeno. See Morison, 2008: 75-83.

secondly that no such strength exists in the brain. However, Galen believes that Aristotle was mistaken in using a third premise, which seemed plausible, that the large number of nerve-like ligaments in the heart go to all the parts of the body.¹⁸ He is less critical of Aristotle here, as he acknowledges him as someone who has developed arguments under the deductive methodology that Galen favours. We find that he sometimes praises the work that Aristotle has done on scientific demonstration. For example, in *On Semen*, Galen says that Aristotle frequently makes use of proper scientific demonstrations.¹⁹ However, this shows the importance of not only the construction of logical methods for arguments, but also that sound premises must be chosen to bring about a conclusion that is robust against refutation. In the example above concerning the location of the ruling part of the soul, Galen has tested a premise against what he considers to be the correct anatomical information and found that the premise was incorrect, this then affects the outcome of the conclusion. Therefore, we see an example of Galen's combined 'logico-empiric' methodology, where a reasoned argument is tested against empirical data.

2.3 Galen's reliance on Plato for his concept of the tripartite system of the soul

In the above discussion on Galen's emphasis on the correct use of logic, I referred to his writing on the anatomy of the physical location of the 'ruling part of the soul' in *On the Doctrines of Hippocrates and Plato*. We shall see that when it comes to an explanation of how a physical substance, such as the black bile humour, can affect a person's emotional state or cognitive reasoning, Galen requires there to be a direct association between the physical parts of the body and what he considers as the rational soul in the body. This will be important when it comes to Galen's explanation of how black bile can cause an illness like melancholy that produces changes to the state of the mind.²⁰ In *On the Doctrines of Hippocrates and Plato*, Galen puts forward an argument for the agreement between Plato and Hippocrates on the question of the location of the

¹⁸ *PHP*, I.10.1-10, CMG V 4,1,2, pp. 96,12-98,13 De Lacy (V 206,4-208,8 K). See Vegetti, 1999: 344.

¹⁹ *Sem.* II.1.74, CMG V 3,1, p.160,22-23 De Lacy (IV 610,8-10 K).

²⁰ See chapter 6 'The diseases caused by black bile', section 6.1 below.

ruling part of the soul (ἡγεμονικόν) in the body. He says that Plato concurred with Hippocrates that the soul has three parts: rational, desiderative and spirited powers. Further to this, each of these parts of the soul is associated with an organ in the body; the brain, the liver and the heart respectively.²¹ Towards the end of *On the Doctrines of Hippocrates and Plato*, Galen explains that Plato is presenting this subject from the position of a philosopher, and Hippocrates is writing about the same subject from a position of a physician.²² This is different from what we saw when Galen criticised the Stoic and Aristotelian view of the ruling part of the soul, as he disagreed with their conclusion that he rejected due to disagreement with his opinion on the anatomical structure of the body (see pages 52-53 above). However, Galen agrees with Plato's view of the ruling part of the soul, and wants to associate it with Hippocrates. The problem is that on the one hand, Plato constructs a theory, but provides very little empirical medical information. On the other hand, there is no theory of the ruling part of soul in the Hippocratic Corpus, but there is some physiological information that Galen can draw upon. Therefore, Galen combines the theory of Plato with the empirical material from the Hippocratic Corpus, and then tries to make it seem that they are in agreement.

We see this in the way that Galen attempts to justify the different descriptions of the liver, the desiderative part of the tripartite system of the soul, by Plato and Hippocrates. Galen claims that the view that the liver is the source of nutrition and genesis of the blood is present in both Platonic and Hippocratic writing. But there is a difference in the way that these two authorities develop their evidence for this phenomenon. Plato discusses the nature of the soul in terms of its 'powers'. In contrast, in the Hippocratic works, information on the emotional and cognitive aspects of human psychology is generally presented in terms of the physiology of the bodily organs.²³ For example, in the case of the association

²¹ *PHP*, IV.1.11-12, CMG V 4,1,2, p. 236,16-23 De Lacy (V 363,12-364,3 K).

²² *PHP*, IX.1.1-3, CMG V 4,1,2, p. 540,4-13 De Lacy (V 720,4-721, 6K). See Vegetti, 1999: 342.

²³ Galen uses passages from the Hippocratic *Alim.* (XXXI (IX 110,1-3 L)) and *Epid. II* (IV.1 (V 120,13-124,8 L)) for his evidence that Hippocrates wrote about the importance of the connection of the blood vessels from the stomach to the liver. See Gal. *PHP*, VI.8.53-71, CMG V 4,1,2, pp. 418,17-422,11 De Lacy (V 576,12-580,18 K). Galen states explicitly that *On Nutriment* was written by Hippocrates in *HVA* (III.17, CMG V 9,1, p. 238,8-12 Helmreich (XV 666,7-12 K)). See Anastassiou and Irmer, 1997, volume II.1, pp. 53 and 56; Craik, 2015: 23. Galen also accepted that *Epidemics II* followed Hippocratic doctrine. See chapter 3 'Galen's

between 'spirited' power and the heart, Galen quotes the *Timaeus* for Plato's account, but when it comes to sources from Hippocrates, he uses passages from *On Nutriment* and *Epidemics II*. For these two texts, Galen attempts to show that Hippocrates had associated the heart with spirited emotions. So, we find that Galen quotes a passage from *On Nutriment*, which refers to a vein in the elbow that throbs in a type of person who is quick to anger. The use of these passages is consistent with the texts that Galen considers to be Hippocratic in origin.²⁴ However, Galen also quotes a passage from the appendix section of *Regimen in Acute Diseases (Acut. [Sp.]*), which he attributes to Hippocrates directly by using the phrase 'Hippocrates says' (ὁ Ἱπποκράτης φησίν).²⁵ Then there is Galen's claim that Plato and Hippocrates are in agreement that the brain is the beginning of our voluntary motion, which is the most basic part of our cognitive abilities.²⁶ We can see how this fits with Plato's tripartite system of the soul in the *Timaeus*, but what about the evidence from the Hippocratic Corpus on the brain as the location of the body for our ability to think and act?

There is one text in the Hippocratic Corpus that discusses the brain as the location in the body, which is responsible for a wide range of bodily functions. This is *On the Sacred Disease*, where there is a general description of the brain, which is said to consist of two halves, separated by a thin membrane. It is connected to the rest of the body by veins, two of which are thicker than the rest, which connect the brain to the liver and the spleen. We are also told that the brain is solely responsible for our emotions, such as joy and laughter or sorrow and grief. The brain is also the place for our thinking, and processing of information for sight and hearing, which we use to understand the world around

opinion on the authenticity of the individual treatises in the Hippocratic Corpus', section 3.3.1 below.

²⁴ Plato, *Ti.* 70b; Hippocratic Corpus, *Epid. II*, IV.4; V.16 (V 126,7-9;130,18-20 L); Gal. *PHP*, VI.8.45-47; 73-76, CMG V 4,1,2, pp. 416,24-36; 422,20-424,8 De Lacy (V 574,14-575,10; 581,11-582,16 K).

²⁵ Hippocratic Corpus, *Acut. [Sp.]*, XIII (VII L) (II 420,13-14 L); Gal. *PHP*, VI.8.75-76, CMG V 4,1,2, pp. 422,30-424,8 De Lacy (V 582,7-16 K). However, there is a problem here because Galen rejected the whole of this part of *Regimen in Acute Diseases*, and so at this point it is convenient for Galen to use this material and attribute it to Hippocrates, even though he rejects the authenticity of the general material from this 'appendix' section of this treatise elsewhere in his writing. See chapter 3 'Galen's opinion on the authenticity of the individual treatises in the Hippocratic Corpus', section 3.2.5 below.

²⁶ Galen, *PHP*, II.8.25; VIII.1.1-6, CMG V 4,1,2, pp. 162,4-6; 480,4-31 De Lacy (V 278,3-6; 648,4-650,11 K).

us.²⁷ All of this information could be used by Galen as evidence for a Hippocratic view of the importance of the brain for our cognitive abilities that would be in agreement with Plato's writing. But there are no references to these passages from *On the Sacred Disease* in Galen's *On the Doctrines of Hippocrates and Plato* or any of his other extant works. However, a large portion of the material at the start of *On the Doctrines of Hippocrates and Plato* is missing and so it is conceivable that this section might contain a reference to the content of *On the Sacred Disease*. But, he does not use this text later on in *On the Doctrines of Hippocrates and Plato* when he draws upon material from other Hippocratic treatises in his discussion of the tripartite nature of the soul.²⁸ Therefore, the absence of any Hippocratic physiological and anatomical theory of the nervous system weakens Galen's argument that Hippocrates developed a theory of the brain as the location of the 'reasoned' part of the tripartite soul in agreement with what is found in Plato's writing. So it is strange that if Galen was aware of the content of *On the Sacred Disease* (and the evidence suggests that he was), why did he not include this in his argument in *On the Doctrines of Hippocrates and Plato*? In contrast, we can see that Galen has selected material from the Hippocratic Corpus, from treatises such as *Epidemics II*, *On Nutriment and Regimen in Acute Disease [Appendix]*, to support his argument that there is agreement between Hippocrates and Plato on the existence of a tripartite system of the soul physically located in the human body.

Peter Singer has raised an issue concerning Galen's discussion of the mortality of the rational part of the soul. We find that Galen assimilates Platonic and Aristotelian terminology, which Singer suggests, has allowed Galen to associate Aristotle with Plato within his discussion of the rational part of the soul, even though Plato and Aristotle had different theories relating to the location of the 'soul' in the body. This allowed Galen to use a 'physicalist' explanation of the soul that is based on 'form' (εἶδος), which provides a framework to understand the rational soul as a mixture in the brain.²⁹ In this way Galen ignores the

²⁷ *Morb. Sacr.* VI (3 L); XVII-XX (14-17 L) (VI 366,5-25; 386,15-394,8).

²⁸ We would expect Galen to quote or reference the content of *On the Sacred Disease* in this type of discussion, if he really considered it to follow Hippocratic doctrine. However, in comparison to the similar text, *Airs, Waters and Places*, Galen makes very little reference to *On the Sacred Disease* in the extant writing we have by him. See chapter 3 'Galen's opinion on the authenticity of the individual treatises in the Hippocratic Corpus', section 3.2.7 below.

²⁹ *QAM*, 2 (IV 771,10-772,16 K). See Singer, 2013: 348-349.

Platonic theory of the soul based on physiological capacities, and this provides Galen with a way to associate the rational soul with physical structure of the brain. This is utilised by Galen in *On Affected Parts* to explain the way that black bile can cause melancholy by directly affecting the physical substance of the brain.³⁰ This shows that Galen can draw upon the content of Plato's *Timeaus* to support his anatomical structure of the body and the three organs that are important for understanding how the physical parts of the body affect the different parts of the soul in terms of emotions and rational thinking. However, when it comes to the actual detailed information on the physical structure of the organs, Galen prefers to use the Aristotelian element theory. Galen may combine different parts of Platonic and Aristotelian theory to support his view on anatomy, physiology and even psychology for his overall biological theory of health and disease, but ultimately he gives the credit to Hippocrates as the originator of these ideas. We can find many examples of Galen's strategy to draw upon varied sources, which he claims was started by Hippocrates, when he writes on the important topic of element theory in medicine.

2.4 Galen's element theory

Galen's use of elemental theory is very important for the way that he characterises black bile, as he uses the content of the Hippocratic *On the Nature of Man* to define the innate, fundamental, form of this humour as containing the paired qualities, 'cold and dry'.³¹ If we look again at the content of Galen's *The Best Doctor is also a Philosopher*, we find that Galen adopts a similar system to the Aristotelian concept of three levels of physical substance. The most fundamental level consists of the 'primary elements' (πρώτα στοιχεῖα) which mix together to form more substantial matter. Uniform or homogeneous (ὁμοιομερής) substances are the second level of matter and the third level contains the more complex structures, such as the organic

³⁰ See chapter 6 'The diseases caused by black bile', section 6.1 below.

³¹ See chapter 4 'Galen's characterisation and physical description of the black bile humour', section 4.1 below.

(ὁργανικός) parts of the body.³² In *On the Natural Faculties*, Galen explains the interaction of substances in terms of capacity or faculty (δύναμις), which defines the attractive, retentive and assimilative nature of fluids, substances and organs in the body.³³ Therefore, when it comes to the language used to write about fundamental matter, Galen has a tendency to select terms that are distinctly Aristotelian. However, we find that Galen has developed the language further than it appears in its Aristotelian context. One example is Galen's use of the term 'first substance' (πρώτη οὐσία) in relation to his view of what is meant by underlying matter, which is found in a slightly different context in Aristotle's works.³⁴ Another example, which comes from Galen's *On the Elements According to Hippocrates*, contains the terms: 'elements' (στοιχεῖα) and 'first principles' (ἀρχαί), which are traditionally considered to have been defined by Aristotle. But Galen has developed these terms beyond what we find in Aristotle's writing, as he uses more detailed definitions of both στοιχεῖα and ἀρχαί.³⁵ Galen's application of the term for elements (στοιχεῖα) is particularly interesting, as he frequently utilises it in his explanation of the content of Hippocratic works, when referring to fundamental substances.³⁶ However, the term στοιχεῖον is not found in the Hippocratic Corpus in the context of a fundamental substance. Instead, there is only one instance of the use of στοιχεῖον in the extant Hippocratic Corpus and this refers specifically to one object as part of a set of a larger set of objects, not to fundamental matter.³⁷ This is part of Galen's strategy to present what he considers to be Hippocrates' work in Aristotelian language, which makes it easier for him to associate the work of Hippocrates with that of Aristotle.

³² *Opt. Med.* 3 (I 60,1-8 K). See Hankinson, 2008b: 210-211. Galen combines Hippocratic physiology with Aristotelian elemental theory. The key texts from Aristotle are: *Parts of Animals*, *On Generation and Corruption* and *Meteorology*. See van der Eijk, 2015a: 100-101.

³³ *Nat. Fac.* I.4 (II 9,7-10,5 K). See Gill, 2010: 70.

³⁴ *HNH*, Pref. CMG V 9,1, pp. 3,24-4,5 Mewaldt (XV 3,1-7 K); *Lib. Prop.* 12 (XIX 45,6 K). See Singer, 2015: 34.

³⁵ *Hipp. Elem.* 6.39, CMG V 1,2, p. 114,21-23 De Lacy (I 470,5-7 K); cf. Aristotle, *GC*, II.1, 329a27-33; *PA*, II, 648b9-11. See Hankinson, 2008b: 214; Singer 2015: 33. The terms στοιχεῖα and ἀρχαί are also found in Plato's *Timaeus*, where fire, air, water and earth are called principles (ἀρχαί) and are described as elements (στοιχεῖα) of the universe, like the letters of the alphabet are the elements of language. See Plato, *Ti.* 48b.

³⁶ For example: see *Hipp. Elem.* 1.3-4, CMG V 1,2, p. 56,9-14 De Lacy (I 414,3-5 K).

³⁷ Hippocratic Corpus, *Mul. III*, 230 (VIII 444,4-5 L).

In *On the Therapeutic Method*, Galen sets out what he regards as the history of the development of the elemental qualities, hot, cold, dry and wet:

εἰ δὲ τοὺς ἀπὸ τῆς στοᾶς φιλοσόφους εἰς τὸ συνέδριον εἰσαγαγόντες ἐπιτρέψαιμεν καὶ τούτοις τὴν ψῆφον, ἐξ ὧν αὐτοὶ τίθενται δογμάτων, ἐκ τούτων Ἱπποκράτην στεφανώσουσι. τὸ γὰρ θερμὸν καὶ τὸ ψυχρὸν καὶ τὸ ξηρὸν καὶ τὸ ὑγρὸν Ἱπποκράτης μὲν πρῶτος εἰσηγήσατο, μετ' αὐτὸν δ' Ἀριστοτέλης ἀπέδειξεν· ἔτοιμα δ' ἤδη παραλαβόντες οὐκ ἐφιλονείκησαν οἱ περὶ τὸν Χρύσιππον, ... ὥστε καὶ κατὰ Πλάτωνα καὶ κατὰ τοὺς ἐκ τοῦ περιπάτου καὶ κατὰ τοὺς ἐκ τῆς στοᾶς ἢ Ἱπποκράτους νικᾷ φυσιολογία· ... ἀλλ' ἐὰν τοὺς περὶ Πλάτωνα καὶ Ἀριστοτέλη καὶ Χρύσιππον ὡς ἀγυμνάστους ἐν τῆδε παρέλθωμεν, οὐχ εὐρήσομεν ἑτέρους.

But if we were to empanel the philosophers of the Stoa and entrust the vote to them too, as a result of the doctrines they themselves affirm, they would crown Hippocrates. For it was Hippocrates who first of all introduced the doctrine of the Hot, the Cold, the Dry, and the Wet; later Aristotle gave a demonstration of it. Chrysippus and his followers took it over ready-made, and did not indulge in futile strife, ... Thus in the eyes of Plato, the Peripatetics, and the Stoics, Hippocratic natural science wins the day. ... But if we pass over Plato, Aristotle, and Chrysippus and their followers as being unversed in this matter, we won't find anyone else who is.³⁸

In this passage, we can see that Galen names Plato, Aristotle, Chrysippus and their followers as those who have correctly followed Hippocrates in terms of his theory of the elemental qualities.³⁹ However, if we investigate the specific details relating to different aspects of the theories relating to the occurrence of health and disease in the human body, we find that Galen is not always in complete agreement with Plato, Aristotle or the Stoics. For example, there is influence from Plato in Galen's work on physiology and anatomy, such as his reference to a three-part division of the soul.⁴⁰ On the subject of the human psyche, Galen attacks the Stoic position in *On the Doctrines of Hippocrates and Plato*. However, Galen's view of Stoicism was not always negative. On the one hand, it is true that we can find a large amount of criticism of the Stoics in *On the Doctrines of Hippocrates* and in the eleventh chapter of *The Faculties of the Soul Follow the Mixtures of the Body*. But, on the other hand, there are texts where Galen offers a more positive view of Stoicism. This is the case when he

³⁸ *MM*, 2.9-10; 2.11-12; 2.13 (X 15,18-16,5; 17,2-4; 18,4-6 K), translation by Hankinson.

³⁹ Jouanna, 2002b: 256-257.

⁴⁰ See section 2.3 above.

is prepared to bring them onto his side in certain debates, such as supporting his view of the fundamental matter as a mixture of elements against the theory of the atomists.⁴¹ Therefore, Galen is selective and will sometimes acknowledge the influence of certain philosophers, or philosophical schools, for his writing on different topics. But Galen's use of both medical and philosophical sources is complex, as he does not always tell us that he has been influenced by a particular source. The one common point that Galen makes is that the basis for all this work on elemental theory that applies to the explanation of health and disease, began with Hippocrates. At this point we can investigate the examples that Galen uses to prove this assertion that Hippocrates was the founder of elemental theory in medicine.

2.4.1 Galen's argument for the Hippocratic origins of element theory

Galen feels it is necessary to defend his biological theory based on the natural faculties of elements, qualities and humours against what he sees as a serious threat from theories that are fundamentally opposed to his view of matter, such as those developed by the Epicureans and Asclepiades. We have seen above that in *On the Therapeutic Method*, Galen claims that Hippocrates was the originator of an elemental theory based on the four qualities, hot, cold, dry and wet. He emphasises the importance of this element theory as being adopted by some of the key philosophical authorities such as the Platonists, Aristotelians and Stoics. Galen is very selective of this type of material and uses it to present his own version of a 'history of element theory'. However, there is a problem with Galen's view that Hippocrates was the first to propose a theory of the elements and had also demonstrated it. This is because there is no evidence for a Hippocratic demonstration of the elements and qualities in the way that we find in the Aristotelian demonstrations such as in the *Posterior Analytics*, which Galen favoured as an example of good demonstrative method. In fact, Aristotle is relegated to being someone who has continued the work of Hippocrates on

⁴¹ For example, see *PHP*, II.2.4-14, CMG V 4,1,2, pp. 104,3-106,23 De Lacy (V 213,8-216,15 K); *QAM*, 11 (IV 816,8-819,15 K). See also Gill, 2010: 1-7 and 26-27. This is unfortunate, as Gill points out, as there is a large amount of commonality between Galen's theory of human psychology and that of the Stoics. Gill suggests that Galen may have been able to improve his writing on human psyche, if he had been more tolerant towards the Stoics. This is because the Stoic theory of the embodied nature of the psyche is more closely aligned to Galen's views than that of Plato's tripartite division, to which Galen is more favourable.

elements by providing some demonstrations of Hippocrates' theoretical framework. At this point Galen also mentions the Stoics, who he said were in agreement with Hippocrates' view on the theory of elements, except in their concept of the total interpenetration of mixed substances.⁴² But in *On the Natural Faculties*, Galen sees this problem as less important relative to the larger debate between the continuum and atomistic theorists. Gill argues that Galen's adoption of parts of Stoic teleology and elemental theory is justified in terms of a development of 'high naturalism' against the opposing mechanical explanation, proposed by the atomists.⁴³ The context here is that Galen needs to draw upon a wide range of sources to attack his opponents on the complex topic on the nature of fundamental matter and how it helps to explain the cause of health and disease in medicine.

One of the most important Hippocratic texts that Galen uses to show the evidence that Hippocrates was the originator of an elemental theory is *On the Nature of Man*. For example, in the seventh chapter of this treatise, there is a passage that describes the four qualities (hot, cold, dry and wet) as fundamental to all things in the universe. Galen uses this passage as evidence that Hippocrates had an elemental basis for his theory of the four humours and that when Hippocrates refers to the four qualities, he actually means the four elements (fire, air, water and earth). In this way, Galen is challenging the Pneumatist view of proximate elements, in terms of their view that the study of the elemental qualities (hot, cold, dry and wet) are all that is needed in medicine, rather than using the four 'cosmic' elements, fire, air, water and earth. In this way, Galen believed that the Pneumatists were dissociating the 'art' of medicine from natural philosophy.⁴⁴ The direct association between qualities, elements and humours, allows Galen to develop a biological theory that links

⁴² *MM*, VII.3 (X 462,18-463,2 K); *Lib. Prop.* 11 (XIX 42,3-7 K). See Hankinson, 2008b: 211.

⁴³ *MM*, II.10 (X 15,18-16,10 K); *Temp.* I.3 (I 523,4-12 K); *Nat. Fac.* I.2 (II 5,4-16 K). For the material from Stoic theory, Stobaeus, 1.129,2-130,13 (LS 47A); Diogenes Laertius, 7.137 (LS 47B); Plutarch, *On common conceptions*, 1085c-d (LS 47G); Gal. *PHP*, V.3.8, CMG V 4,1,2, p. 306,23-28 De Lacy (V 447,3-9 K) (LS 47H); Alexander, *On mixture*, 224,14-17, 23-26 (LS 47I); Alexander, *On mixture*, 216,14-218,6 (LS 48C). See Gill, 2010: 75-77. However, Galen's assimilation of Stoic physics is not entirely compatible with his own views, particularly in terms of revisionism (willingness to revise familiar distinctions) and holism (a tendency to analyse the whole, rather than the constituent parts). See Gill, 2010: 77-84. I will be discussing Galen's teleological framework for his biological theory in more detail, see section 2.5 below.

⁴⁴ Hippocratic Corpus, *Nat. Hom.* 7, CMG I 1,3, pp. 184,16-186,10 Jouanna (VI 48,20-50,9 L); Gal., *HNH*, I.38; I.39, CMG V 9,1, pp. 48,13-25; 49,4-7 Mewaldt (XV 91,12-92,9; 93,1-4 K). See Kupreeva, 2015: 158-160.

the four humours of the body to the four cosmic elements in the universe, which enables him to draw upon the natural philosophy of Plato and Aristotle, as well as the physiology of Hippocrates.⁴⁵ What we find is that Galen has drawn upon the Aristotelian concept of three levels of substance in the human body: the elements (στοιχεῖα), uniform parts (ὁμοιομερής) and non-uniform parts (ἀνομοιομερής). The third level defines the heterogeneous parts of the body, such as the face or hands. But Kupreeva has raised a point about a possible difference between the language used by Galen and Aristotle in their presentation of elemental substances. We find that Galen defines the elements (στοιχεῖα) as 'simple substances', which contain the qualities. In contrast, Aristotle refers to 'out of powers' (δυνάμεις), which he defines as the 'simple qualities'.⁴⁶ This might bring Aristotle closer to a concept of qualitative interaction that is similar to the type of theory that was adopted later by the Pneumatists, where the qualities are themselves able to interact, rather than being manifest within the four cosmic elements. However, Galen does not want to criticise Aristotle in terms of elementary substances, as he is using parts of Aristotle's language and doctrine for his own presentation of this subject. But, he can challenge the Pneumatists' view of elementary qualities instead. The importance to Galen of the actual status of fundamental substances in terms of 'quality' and 'element' is shown in the dialectical debate about the view of the Pneumatist Athenaeus of Attalia in *On the Elements According to Hippocrates*. In this debate we find that Galen criticises Athenaeus' view that the qualities can exist independently from the substances, in which they are manifest. He ridicules anyone who would differentiate between something that contains 'hot' in an extreme sense and the elemental 'fire'.⁴⁷ This is important when Galen refers to black bile as being 'cold' and 'dry' in quality, as we understand Galen's characterisation as the interaction between physical substances, such as the cosmic elements or the humours, in terms of the capacity of the physical

⁴⁵ Kupreeva, 2015: 161.

⁴⁶ Aristotle, *PA*, II, 646a14-24. At the lowest level of substance in the body, Aristotle is using the older meaning of δύναμις, which is similar to the elements (στοιχεῖα), where a substance is described as having a distinct character of its own and does not carry the later meaning of power, capacity or faculty. See Forster, 1937; Kupreeva, 2015: 161-162.

⁴⁷ *Hipp. Elem.* 6.1-30, CMG V 1,2, pp. 102,1-110,7 De Lacy (I 457,5-465,1 K). See Smith, 1979: 87-88; Hankinson, 2008b: 215-216.

substance that has inherent qualities. Therefore, it is the physical substance of black bile itself that has the capacity to be 'cold' and 'dry'.

It should be acknowledged that Galen and the Pneumatists share a theory of the body according to which the four humours correspond to the four cosmic elements. Galen even uses Pneumatist terminology when he refers to the humours as 'proximate elements' in *On the Elements According to Hippocrates*. But the Pneumatist concept of proximate elements is related to the Stoic theory of pneumatic tension, developed by Chrysippus. In fact, we find that Galen uses this Stoic pneumatic tension, when he sides with the Stoics (and Aristotle) in criticising Plato's view that plants do not have perception. He also agrees with the Stoics (and Plato) in an argument against Aristotle on the idea that the presence of a soul implies perception. The Pneumatists are drawing upon Stoic physics in their view that the 'proximate elements' of the body are different from the elements that constitute the universe. But according to Galen, both the humours and the cosmic elements share the same basic nature. Galen criticises the Pneumatists' position in two ways. Firstly, from a methodological and epistemological point of view, the proximate elements of the body can be observed directly and so do not need to be demonstrated. The second criticism is on the basis of logic, where there is an inconsistency in Pneumatist theory when they use both 'quality' and 'body' when referring to what Galen considers to be 'elements'.⁴⁸ In Aristotle's *Metaphysics*, quality exists in matter and the compounds formed from this matter and any uniform substance created from these compounds share the same elements (στοιχεῖα) and principles (ἀρχαί). However, the type of principle and element is not the same for different things. For Aristotle, by analogy, only form (εἶδος), privation (στέρησις, the loss or absence of an inherent quality) and matter (ύλη) can be referred to as being the same type of elements, which are in turn the principles of change. In *On the Elements According to Hippocrates*, Galen uses slightly different terms, for

⁴⁸ For Galen's use of the term 'proximate elements', see *Hipp. Elem.* 10.1-3, CMG V 1,2, pp. 138,15-140,2 De Lacy (I 492,1-493,1 K). For Galen's view on soul and perception, see *Nat. Fac.* I.1 (II 1,5-2,6 K); *Adv. Jul.* V (XVIIIa 266,9-13 K); *Caus. Symp.* VII.2 (VII 129,4-10 K). For Galen's criticism of Pneumatist element theory on the basis of methodology, epistemology and logic, see *Hipp. Elem.* 6.1, CMG V 1,2, pp. 102,1-7 De Lacy (I 457,5-13 K); Kupreeva, 2015: 172-178.

example instead of εἶδος, Galen refers to quality (ποιότης).⁴⁹ Galen's aim is to refute the views of the Atomists, Corpuscularists and the Pneumatists, by showing that the elements are the fundamental substances of the universe and are the basis of the 'proximate' elements of the body and that they represent the material form of the four qualities. In this way, Galen is adapting Aristotelian elemental theory for his own use in *On the Elements According to Hippocrates*. But there is a difference in emphasis between Galenic and Aristotelian elemental theories, where Galen regards the concept of element as a more robust philosophical notion and, as we have seen above, Aristotle is more reluctant than Galen to view 'elements' as physical substances.⁵⁰ Therefore, Galen is able to select what he requires from Aristotelian element theory and can ignore parts of it that either he does not agree with, or may contradict his element theory. It also allows Galen to refer to Hippocrates, not Aristotle, as the originator of the theory of elements. In *On the Elements According to Hippocrates* Galen uses the content of the Hippocratic *On the Nature of Man* to claim that Aristotle is really a follower of the natural philosophy developed by Hippocrates. In this way, Galen claims that Aristotle adopted Hippocrates' ideas and methodology, and has demonstrated some parts of Hippocrates' element theory. However, the detail of the theory and language used by Galen comes from Aristotle, not from any Hippocratic source, and so this is a clear example of Galen's manipulation of the source material on elements to distort the history of the development of the theory of elements that he uses in his writing.

There is another example of Galen's manipulation of material on elements, which is represented as having Hippocratic origins. In *On the Elements According to Hippocrates* Galen sets out his polemic against the atomists' theory, considering it to be inadequate to explain natural phenomena. In this treatise, he presents his theory of elements within the context of what he regards as Hippocrates' views on fundamental substances. But, when we look at the detail of the information presented by Galen there are examples of misidentification of element theory from Aristotle to Hippocrates. We have seen this already, when Galen claims that Hippocrates had developed a methodology

⁴⁹ Aristotle, *Metaph.* XII.4, 1070a32-1070b36; Gal., *Hipp. Elem.* 6.37-40, CMG V 1,2, pp. 114,13-116,5 De Lacy (I 469,12-471,1 K). See Kupreeva, 2015: 187-190.

⁵⁰ Kupreeva, 2015: 192-193.

in *On the Nature of Man*, which is actually more like Aristotle's approach in the *Physics* (see page 52 above). But we also find that some aspects of Galen's writing in *On the Elements According to Hippocrates* do not match Aristotle's views on element theory completely. This is because, although Galen uses Aristotelian sources to support his refutation of the discrete matter theories of Atomists and Corpuscularists, his ideas about 'simple bodies' differ from those of Aristotle.⁵¹ In his refutation of atomism, Galen attempts to collect together the discrete particle theories of different theorists, including Democritus, Epicurus and Asclepiades. Galen's concern here is that all their theories would regard all elements being the same in terms of 'form and power' (τὴν ἰδέην καὶ τὴν δύναμιν), which he interprets as the inability to undergo qualitative change. However, as Leith suggests, Galen's use of 'form and power' allows him to take what is actually a refutation of Ionian monism in *On the Nature of Man* and make it seem like Hippocrates was attacking the theory of atomism. Therefore, this is a deliberate strategy to place Hippocrates into the position of the originator of an elemental theory that he presents as being continued by Aristotle.⁵² In this way, Galen is trying to persuade his audience that he himself is offering the best explanation of why his element theory is superior to what the atomists can offer. However, this element theory is presented as if it were first developed by Hippocrates in *On the Nature of Man* and then adopted by later philosophers, such as Aristotle.

2.4.2 The concept of 'mixture' in Galen's element theory

When it comes to Galen's theory of elements, we find that the concept of mixture (κρᾶσις) is one of the most important parts of this theory to explain the nature and function of fundamental substances in the universe and for his

⁵¹ Kupreeva suggests that the concept of the elements that Galen portrays in *On the Elements According to Hippocrates* could be closer to the debates within Peripatetic community of the second century CE, rather than the Aristotelian sources of the early Hellenistic period. See Kupreeva, 2015: 153.

⁵² For the Hippocratic use of 'form and power', see *Nat. Hom.* 2, CMG I 1,3, pp. 166,14-168,2; 176,8-9 Jouanna (VI 34,10-15; 42,6-8 L). For Galen's use of 'form and power', see *Hipp. Elem.* 2.1-8, CMG V 1,2, p. 58,6-26 De Lacy (I 415,4-416,13 K). See also Hankinson, 2008b: 212; Leith, 2015a: 214 and 230-232; Kupreeva, 2015: 162-163. Kupreeva adds the Diodoreans (the followers of Diodorus Cronus) to this list of discrete matter theorists, although Galen does not mention them by name in this treatise.

biological model of health and disease in the body.⁵³ However, as we have already seen in this chapter, Galen has a tendency to misattribute to Hippocrates the credit for the development of this type of theory. So for example, in *On the Elements According to Hippocrates*, Galen names Hippocrates as the originator of the theory of qualitative change as the basis for physiology. When it comes to the importance of mixture in this treatise, Aristotle and Chrysippus are mentioned as ‘making further remarks’, as though they are just carrying on the work on qualitative change from that already developed by Hippocrates. This applies not just to the ability of the qualities to alter, but also to the way that they are thoroughly mixed during interaction, in contrast to the juxtaposition in rival theories, such as with the atoms. However, Galen only uses the term κρᾶσις three times in *On the Elements According to Hippocrates* in a short section where he explains that Hippocrates knew that the qualities were completely mixed. There are issues also within the detail of the material on mixtures that Galen uses in his writing. For example, there is a difference between the Aristotelian and Stoic versions of the theory of mixtures. The Aristotelians postulated that only qualities undergo complete mixture. Whereas the Stoics believed that all substances could be thoroughly mixed by complete interpenetration of the matter within them. Galen acknowledged these two views, but considered the difference as unimportant for medicine. It seems that if it came down to a decision between the two that he would consider the Aristotelian concept as the more likely explanation.⁵⁴ In contrast, there is very little in the Hippocratic *On the Nature of Man* about the mixture of substances and so Galen explains the absence of any reference to the detail on the nature of the mixtures of the qualities because physicians only need to know they are mixed, not how they are mixed. This is part of Galen’s strategy to attribute the origin of the theory of mixture of the elements to Hippocrates, without actually being able to quote or reference specific parts of the Hippocratic Corpus on this topic.

We can understand more about Galen’s view of the importance of ‘mixture’ for the explanation of health and disease from the content of his treatise, *On*

⁵³ See van der Eijk, 2015b: 675-676.

⁵⁴ *Hipp. Elem.* 9.11-19; 24; 33, CMG V 1,2, pp. 130,1-132,18; 134,12-13; 136,15-18 De Lacy (I 483,9-486,2; 487,6-7; 489,5-9 K); *Prop. Plac.* 15.1, CMG V 3,2, p. 116,5-19 Nutton; *Nat. Fac.* I.2 (II 5,13-6,10 K). See Hankinson, 2008b: 217.

Mixtures.⁵⁵ This work is different from similar treatises in the Galenic Corpus, as it is narrower in its style by avoiding asides and unnecessary tangents and remains focused on the overall argument throughout. In a similar way to *On the Elements According to Hippocrates*, there is no prologue or introduction, as it starts with a clear statement that the animal body is composed of a mixture of the four qualities, hot, cold, dry and wet.⁵⁶ It appears to be the case that Galen wrote *On Mixtures* for physicians that were beginners in medical theory, so that they could access his more complex works on physiology and medicine. In this treatise, he constructs a theory based on nine types of mixture that explain the nature of the human body, these are four mixtures of pairs of the four qualities (hot, cold, dry and wet), where one of the qualities is more dominant than the other. Then there is a further four mixtures of paired qualities, this time where both qualities are dominant. These eight mixtures represent excess or dominance of one or more quality in the body, which can be non-ideal and cause illness. However, there is a ninth mixture, where all four qualities are in their proper proportion in the mixture relative to what is normal; this is the ideal mixture. This allows Galen to characterise the state of the body in relation to these nine 'dispositions' (ἔξεις). The basis of this idea is that excess and well-balanced dispositions are relative to a 'normal' state of the body. We find that this indicates more flexibility, as this 'normal' state can change relative to factors such as age, environment or regime. In this way, Galen is able to characterise the constitution of patients individually. Therefore, treatment of illness can be tailored for specific diseases suffered by people with particular dispositions. Galen's theory also allows for variation of the mixture in different parts of the body.

The eight non-ideal mixtures do not necessarily imply that a disease is present in the body, but they do indicate that an individual may be more susceptible to particular types of illness. The ninth 'ideal' mixture is not just a theoretical concept in Galen's theory, as he believes that it is possible to determine this 'middle position' (μέσση) through extensive training and a large amount of

⁵⁵ Galen advertises the importance of his forthcoming treatise, *On Mixtures*, in *Hipp. Elem.* (9.32-34, CMG V 1,2, p.136,13-21 De Lacy (I 489,2-13 K)).

⁵⁶ See van der Eijk, 2013: 150.

medical experience.⁵⁷ This concept of a middle position is Aristotelian, which Galen has applied to the idea of there being an ideal middle point of the human body as a 'well-fleshed human being' (εὐσαρκὸς ἄνθρωπος).⁵⁸ This shows that Galen is utilising an Aristotelian concept of mixture for his own biological theory. But the content of *On Mixtures* makes the different combination of mixtures of the four qualities, not the four humours, as the explanation of the underlying cause of health and disease in the body. In this way, the four humours are observable indicators of the signs of disease in the body, but their actual composition and function is explained by the four qualities, which are paired in each of the humours. This explanation is related to the content of *On the Nature of Man*, as each of the four humours is characterised in terms of a pair of qualities. However, in *On Mixtures* Galen is more focused on explaining health and disease with reference to the qualities than the humours, which is a different emphasis than we find in *On the Nature of Man*. The fact that Galen recommends *On Mixtures* as a starting point before going on to his more complicated treatises might indicate that he believed that physicians should understand the importance of the qualities to explain health and disease before moving on to the way that health and disease can be determined from physical substances such as the humours.

Galen's concept of an ideal mixture in the body can be understood in terms of his overall teleological framework for causation in his biological theory.⁵⁹ We can find some specific information on teleology in *On Mixtures*, relating to the mixtures of the elemental qualities in the body.⁶⁰ When Galen discusses what makes the best constitution of a man, he refers to a median that indicates perfect proportions of key components, such as the qualities. But he brings in two possible explanations; either that the root cause of the constitution is due to a 'consequence of that good balance of the four elements' (ἐπομένης τῆ τῶν

⁵⁷ For Galen's presentation on the nine types of mixture, see *Temp.* I.8 (I 554,12-559,9 K). For Galen's reference to the mixtures as 'dispositions', see *Temp.* I.8; II.4 (I 558,9-14; 604,6-7 K). For an example of the influence of age, environment and regime on the mixtures of the body, see *Temp.* II.5 (I 618,1-619,1 K). For the importance of the 'middle position' (μέσον) in Galen's theory of mixture, see *Temp.* I.9 (I 559,10-561,13 K). See also Hankinson, 2008b: 221; van der Eijk, 2015a: 101-105, 108 and 113; 2015b: 676.

⁵⁸ *Temp.* I.9 (I 566,12-567,9 K). See van der Eijk, 2013: 153.

⁵⁹ I will be analysing Galen's teleology in more detail later in this chapter, see section 2.5 below.

⁶⁰ For example, see: *Temp.* I.4; I.9; II.1; II.5; III.1, (I 529,5-12; 563,3-5; 575,12-13; 619,14-15; 635,16-636,2; 647,14-16 K). See van der Eijk, 2015a: 106.

τεττάρων στοιχείων εὐκρασία), or ‘has some higher cause of a more divine nature’ (τινα θειοτέραν ἀρχὴν ἑτέραν ἐχούσης ἄνωθεν). These are both teleological statements, but one is explaining the cause in terms of the ‘good’ balance of the elements, and the other is explaining the cause in terms of an intelligent agent.⁶¹ This could represent Galen deliberating over Aristotelian or Platonic concepts of teleology, but we find the following statement later in this treatise: ‘A second mistake is the failure to regard the natural cause of our construction as a craftsman-like power’ (κατὰ δεύτερον δὲ τρόπον, ὅτι τῆς διαπλαστικῆς ἐν τῇ φύσει δυνάμεως οὐ μέμνηται τεχνικῆς). At this point Galen tells us that Aristotle was uncertain about this question of whether the power that creates us is just the nature of the qualities or has a higher divine cause. But, as Singer points out, it is difficult to locate a specific Aristotelian source for this debate. Singer suggests that Galen’s reference to a question of the fundamental cause of the construction of living beings may be due to a problem with his use of material on teleological causation from Aristotle’s *Parts of Animals*. An alternative explanation is that this could be Galen’s own version of the type of debate going on within Aristotelian circles in the late second century CE.⁶² The concept of some median that indicates the best proportion or balanced point is similar to Aristotle’s concept of a ‘golden mean’. In this case, the median is a ‘well-fleshed’ body, which Galen describes as the ideal case for humans.⁶³ Galen goes on to discuss the limitations on the abilities of human beings relative to what is possible for the divine creator in terms of the elements. Perfect mixture is only possible for God (θεός) and ‘in Nature’ (φύσεως), but crucially humans have the ability to create mixtures where the constituent substances become perceptibly indistinct from one another. But Nature has crafted our skin in such a way to be perfectly proportioned in terms of the qualities and this makes it an ideal tool for our perception of the world. This makes humans stand out as the most ideal ‘living being’, being the most well-balanced of all animals.⁶⁴ However, after we have been shaped by this divine craftsman, Galen allows for more autonomy for our bodily processes,

⁶¹ See Johnson’s definition of this type of causal explanation, pages 71-72 below.

⁶² *Temp.* I.9; II.5 (I 567,2-4; 635,16-636,1 K), translations by Singer. See Flemming, 2009: 77; van der Eijk, 2013: 157; 2015a: 101-102; 115; 118-121 and Singer, 2015: 29-31.

⁶³ *Temp.* II.1 (I 574,16-577,8 K). See van der Eijk, 2015a: 116-117.

⁶⁴ *Temp.* I.9 (I 561,13-567,9 K). See van der Eijk, 2015a: 110-113.

which do not require divine intervention. This allows Galen to use a more materialistic theory, the nature of elements, qualities and humours, to explain how the body functions in terms of health and disease. We shall see that this is important for Galen's characterisation of black bile as having different forms. The most fundamental type of black bile in the body is the innate black bile that is one of the four humours that are essential in maintaining the health of the body. This form of black bile can be considered as 'ideal' and would contain the perfect mix of 'cold and dry' qualities, which would correspond to this 'median' state in Galen's theory of mixtures.⁶⁵

It is certainly the case that the concept of mixture of elements goes back further than Aristotle and the Stoics to the theories of mixtures of fundamental substances in Presocratic philosophy and among some of the medical theories in the Hippocratic corpus.⁶⁶ However, as we have seen, Galen's views in *On Mixtures* have an Aristotelian basis. We find that Aristotle is referred to many times throughout *On Mixtures*, just like the authority of Hippocrates is evoked many times in *On the Elements According to Hippocrates*. Galen is more favourable to Aristotle in *On Mixtures* than he is in other works, as we found in the case of *On the Elements According to Hippocrates*, where Galen wanted to enhance the influence of Hippocrates at the expense of Aristotle.⁶⁷ In *On Mixtures*, Galen refers directly to Aristotle and his theory of elements and mixtures, as well as his criticism of those who have misunderstood them.⁶⁸ But despite this praise for the work of Aristotle, Galen still considers Hippocrates to be the originator of the theory of elements and the explanation of the nature of the human body from the mixture of elemental qualities. We find that Galen presents Aristotle as building on the work of Hippocrates, supplying proof when it is required.⁶⁹ The importance of the epistemological status of the properties of the four qualities is also defended by Galen in *On Mixtures*, from what he

⁶⁵ See chapter 4 'Galen's characterisation and physical description of the black bile humour', section 4.1 below.

⁶⁶ For example, for details on Anaxagoras' theory of the original mixture of mass in the universe, see Simplicius, *in Ph.* 155.23ff (26-30), *in Cael.* 608.21-23). See also Curd, 2007: 153. For information on the mixture of fire and water in the Hippocratic *On Regimen I*, see *Vict. I*, VI (VI 478,8-10 L); Jouanna, 2012a: 204-205. See also van der Eijk, 2015b: 677.

⁶⁷ See section 2.4.1 above.

⁶⁸ *Temp.* I.3; I.5; I.9; II.2; II.6; III.3; III.4, (I 523,10-17; 534,11-535,12; 565,17-566,3; 581,17-18; 624,17-625,1; 628,11-12; 666,10-13; 672,14-16 K). See Flemming, 2009: 77-78; van der Eijk, 2013: 155-156.

⁶⁹ See van der Eijk, 2012b: 272-273.

perceives as an inferior sceptical view on the status of what is hot or cold. We find that Galen utilises the Aristotelian view that the determination of actual 'hot' and actual 'cold' can be achieved through the sense of touch, for instance fire or ice. For Galen there is no need to construct a logical demonstration to test something that is evident directly from the use of the senses. For example, if something is 'hot' and it feels hot, then it is ridiculous to produce a demonstration for this experiential fact. Galen calls this 'a Pyrrhonist kind of confusion' (Πυρρωνίσιος ἀπορία), which is actually a sceptical position where everything needs to be questioned and tested.⁷⁰ However, despite Galen's more positive attitude to Aristotle in *On Mixtures*, Hippocrates is still acknowledged as the originator of the theory of elements, which contains this concept of mixture and this is a clear manipulation of the Hippocratic and Aristotelian sources.

2.5 Galen's teleological theory

The concept of a teleological basis for Galen's biological theory has already been mentioned in terms of his use of Plato's *Timaeus* for his view of the ruling part of the soul and for his work on the elements.⁷¹ In terms of black bile, Galen's use of teleology is important in two ways. Firstly, in *On the Natural Faculties*, Galen defends the very existence of black bile on the basis of teleology. Secondly, in *On the Utility of the Parts*, Galen uses teleology to explain the spleen's purpose to regulate and remove black bile from the body. This second point is part of Galen's overall view of causation in the body, which he uses to attack the theories of the Atomists and physicians, such as Asclepiades. For example, in *On the Natural Faculties*, Galen puts forward his own case for teleology as the most likely cause for the explanation of the nature of the most fundamental phenomena in the universe.⁷² This statement alone may make it seem like Galen completely rejects any mechanistic explanation in his view of the primary cause of all things in the universe. However, Johnson has questioned the traditional assumption that explanations of teleological and mechanistic causation should be considered mutually exclusive. For Johnson,

⁷⁰ *Temp.* II.2 (I 588,4-591,2 K). See Hankinson, 2008b: 221; van der Eijk, 2015b: 685.

⁷¹ See sections 2.3 and 2.4 above.

⁷² For example, *Nat. Fac.* I,7 (II 26,14-27,16 K). See Lloyd, 1996: 266-267; Gill, 2010: 66-67.

the most basic type of explanation is a demonstration of a cause. It is then possible, using this definition, to move onto more complex types of causality. For example, a teleological explanation is a demonstration with a primary cause that is aimed at some good. In contrast, a mechanistic explanation is a demonstration that can be directly modelled on simple mechanics, such as a pump or a pulley system.⁷³ Johnson shows that it is possible to have both teleological and mechanistic cause for the same phenomenon, referring to Aristotle's explanation of respiration in the human body.⁷⁴ Therefore, when we look at Galen's teleological framework for his biological theory, we should not think that this automatically rules out any mechanistic explanations. It is also important to understand Galen's use of teleology in his biological theory of health and disease in relation to the teleological systems of Plato and Aristotle.

2.5.1 Galen and Platonic teleology

For Plato, there are two kinds of cause. Firstly, there is a cause that comes from intelligent agency. This is the type of cause associated with the demiurge, who is not actually present in the world, but his intelligence has created things, which have this direct cause within them. The other type of cause is less dominant and is a mechanical cause relating to matter. When intelligence operates to cause something, the matter has the ability to undergo a mechanical change, but it does not contain any intelligence to bring about the primary cause. Instead, it has to be initiated by an intelligent agent.⁷⁵ We can find examples where Galen uses terminology that is similar to the Platonic conception of a 'divine creator'. For example, in *On the Elements According to Hippocrates*, we have the following statement about the formation of the foetus:

⁷³ Johnson, (forthcoming): 1-2.

⁷⁴ For example, respiration can be viewed in terms of a material cause in relation to the hypothetical necessity of its benefit (teleological explanation) and as a purely mechanical explanation in terms of acting as a pump. Aristotle, *PA*, 1.1, 642a31-b4; *Resp.* 27, 480ab. Overall, Johnson is responding to what he conceives as 'some influential histories of ancient philosophy' (for example Dijksterhuis, 1961), which have made the assumption that teleological and mechanistic explanations are 'directly opposed and mutually exclusive alternatives'. He argues that Aristotle conceived of biomechanical explanations that were not incompatible with his overall teleological viewpoint. Therefore, it is possible to view Aristotle, not as just an 'arch-teleologist', but also as a mechanistic philosopher. See Johnson, (forthcoming): 1, 6-7 and 20. For Johnson's list of those who have contributed to the 'influential histories of ancient philosophy', see Johnson, 2005: 24-25 (note 38).

⁷⁵ Plato, *Ti.* 46c-48b and 68e-70a. See Sedley, 2007: 114-115.

ἄρ' οὖν ἐκ τῆς αὐτῆς οὐσίας ἅπαντα γέγονεν ἢ μᾶλλον ἀγαθός τις οὔσα δημιουργός ἢ φύσις, ἥνικα τὸ πρῶτον ἐκ τοῦ παρὰ τῆς μητρὸς αἵματος εἰς τὴν μήτραν ἰόντος ἐγέννα τε καὶ διέπλαττε τὸ ἔμβρυον, ...

Then did they all come into being from the same substance, or rather, when nature, being a good craftsman, first generated and fashioned the embryo from the blood that goes from the mother to the uterus, ...⁷⁶

There are two points to note here. The first is that Galen refers to Nature (φύσις) as a good craftsman (ἀγαθός ... δημιουργός). This type of concept of a craftsman is found in Plato's *Timaeus*, where the perfect beauty of the cosmos is associated with a good craftsman (δημιουργός ἀγαθός).⁷⁷ Further to this, we can find it in Stoic philosophy. For example, we have references to the Stoic creator, as an intelligent god, who creates all things by stage: '... he turned the entire substance through air into water ... he then creates first of all the four elements, fire, water, air and earth' (τρέπειν τὴν πᾶσαν οὐσίαν δι' ἀέρος εἰς ὕδωρ ... εἶτ' ἀπογεννᾶν πρῶτον τὰ τέσσαρα στοιχεῖα, πῦρ, ὕδωρ, ἀέρα, γῆν).⁷⁸ However, as Flemming points out, Galen's craftsman is more like the idea of a Platonic transcendent god. This is a god that is more remote from the real world, who is separate from the work that he creates, as opposed to the Stoic conception, which is more immanent in the world.⁷⁹ In Plato's teleological system, the demiurge creates the most fundamental entities, such as the elements, but delegates the fashioning of living things to 'younger gods'. However, for Galen, the demiurge is directly involved in the formation of human bodies.⁸⁰ For example, in *On the Doctrines of Hippocrates and Plato*, Galen discusses Plato's theory about these gods, but only considers this in terms of the plausibility and reasonableness of the argument, not as something that can be proved by scientific demonstration. Therefore, Galen postulates his own

⁷⁶ *Hipp. Elem.* 11.6, CMG V 1,2, p. 142,8-11 De Lacy (I 495,4-8 K), translation by De Lacy. See Hankinson, 2008b: 218.

⁷⁷ Plato, *Ti.* 29a.

⁷⁸ Diogenes Laertius, 7.135-6 (LS 46B), translation by Long and Sedley.

⁷⁹ Flemming, 2009: 73-74. There is also the work of the Stoic Epictetus, who wrote about the providence of the divine cause in the universe, which has some similarities to Galen's writing. However, Epictetus was concerned more with ethics than physiology and ultimately Galen's view of teleology is closer to that of Aristotle and Plato than the Stoics. See Flemming, 2009: 79-81.

⁸⁰ Sedley, 2007: 97-98.

theory of a 'divine creator', who has formed all things for a purpose, but who is constrained by the 'physics' of the observable material world. Overall, when Galen talks about a demiurge, he is more closely aligned to Plato than to the Stoics, but he selects what he wants from Plato's *Timaeus* without commitment to everything that Plato had written about a divine creator. Galen also does not want to be associated with any developments by later followers of Plato's doctrines. This partial association with Plato's theory makes it easier for Galen to combine aspects of Platonic and Hippocratic material on first principles and the formation of the human body.⁸¹ However, overall Galen wants to present his concept of living creatures from both the earthly material structure and a higher divine principle. This involves the incorporation of a theory of physical structure, explained by the nature of elements, qualities and humours, with a compatible teleological model of how these material entities form living beings from a purposeful design.⁸²

The second point of interest here is that in the passage cited above, Galen's demiurge works not with the most fundamental substances in the cosmos, but with the proximate matter of the body. The reference to blood in the passage actually refers to composite blood, which is made up of all four humours: blood, phlegm, yellow bile and black bile. This means that the four humours within the composite blood are only the raw material used to fashion the human body from the design attributed to some intelligent divinity. But according to Galen, this raw material is something separate from the intelligence, as in *On Semen*, he complains that Aristotle has mistakenly referred to the presence of divine intelligence in the menstrual blood, rather than in the male semen. Galen asserts that the male semen contains the power to fashion all parts of the body. Therefore, the skill of the demiurge, which Galen refers to in *On the Elements According to Hippocrates*, is manifest in the essence of the substance of the semen and uses the composite blood as the raw material to create the embryo. The power inherent within semen can use its own material substance and the menstrual blood to produce all the parts of the body according to Nature's

⁸¹ For Galen's view of the constraints on the demiurge in terms of matter, see *UP*, XI.14 (III 904,18-906,8 K). For Plato on the 'younger gods' and the demiurge, see *Ti.* 41a3-d3 and for Galen's view of these 'younger gods', see *PHP*, IX.9.1-14, CMG V 4,1,2, pp. 596,30-600,30 De Lacy (V 791,9-795,14 K). See also Hankinson, 1989: 211-218 and Flemming, 2009: 74-75.

⁸² See van der Eijk, 2015a: 97.

design.⁸³ Galen also refers to Nature as a craftsman (δημιουργός) in *On the Formation of the Foetus*, who creates the skin as a natural covering for our bodies, and claims that ‘the seed must contain the scheme of the Craftsman’ (τὸ μὲν σπέρμα τὸν τοῦ δημιουργοῦ λόγον ἔξει). Then towards the end of this treatise, Galen outlines a similar argument about the intelligence and power of ‘Nature’ (φύσις), which is manifest in the way the parts of the body are formed and function. At this point Galen directs his argument against Atomists, like Epicurus, who have postulated a ‘random process’ explanation for the way things are created, which Galen cannot accept as the most likely cause.⁸⁴ However, although Galen accepts that humans were created by divinity, he questions whether creatures that he regards as dangerous or ugly were designed this way by the divine craftsman. Galen does not go into any more detail here, but leaves this as just an uncertainty. What he is more certain about is that skill and intelligence is required to create animals and once born, life is governed by three causes of motion: from the brain through nerves and muscles, from the heart through the arteries, and from the liver through the veins.⁸⁵ Therefore, from the content of *On the Elements According to Hippocrates*, we can consider black bile, which is one of the four humours present in the menstrual (composite) blood, as a substance that is used by ‘Nature’ to form the embryo. This is consistent with Galen’s humoral system based on the content of the Hippocratic *On the Nature of Man*, which defines black bile as one of the four proximate constituents of the body. So, from this basis, black bile is part of the composite blood and contributes to the formation of the foetus and should be regarded as a substance that is essential to the body.

2.5.2 Galen and Aristotelian teleology

⁸³ For example, see *Sem.* I.5.8-11; 10.10; 13.18, CMG V 3,1, pp. 80,19-28; 100,19-22; 112,16-19 De Lacy (IV 529,11-530,6; 549,12-16; 561,8-11 K). See also De Lacy, 1992: 213-214 and 224; van der Eijk, 2012: 277-278; Singer, 2015: 20.

⁸⁴ *Foet. Form.* II; V; VI, CMG V 3,3, pp. 60,16-20; 86,17-18; 90,27-100,28 Nickel (IV 657,16-658,4; 682,13-14; 687,5-697,4 K), translations by Singer.

⁸⁵ *Foet. Form.* VI, CMG V 3,3, p. 104,25-106,13 Nickel (IV 700,17-702,4 K); cf. *UP*, XI.14; XVII.1 (III 906,8-907,18; IV 351,4-359,6 K). See Hankinson, 2008b: 228 and 234; van der Eijk, 2015a: 124-125.

Aristotle's teleology was different from Plato's, as he did not agree with the concept of a demiurge, and developed a different cosmology that was based on the world not having a beginning and so there is no need for an initial creation or first cause. However, Aristotle did adopt a teleological framework for his biological system. So, although intelligent purpose is not a dominant cause in Aristotle's view, Nature has a purpose, which involves conditional necessity that is similar to the concept of intelligent purpose.⁸⁶ Galen follows a similar idea to this Aristotelian teleology when he presents his view of the parts of the human body in terms of functional analysis. In *On the Utility of the Parts* and *On the Natural Faculties*, Galen explains the structure and function of parts of the body in relation to specific activities such as the body's self-maintenance and need for reproduction. In Aristotle's system there are four interconnected factors that explain the relationship between the organism as a whole and its parts. The first is the ability to support self-maintenance and reproduction. The second is the priority of the whole organism in relation to its parts. The third is the explanation of the function of the individual parts for the organism's activities. Lastly, there is the ability of the parts of the body to work together for the benefit of the whole organism.⁸⁷ In *On the Natural Faculties*, Galen defines the function of the parts of the body in terms of works (ἔργα) and activities (ἐνεργεῖαι). Here works are the products of the body, such as flesh and bone, but the activities are the processes that occur in the body. For each activity there is a faculty (δύναμις), which is its particular cause (αἰτία). In this way, works (ἔργα) have a broader definition, as all activities (ἐνεργεῖαι) can be understood as the products of works, but not all the products from works can be considered as activities.⁸⁸ So far this is consistent with Aristotle's view of the functional analysis of the parts of the body, but Galen goes beyond Aristotle in his application of the terms 'use' (χρεία) and 'activity' (ἐνεργεῖαι). In *On the Utility of the Parts*, Galen's concept of activity is responsible for active (δραστική) change or motion (κίνησις) in the body. For this type of phenomenon, Galen differentiates between passive and active motion. For example when food becomes blood in the body, the actual transformation of the food is passive, but there is an active process in the

⁸⁶ Aristotle, *Ph.* II.9, 199b33-200b9. See Sedley, 2007: 173, 182-184.

⁸⁷ Aristotle, *de An.*, II-IV, 413a23-b13; 414a29-32; 415a1-b3, b26-416a9; 416b17-20; *PA*, 1.1; 1.5, 640a33-b4; 645b15-22. Schiefsky, 2007: 369-372 and 375.

⁸⁸ *Nat. Fac.* I.2; 4 (II 6,19-7,16; 10,6-13 K). See Schiefsky, 2007: 375.

veins.⁸⁹ For Galen, ‘use’ (χρῆσις) is distinct from ‘activity’ (ἐνεργεῖα), which can be understood, for example, in terms of the characteristics of the arteries. So Galen tells us that the active, pulsating motion in the arteries is the activity, but the ‘use’ of this activity is the preservation of the heat and nourishment of the psychic pneuma.⁹⁰ Galen’s development of the term ‘use’ (χρῆσις) in *On the Utility of the Parts* tells us about his teleological framework for the structure and function of the parts of the body. This is because the ‘use’ (χρῆσις) of a particular part in the body is also its purpose, which is the reason why it is designed in such a way and located in a specific place in the body. Therefore, the very structural design and location of a part of the body is associated with its function and its purpose, the end result for which it exists.⁹¹ When Galen applies this term ‘use’ (χρῆσις) to the parts of the body, he is defining their function from the point of view of the ‘good’ of the whole organism, for its self-maintenance and reproduction, and also for a more general well-being of the whole organism. This brings us to another area where Galen goes beyond the functional analysis of Aristotle, as he not only considers that the parts of the body are structured and located in such a way as to benefit the whole organism, but that this is the optimal construction. This argument for optimal construction is not dependent on the kind of functional explanation that we have been discussing so far, as there can be a functional explanation without the requirement for the best possible construction. This is what we find in Aristotle’s *Parts of Animals*, and other related texts. However, a need to show that the human body has been designed in the best possible way brings Galen closer to the work of Plato and his concept of the demiurge (see section 2.5.1 above).⁹² Therefore, depending on the context, we can understand Galen’s teleology in terms of Aristotle’s writing about the role of Nature in *Parts of Animals* and Plato’s concept of the demiurge in the *Timaeus*. This is part of Galen’s overall aim to bring together what he considers as the best examples of ‘fundamental cause’ in philosophy in

⁸⁹ *Nat. Fac.* I.2 (II 6,19-7,16 K); *MM*, 5.10-6.1 (X 45,16-46,3 K); *PHP*, VI.1.5, CMG V 4,1,2, p. 360,22-25 De Lacy (V 506,16-507,3 K). See Schiefsky, 2007: 381-382.

⁹⁰ *UP*, I.16; VI.4, (III 45,9-46,8; 422,7-10 K); *Us. Puls.* V 160,16-161,3 K. See Schiefsky, 2007: 383.

⁹¹ *UP*, I.11; III.14; VI.12; XI.13; XIII.12 (III 29,7-10; 252,5-11; 464,6-10; 899,1-7; IV 129,6-130,7 K). See Schiefsky, 2007: 384-385.

⁹² *UP*, I.5; XVII.1-2 (III 9,4-17; IV 350,20-351,7; 360,17-361,6 and 363,14-364,5 K). See Schiefsky, 2007: 392-395.

order to refute the theories of those who advocated materialistic or mechanistic causation such as the atomists, Asclepiades and the Methodists.⁹³

We can find examples to show that Galen has a much more comprehensive teleological view of the parts of the body than Aristotle. For example, in *On the Natural Faculties*, Galen presents his argument against Erasistratus and his followers on the question of teleology. We find that Galen adopts Aristotelian language in his references to 'Nature', where he uses such phrasing as: 'Nature does nothing in vain' (ἡ φύσις οὐθὲν ποιεῖ μάτην), which appears in such works as *Progression of Animals*.⁹⁴ Galen's development of a teleological framework to explain certain parts of physiology and anatomy has an impact on his view that the humours have a defined purpose for health and disease of the body. However, when we come to specific details of Galen's argument against Erasistratus, we find the following case where Galen accuses him of being inconsistent in terms of the 'useful' status of bile in the body:

ἀλλ', ὧ σοφώτατοι, προνοητικὴν τοῦ ζώου καὶ τεχνικὴν αὐτὸς ὁ Ἐρασίστρατος ὑπέθετο τὴν φύσιν. ἀλλὰ καὶ τὸ χολῶδες ὑγρὸν ἄχρηστον εἶναι πανταπάσι τοῖς ζώοις ἔφασκεν. οὐ συμβαίνει δ' ἀλλήλοις ἄμφω ταῦτα. πῶς γὰρ ἂν ἔτι προνοεῖσθαι τοῦ ζώου δόξειεν ἐπιτρέπουσα συναναφέρεσθαι τῷ αἵματι μοχθηρὸν οὕτω χυμόν;

But, you sapient folk, Erasistratus himself supposed that Nature took thought for the animals' future, and was workmanlike in her method; and at the same time he maintained that the biliary fluid was useless in every way for the animals. Now these two things are incompatible. For how could Nature be still looked on as exercising forethought for the animal when she allowed a noxious humour such as this to be carried off and distributed with the blood?⁹⁵

This shows that Galen had acknowledged at a certain level that Erasistratus was committed to a view of nature that is capable of intelligence and forethought.⁹⁶ Therefore, we find that Galen is not criticising Erasistratus for

⁹³ *UP*, XIV.4; XVII.1 (IV 153,13-16; 346,1-347,6 K). See Tallmadge-May, 1968: 9-12; Hankinson, 2008b: 228; van der Eijk, 2015a: 96-98.

⁹⁴ *Gal. Nat. Fac.* II.4 (II 91,11-12 K); Aristotle, *IA*, 2, 704,b15 and 12, 711a18. See Jouanna, 2002b: 258-259.

⁹⁵ *Nat. Fac.* II.2 (II 78,10-16 K), translation by Brock. See von Staden, 1997b: 185 and 193.

⁹⁶ For example: *Hipp. Epid.* VI.VI.3, CMG V 10,2,2, p. 327,27-29 Wenkebach (XVIIb 321 K). As von Staden points out, this characterisation, by Erasistratus, of Nature as capable of forethought might seem more Platonic and Stoic. Aristotle was cautious in describing Nature as

being a non-teleologist, but for the places in his theory where an ateleological explanation is adopted to characterise a part or function of the body as having no purpose.⁹⁷ There are some aspects of Erasistratus' view of natural philosophy that Galen cites as good examples of the purposeful work of Nature, such as his concept of the heart acting like a bronze-smith's bellows.⁹⁸ However, we find that Galen's own version of teleology is so comprehensive that he will not accept that a fundamental substance, such as bile, has no end-directed purpose in the body. But, in this case Galen is criticising Erasistratus and is ignoring a similar statement on bile by Aristotle in *Parts of Animals*, where bile close to the liver should be considered as a residue and does not have a purpose.⁹⁹ The target of Galen's polemic is against Erasistratus and not Aristotle. This is because Galen does not want to associate Aristotle with the Erasistrateans, as we have seen above Galen is dependent upon Aristotle for his work on logic and natural philosophy, such as the qualities and elements. Galen also wants to list Aristotle among those that followed Hippocrates, as it is important for his overall presentation of the historical development of the qualities, elements and humours. This applies to specific cases in Galen's characterisation of black bile in terms of the function and management of this humour in the body, where he deliberately ignores Aristotelian content that is in conflict with his own theory of black bile. In these cases he prefers to attack his usual targets such as Erasistratus and Asclepiades.

2.5.3 Galen's view of 'Hippocrates the teleologist'

We have seen examples in this chapter that Galen wants to present Hippocrates as if he were the originator of the application of certain parts of philosophical theory in medicine. The same is true when it comes to teleology. For example, in *On the Utility of the Parts*, we find he claims that Aristotle's teleological system is superior to Plato's in terms of the explanation of anatomy and physiology from teleology. However, neither Aristotle nor Plato have been able to combine teleology within a biological theory to explain how the parts of

being a 'conscious thinker', more to do with seeing the technical and skilful craftsmanship in Nature, which is closer to Erasistratus' view of Nature's forethought being associated with technical skill than to Plato's demiurge. See von Staden, 1997b: 187-188 and 190-191.

⁹⁷ Fleming, 2009: 70-71.

⁹⁸ *UP*, VI.15; VII.4 (III 480,15-481,13; 523,13-524,3 K). See Adamson, 2015: 203.

⁹⁹ Aristotle, *PA*, IV.2, 667a12-17. See von Staden, 1997b: 193; Hankinson, 2008b: 227.

body are formed in the way they are and how they function. At this point, Galen even admits that Hippocrates was not able to achieve this.¹⁰⁰ This brings us to a particular issue in Galen's presentation of the history of the development of teleological models that he uses to present his own ideas. When it comes to the originator of the role of a purposeful and intelligent agent at work in the universe, it is not Plato or Aristotle that Galen names as the first person to develop this type of theory, but Hippocrates. Instead, the work of Plato and Aristotle on teleology is acknowledged by Galen as following on from the original ideas of Hippocrates.¹⁰¹ Galen's emphasis on Hippocrates as the foremost teleologist is, as Flemming points out, fraudulent in terms of the content of the Hippocratic Corpus. This was part of Galen's reinforcement of his own work with what he considers to be Hippocratic and since he wants to refute the materialistic theories with arguments about teleology, then he requires there to be a Hippocratic basis for them, with Platonic and Aristotelian teleology being secondary to the work of Hippocrates.¹⁰² In order to achieve a Hippocratic origin for teleology in medicine, Galen gives examples of the instances where Hippocrates has referred to Nature as being creative and active in designing living beings. For example in *On the Natural Faculties*, we have: 'Nature acts skilfully and decently throughout' (ἡ φύσις ἅπαντα τεχνικῶς καὶ δικαίως πράττει), which Galen attributes to Hippocrates' writing. In *On the Utility of the Parts*, Galen says that Hippocrates is 'continually singing the praises of Nature's righteousness and the foresight she displays in the creation of animals' (διὰ παντὸς ὑμνοῦντι τὴν δικαιοσύνην αὐτῆς καὶ τὴν εἰς τὰ ζῶα πρόνοιαν) and attributes to Hippocrates, the following: 'Nature is well-trained, just, skilful, and provident in her treatment of animals' (ὡς εὐπαίδευτός τε καὶ δικαία καὶ τεχνικὴ καὶ προνοητικὴ τῶν ζώων ἡ φύσις ἐστίν).¹⁰³ However, there is a problem, as we do not find these terms being applied to 'Nature' in the Hippocratic Corpus in the way that Galen claims that they are. For example, in the case of 'well-trained' (εὐπαίδευτος), the author of the Hippocratic *On Joints* uses this term to describe surgery attendants, rather than a providential

¹⁰⁰ Flemming, 2009: 66-67.

¹⁰¹ Smith, 1979: 86.

¹⁰² Flemming, 2009: 72.

¹⁰³ *Nat. Fac.* I.12 (II 30 K); *UP*, III.10; V.9 (III 235,6-8; 379,10-11 K), translations by Tallmadge-May. See Flemming, 2009: 73.

Nature.¹⁰⁴ In addition to this, Galen also brings in various passages and remarks from Hippocratic texts out of context in order to strengthen his case for Hippocratic teleology. In *On the Doctrines of Hippocrates and Plato*, Galen quotes the following three Hippocratic passages: ‘Nature, being well-instructed, does what is needed without being taught’ (εὐπαίδευτος ἡ φύσις ἐοῦσα, οὐ μαθοῦσα τὰ δέοντα ποιέει), ‘Our natures are the physicians of our diseases’ (φύσιες νούσων οἱ ἰητροί) and ‘Nature will wholly suffice’ (φύσις ἐξαρκέσει παντάπασιν). He uses these passages as examples of Hippocrates’ admiration for the power of Nature, naming it as the cause that fashioned human beings.¹⁰⁵ The first two statements come from the fifth section of *Epidemics VI* and the third one is from *On Nutriment*. As Flemming suggests, these phrases do not conflict with Galen’s view of ‘Nature’ (φύσις), but they do not provide enough information to justify his argument for a fully developed Hippocratic teleology that is the basis of the later work by Plato and Aristotle.¹⁰⁶ This is the way that Galen manipulates Hippocratic texts and draws upon different passages from different works, as if they are presented as offering a coherent argument in the way that Galen requires.¹⁰⁷ Galen attempts to make a case for a Hippocratic precedent for purposiveness in Nature, when he uses the notion that ‘Nature is Just’ (δικαία ἡ φύσις) in *On the Utility of the Parts*.¹⁰⁸ In this case, we do find the use of δικαία and φύσις together in the Hippocratic *On Fractures* and *On Joints*.¹⁰⁹ However, again, as Flemming points out, the Hippocratic context is more to do with the setting of bone or a dislocation in a way that most conforms

¹⁰⁴ *Artic.* XLIII (IV 186,5-8 L). See Tallmadge-May, 1968: 264, note 33. In *Epidemics VI* there is another instance of ‘well-trained’ being applied in a context that is closer to Galen’s notion of ‘Nature’, see below.

¹⁰⁵ *PHP*, IX.8.26-27, CMG V 4,1,2, p. 596,21-29 De Lacy (V 790,16-791,8 K). See Flemming, 2009: 73.

¹⁰⁶ *Epid.* VI, V (V 314,5-8 L); *Alim.*, XV (IX 102,16 L); Flemming, 2009: 73. Galen does acknowledge the Hippocratic content of *Epidemics VI* and regards *On Nutriment* as an example of a genuine work by Hippocrates, see ‘Galen’s opinion on the authenticity of the individual treatises in the Hippocratic Corpus’ below, and Craik, 2015: 23 and 89.

¹⁰⁷ Jouanna suggests that Galen is using the connection between two adjectives: ‘untaught’ (ἀδίδακτος) and ‘uneducated’ (ἀπαιδευτος) and the substitution of the singular φύσις for its plural in order to make the combination of these two sources more convincing. See Jouanna, 2002b: 253-254.

¹⁰⁸ For example: *UP*, I.22; II.16 (III 81,10; 158,6-9 K). See Flemming, 2009: 73.

¹⁰⁹ *Fract.* I; XXXVII (III 412,3-414,1; 540,16-17 L); *Artic.* XLVII; LXII; LXX (IV 210,1-4; 266,13-17; 288,12-14 L). See Flemming, 2009: 73.

to what is most natural.¹¹⁰ Therefore, this may be a deliberate manipulation of the content of the Hippocratic Corpus to support Galen's assertion for a clear teleological basis of Hippocrates' writing on physiology and anatomy, which Galen can use alongside the more explicitly defined teleological material in the works of Plato and Aristotle.

2.6 Summary

There are three main points that are important for my analysis of Galen's characterisation of black bile that come out of this analysis of the way that Galen portrays Hippocrates as a philosopher. Firstly, Galen is dependent upon Plato and Aristotle (along with the Stoics to a lesser extent) for material that will support his characterisation of black bile in terms of his adoption of the theory of a tripartite division of the soul, element theory and teleology. Secondly, it is Galen's strategy to give the credit to Hippocrates as the originator of the ideas and methodological approach in each of these cases. Thirdly, Galen will provide evidence for his assertion concerning Hippocrates' primacy in the field of philosophy with reference to certain texts from the Hippocratic Corpus. In this case, Galen is not always consistent with his own views of the authenticity of these treatises in this collection. We shall see that all three of these points apply to Galen's overall characterisation of black bile and that they help us to understand why there appears to be some differences in the way that he writes about this humour.

Beginning with the first point there are many examples of Galen's dependency on Plato and Aristotle. For example when it comes to the importance of logic for demonstration, Galen favours an approach to logical argument that can be found in Aristotle's *Posterior Analytics*. When it comes to the natural philosophy relating to health and disease, he adopts Plato's tripartite division of the soul as the best explanation, uses Aristotle's three-level system for the hierarchy of different substances in the human body and both Plato and Aristotle influence his teleological framework of structure and function of the different parts of the

¹¹⁰ See also Jouanna's analysis of Galen's manipulation of the Hippocratic works to present his argument that Hippocrates already had developed the concept of teleology from his use of a 'just Nature': Jouanna, 2002b: 252.

body. However, in all these cases, the second point also applies, as Galen emphasises that Hippocrates is the originator of the work on these topics in medicine. For example, in *On the Doctrines of Hippocrates and Plato*, it is important to Galen that Hippocrates must have also developed this tripartite division of the soul. Then we find in *On Mixtures* and *On the Elements According to Hippocrates* that Hippocrates not only began the work on element theory, but also was the first to develop the methodology that is used to determine the nature of such substances. We can find evidence for Galen's use of both Plato's and Aristotle's teleological systems, even though they are very different. For example, in *On the Elements According to Hippocrates*, Galen refers to a craftsman-creator in language that is similar to the demiurge in Plato's *Timaeus*. In contrast, in *On the Natural Faculties*, Galen appears to be drawing upon Aristotle's concept of teleology. Then in *On the Utility of the Parts*, we can find examples where Galen uses both Platonic and Aristotelian teleology to explain causation in terms of the structure and function of the parts of the body. But, in all these examples on teleology, Galen finds some way to criticise some part of Plato's and Aristotle's teleological framework. However, in some cases Galen will intentionally ignore parts of Aristotle's teleology, even when they are in conflict with his own view on a particular subject. We saw this in *On the Natural Faculties*, when he attacks Erasistratus, who he claims goes against the teleological explanation for biological processes, by denying any purpose of bile in the body. Galen attacks Erasistratus on this issue, but he ignores a similar statement made by Aristotle. This is because he wants to use the work of Aristotle and associate it with Hippocrates, in order to support his own views on topics, such as the qualities and elements. When we investigate Galen's writing about the early authorities on teleology, we find that he refers to Hippocrates as the foremost teleologist. But the evidence is against this view, as there is no fully developed teleological model within any of the extant Hippocratic texts, which we find in the works of Aristotle and Plato.

When it comes to the third point, relating to the way that Galen uses the texts in the Hippocratic Corpus to support his arguments on Hippocrates' use of philosophy in medicine, we find that *On the Nature of Man* is a key treatise. There are many examples of this in his *On the Elements According to Hippocrates*. We have seen that Galen has claimed that Hippocrates had

developed a demonstrative method to determine the nature of elements, which is actually found in Aristotle's *Physics*. Further to this, Galen emphasises Hippocrates' development of the theory of qualities and elements in *On the Nature of Man*, but the element theory that Galen writes about is based on the Aristotelian three stage system to define substances in the body. When Aristotle is acknowledged, he is represented as following on from the original work of Hippocrates. Galen will even defend the lack of material in *On the Nature of Man* to make it seem as if Hippocrates had intended to write about a particular topic. We can see that this is the case with the idea of Aristotelian 'mixture' of qualities. Galen draws upon this material in *On Mixtures*, but although he does acknowledge the work of Aristotle on this subject, ultimately it is Hippocrates who should be acclaimed. In addition, in *On the Elements According to Hippocrates*, Galen uses the content of *On the Nature of Man* to support his own polemic against atomism, as if this was what Hippocrates was attacking in this treatise. However, Galen has manipulated the content of this Hippocratic text, as the object of criticism is Ionian monism, not atomism. This does not prevent Galen from using this text in his argument against the theory of atomism. But this does explain why *On the Nature of Man* is so essential to Galen's development of a biological theory that contains reference to black bile as a substance that can account for both health and disease in the body.

Besides *On the Nature of Man*, Galen brings in other texts from the Hippocratic Corpus to support his argument of Hippocrates' use of philosophy in medicine. In *On the Doctrines of Hippocrates and Plato*, Galen attempts to show that Hippocrates was in agreement with Plato's tripartite division of the soul. However, although there is clear evidence in Plato's writing for the development of a theoretical model for this tripartite system, Galen had to bring together some disparate material from Hippocratic treatises, such as *On Nutriment*, *Epidemics II* and the appendix section of *On Regimen of Acute Diseases*. When it comes to Galen's view of the authenticity of these three texts, he considers the first two to be genuine. But, there is evidence that suggests that Galen may have rejected the authenticity of the appendix section of *On Regimen of Acute Diseases*. What is surprising is that Galen could have quoted and referenced a large amount of material on the association between the brain and cognitive responses from *On the Sacred Disease*. There is no clear evidence that Galen

identified this text as authentic, but the absence of quotations and references suggests that he did not value its content. All we know is that he chose not to refer to any of the potentially useful material contained in *On the Sacred Disease* for his discussion of this topic in *On the Doctrines of Hippocrates and Plato*. In contrast, we find that Galen is prepared to quote from the appendix section of *On Regimen of Acute Diseases*, to support a view of Hippocrates. This is the part of *On Regimen of Acute Diseases*, which he has identified as inauthentic. This shows the type of manipulation that Galen will use to bring forward evidence for his arguments. We shall see in the next chapter the way that Galen systematically classifies the Hippocratic Corpus into texts that are either Hippocratic or inauthentic on the basis of language and doctrine. However, as we have seen, he does not always apply this classification in practice when he is quoting Hippocratic material to support his arguments. We shall see that Galen often will use information from texts that he has identified as inauthentic when he requires specific material that he will call 'Hippocratic' for his characterisation of black bile. Therefore, in the next chapter I am going to investigate how Galen determines Hippocratic authenticity for the treatises in the Hippocratic Corpus that contain important information that he uses in his characterisation of black bile.

3 Galen's opinion on the authenticity of the individual treatises in the Hippocratic Corpus

3.1 Introduction

We have seen already the importance of the Hippocratic *On the Nature of Man*, which supports Galen's view of the philosophical methodology used by Hippocrates, and more specifically, as the origin of the theory of the four-humour system that explains health and disease in the body.¹ Therefore, it appears that *On the Nature of Man* is important at least for the basis of black bile as one of the four humours in Galen's biological theory. However, the content of this one Hippocratic text is not enough to explain the way that Galen uses black bile as part of his biological theory of health and disease. We shall find that it was necessary for Galen to draw upon many other treatises from the Hippocratic Corpus for his characterisation of black bile. However, he did not accept the authenticity of all the works in this collection and so it is important to understand his views on the authenticity of the most important texts in the Hippocratic Corpus in relation to their content on black bile.² In the previous chapter there was also the case where Galen had used the content of different texts from the Hippocratic Corpus to support his argument that Hippocrates and Plato were in agreement on the tripartite division of the soul. It appears that Galen may be using material from some treatises in the Hippocratic Corpus as evidence for Hippocrates' writing on a particular topic, even when he has identified the text as being inauthentic.³ This is not an isolated case and we shall find more examples of Galen's use of 'inauthentic' texts for key 'Hippocratic' material on black bile. But, in order to understand Galen's determination of the authenticity of the different treatises in the Hippocratic Corpus, it is important to find out how he began his studies on the Hippocratic texts with reference to the work of earlier physicians and medical writers. Therefore, I will investigate the way that some of the early authorities on

¹ See chapters 'Introduction' and 'Galen's strategy for his portrayal of Hippocrates as a philosopher' above.

² The texts from the Hippocratic Corpus selected for analysis in this chapter are the most important sources for Galen's development of his theory of black bile, which I have worked on in the research for this thesis.

³ See chapter 2 'Galen's strategy for his portrayal of Hippocrates as a philosopher', section 2.3 above.

medicine had engaged with the 'Hippocratic Corpus' in order to trace some of the most important stages of interpretation and commentary of these texts between the fourth century BCE and the second century CE. This will bring us up to the time when Galen began his medical studies in Pergamum, and so I will include information on some of Galen's teachers who were actively engaged with the interpretation of the Hippocratic Corpus. All of this is in preparation for a detailed analysis of how Galen approached the question of authenticity of some of the key texts on black bile in the Hippocratic Corpus. My aim is to understand how Galen uses the concept of authenticity to identify genuine Hippocratic texts and which ones will be most significant for him in terms of his presentation of the physical properties and function of black bile in the body.

When we read different treatises by Galen, it is important to understand his writing in terms of earlier medical and philosophical works that have influenced him and to which he often refers. The most significant early medical influence on Galen is from 'Hippocrates', who he asserts must be properly understood in order to be successful in medicine.⁴ Galen was writing in the period of the so-called 'Second Sophistic', which von Staden characterises as an epideictic culture that favoured public displays, re-enactment of Greek historical events and displays, particularly from the fifth and fourth century BCE, along with an interest in the Attic language.⁵ Therefore, Galen's use of material from the Greek classical period of the fifth and fourth century BCE to support his arguments and theories can be viewed within this context.⁶ One particular debate that Galen took an active interest in was the 'Hippocratic Question', which is based on the issues of how to reliably decide the authenticity of the large amount of texts that make up the Hippocratic Corpus. We find throughout Galen's writing many references and quotes to passages that he labels as being by Hippocrates or that are in agreement with Hippocratic doctrine. In order to understand how Galen made decisions about the content of material from treatises, I want to try to determine what the 'Hippocratic Corpus' actually

⁴ For example in *Opt. Med.* (1 (I 53,3-55,7 K)), Galen describes Hippocrates as an ideal physicians who should be emulated. See chapter 'Galen's strategy for his portrayal of Hippocrates as a philosopher' above for more information on the way that Galen characterises Hippocrates as the foremost physician and philosopher in treatises, such as *On the Elements according to Hippocrates*. See also Smith, 1979: 83-96 and Mattern, 2008: 8-9.

⁵ Von Staden, 1997a: 33.

⁶ Harig and Kollesch 1975: 270-271; Swain, 1996: 378.

was in the second century CE because Galen did not analyse the content of the Hippocratic Corpus without reference to earlier studies on the content of these texts. The various treatises that comprise the Hippocratic Corpus were originally used and collected together from the fourth century BCE onwards. The reason why many medical texts were collected together from this period was a move towards medicine being developed more systematically, which required a consistent rational approach to the causes of health and disease. This process began with a number of physicians choosing to develop their medical theories in this rationalistic way. However, at this early point in the history of medicine, there did not seem to be any acknowledgement of Hippocrates or Hippocratic medicine as the best authority and foundation of this new rationalist thinking.⁷ We can obtain an understanding of the Hippocratic Corpus from the way that it was used by physicians and those interested in medical texts. For example, it was thought that the physician Diocles of Carystus (fourth century BCE) was a good, early, source for the interpretation of Hippocratic doctrine. However, this is now not considered to be the case and analysis conducted by scholars, such as Smith and van der Eijk, have cast doubt on the usefulness of Diocles to analyse the early view of the Hippocratic works.⁸ Therefore, we need to look elsewhere to investigate the early collection of medical texts that were designated as being by 'Hippocrates'.

In the early Hellenistic period, the library at Alexandria had collected a large amount of medical works, many of which became attributed to Hippocrates.⁹ One of the most prominent physicians at this time was Herophilus (325-250 BCE), who was well regarded because of his pioneering work on anatomy and

⁷ Lloyd discusses the problems involved in attempting to provide a modern solution to the 'Hippocratic Question'. His conclusion is that it is clear that what we call the Hippocratic Corpus is actually a collection of texts by a large number of different writers. Information on Hippocrates from ancient sources, such as Plato, Aristotle, Hellenistic writers and Galen, do not provide reliable enough evidence for us to make a conclusive determination of the Hippocratic authenticity of any of the treatises. See Lloyd, 1975; Smith, 1979: 177-178.

⁸ Smith argues that if Diocles had said anything significant about Hippocrates, whether it was in praise or to criticise him, then it would be highly likely that Galen would have reported this somewhere in the texts that have survived. But this does not mean that Diocles was unaware of Hippocrates and it is likely that he did read some of these works, such as *On Regimen*. It has been suggested by van der Eijk that the evidence to associate Diocles with Hippocratic medicine is inconclusive. But, he does concede that it is possible for Diocles to have been aware of at least some of the Hippocratic works. See Smith, 1979: 187 and 189-191; van der Eijk, 2001: xxxiii and xxxv; von Staden, 2006: 16.

⁹ *Hipp. Epid.* III.II.4, CMG V 10,2,1, pp. 78,27-80,6 Wenkebach (XVIIa 605,10-608,1 K). See Smith, 1979: 199-202; Small, 1997: 44; Vallance, 2000: 95-101.

physiology from his studies on human dissection and vivisection. Earlier we saw that the evidence indicates that Herophilus probably did not follow Hippocrates' humoral system in the way that Galen has suggested.¹⁰ However, it is likely that Herophilus engaged with the Hippocratic works, but it is doubtful that he wrote commentaries on any of them.¹¹ What we find is that there was more active engagement with the content of the collection of Hippocratic texts among his followers. For example, the Herophilean Bacchius of Tanagra (c. 275-200 BCE) wrote commentaries on *Aphorisms*, *Epidemics VI* and *In the Surgery*.¹² In the case of *In the Surgery*, Galen includes Bacchius among the earliest commentators of this text. He found this version useful, not only for its 'ancient readings', but also for the inclusion of some variants of its reading that were in agreement among the very earliest commentators on this text. However, in contrast to this praise, we find that Galen accused Bacchius, among other early commentators, of making emendations to the transmitted text of *Epidemics VI*. Bacchius also wrote a glossary on Hippocratic works, not only to explain obscure and difficult medical terms, but also to show where common language was used in a medical context.¹³ Then there are the Empiricists, a rival group to the Herophileans, who are also important for this early work on the Hippocratic texts. The evidence in the extant sources indicates that the Empiricist Zeuxis (most likely c. 250-175 BCE) worked on six Hippocratic texts: *On Places in Man*, *Aphorisms*, *Prorrhetic I*, *Epidemics II*, *III* and *VI*.¹⁴ Another Empiricist,

¹⁰ See chapter 1 'Introduction', section 1.3.4 above.

¹¹ Von Staden suggests that although Herophilus offered critical responses to a few of the Hippocratic texts, such as *Prognostic*, and glossed some Hippocratic words and expressions, the precise literary form that he used is not clear. Von Staden cites Caelius Aurelianus (T31 and T261, *Tardae passiones*, 4.8.113) and Gal. (T32 and T264, *Hipp. Prog.* I.4, CMG V 9,2, p. 204,4-205,8 Heeg (XVIIIb 13,14-16,4 K)) for evidence of Herophilus' writing against the Hippocratic *Prognostic*. But, this does not necessarily imply that Herophilus had written a commentary on the *Prognostic*. See Smith, 1979: 191-193 and 199; von Staden, 1982: 78 and 90; 1989: 74-76; 2006: 16; Hanson, 1998: 37; Vallance, 2000, 101 and 107.

¹² Von Staden claims that the modern view that Bacchius wrote commentaries on *On the Nature of the Child*, *Epidemics II* and *III* is based on inconclusive evidence. See von Staden, 2006: 17-18 and 20-25. See also Hanson, 1998: 37-38; Vallance, 2000: 102.

¹³ *Hipp. Off. Med. Pref.* (XVIIIb 631,9-632,1 K); *Hipp. Epid. (VI) Pref.* CMG V 10,2,2, pp. 3,4-4,6 Wenkebach (XVIIa 793,4-794,10 K); *Hipp. Epid. III.II.25*, CMG V 10,2,1, pp. 87,6-15 Wenkebach (XVIIa 618,19-619,11 K). See Smith, 1979: 202-204; von Staden, 1999a: 158; 2006: 18-20 and 26-27.

¹⁴ Galen reports that Zeuxis wrote commentaries on 'all books of Hippocrates', but as von Staden points out, it is unclear whether this means the texts that Galen believes are authentic or all the books attributed to Hippocrates at that time. If it is the former, then this would be one of the first attempts at a comprehensive exegesis of a Hippocratic Corpus. Galen reports Zeuxis' gloss of the Hippocratic *On Places in Man* in his *Gloss.* (XIX 107,14-108,5 K). The evidence for Zeuxis' commentary on *Prorrhetic I* comes from a passages in Galen's own commentary on this Hippocratic work (*Hipp. Prorrh.* II.23, CMG V 9,2, p. 73,8-20 Diels (XVI 636,5-637,4 K)). There

Glaucias of Tarentum, who was a contemporary of Zeuxis, provided interpretation of some passages from *Epidemics VI*.¹⁵ There has been some generalisation that characterises the Empiricist interpretation of the Hippocratic texts solely on the basis of their empiricism, which was used to align ‘Hippocrates’ with their doctrine. This is the type of Empiricist strategy that was promoted by Galen in his polemic against some of the Empiricist physicians. However, analysis by von Staden suggests that some of the Empiricists adopted a more independent approach to their interpretation of the Hippocratic texts and in some cases defended a particular Herophilean view. For example, when Zeuxis comments on a passage from *Epidemics VI*, he attempts to defend the content of the passage with reference to Herophilus’ interpretation and even defends this view from the criticism of Herophileans, such as Callimachus. Further to this we find Zeuxis criticising Glaucias for tampering with the transmitted text of *Epidemics VI*.¹⁶ Unfortunately, information on the work of these early Hellenistic Herophileans and Empiricists only survives in fragments or in remarks made by later writers, such as Erotian, Celsus and Galen.¹⁷

In addition to the Herophileans and Empiricists, there are other physicians who engaged with the works in the Hippocratic Corpus. In his *Commentary on In the Surgery*, Galen includes Asclepiades, alongside Bacchius, Zeuxis and Heraclides of Tarentum, in his list of early Hippocratic commentators.¹⁸

Asclepiades of Bithynia (second to first century BCE) had a reputation of

is a reference to Zeuxis’ interpretation of the content of the Hippocratic *Aphorisms* when Galen is discussing the analysis of a particular aphorism by the early authorities. Von Staden suggests that this indicates a commentary on *Aphorisms* by Zeuxis, as Galen is referring to a set of early commentators, who go further than lexicography and glossary of terms (*Hipp. Aph.* VII.69 (XVIIIa 186,11-187,4 K)). The evidence for Zeuxis’ commentary on *Epidemics II* is from just one source, which is a ninth century Arabic translation of Galen’s commentary on this Hippocratic work (*Hipp. Epid.* II, CMG V 10,1 pp. 230,10-234,7 Pfaff). See von Staden, 2006: 30-39.

¹⁵ For example, Galen criticised Glaucias for emending a passage from *Epidemics VI* in relation to information about the spleen (*Hipp. Epid.* VI, CMG V 10,2,2, pp. 451,40-452,2 Pfaff). See von Staden, 2006: 40-44.

¹⁶ *Hipp. Epid.* VI.I.5; VI.II.43, CMG V 10,2,2, pp. 20,19-21,9; 114,1-9 Wenkebach (XVIIa 826,4-827,7; 992,9-16 K). See von Staden, 2006: 32-34 and 44-45. For an example of the view, which Galen promotes, that characterises Empiricist exegesis in terms of associating empiricism with ‘Hippocrates’, see Smith, 1979: 177-178; 205; 208-210.

¹⁷ The earliest, most ‘complete’, Hippocratic commentary is by the first century BCE Alexandrian physician, Apollonius of Citium. Smith reports that Apollonius, although sometimes writing in an Empiric style, did not refer to himself as an Empiricist. He is mostly positive about Hippocrates and the work that survives in his treatise *On Joints* draws heavily on the Hippocratic work of the same title. See Smith, 1979: 212-214; Nutton, 2004: 145.

¹⁸ Heraclides of Tarentum was an Empiricist from the first century BCE. He was a student of the Herophilean, Mantias. See von Staden, 1989: 86-87 and 106; Nutton, 2004: 144 and 151-152.

opposing 'Hippocratic' medicine, which is a view that Galen has encouraged in his polemic against him. It was thought that Asclepiades had written two commentaries, one on the Hippocratic *In the Surgery* and the other on *Aphorisms*. However, new evidence suggests that he also wrote a commentary on the Hippocratic *Epidemics I*.¹⁹ There has been some debate on whether Galen had access to only one of the texts from the four early commentators that he refers to in his *Commentary on In the Surgery*. Smith claims Asclepiades' commentary is the most likely one that Galen is using as his source. However, Leith has argued, on the basis of chronology, that if Galen only had one of these commentaries, it would most likely be by Heraclides.²⁰ Galen was keen to characterise Asclepiades as opposed to Hippocrates and there is evidence of Asclepiades criticising some parts of the Hippocratic texts, such as rejecting the theory of critical days. However, as Leith suggests, it is better to view Asclepiades' attitude towards Hippocrates as attempting to understand and provide a clear interpretation of the content of the Hippocratic works, rather than trying to show that Hippocrates was at all times correct.²¹ In this way, Asclepiades is closer to Herophilus' approach to Hippocrates. Another source on the work of Hippocrates comes from Celsus (first century CE), who attempted to create a 'history of medicine', which identifies Hippocrates as the first person to separate medicine from philosophy. Celsus constructs his historical narrative by emphasising Hippocrates' philosophical pedigree and by pointing out that he is sometimes called a student of Democritus and should be regarded as the founder of 'rationalist' medicine. We find that Celsus draws upon a wide range of Hippocratic works, but he does not attempt to ascertain the authenticity of the different texts that were attributed to Hippocrates.²²

So far the information that we have on this early period of engagement with the texts that were collectively attributed to 'Hippocrates' is that the content was interpreted using glossaries, commentaries and edited versions of the treatises.

¹⁹ Galen's reference to Asclepiades as a commentator on the Hippocratic *In the Surgery* comes from *Hipp. Off. Med.* (Pref. (XVIIIb 631,9-632,1 K)). The evidence of Asclepiades' commentary on *Aphorisms* is from Caelius Aurelianus (*On Acute Diseases*, 3.1.3 (CML VI.1 p. 294 Bendz)) and *Epidemics I* is from a recently discovered papyrus (P. Oxy. LXXX 5231). See Leith, (forthcoming): 1-7.

²⁰ *Hipp. Off. Med.* I.5; I.22; II.29; II.30 (XVIIIb 666,10-14; 715,9-18; 805,16-806,2; 810,15-811,2 K). See Smith, 1979: 222-226; Leith, (forthcoming): 4.

²¹ Leith, (forthcoming): 15.

²² Celsus, *On Medicine*, pref. 7-10, 14-15, 47 and 66. See Smith, 1979: 226-230; von Staden, 1999b: 264-267; Nutton, 2004: 116.

However, we do not find evidence that there was a systematic study of the consistency of language and doctrine to determine the authenticity of individual or groups of texts. The first time we encounter a direct engagement with the question of the authenticity of Hippocratic works is in the first century CE. It is at this time that Erotian produced a 'Hippocratic' dictionary to help his fellow physicians to access the large amount of Hippocratic works available. Erotian accepts the authenticity of almost all the treatises, but he singles out *Prorrhetic II* as not being written by Hippocrates. However, we do not know why he rejected the authenticity of this particular text. For example, he might have been concerned about the content of this treatise in terms of linguistic or doctrinal issues.²³ Therefore, from the first century CE, we start to find more information on a debate within ancient medicine relating to the 'Hippocratic Question'. There is evidence that shows that physicians and medical commentators at this time became interested in comparing the Hippocratic treatises with each other, in terms of consistency of grammatical style and doctrinal content. This allowed them to determine whether a particular text was a genuine Hippocratic work or not. The first attested systematic investigation based on consistent criteria for the engagement with this Hippocratic Question began with Dioscurides and Artemidorus Capiton at the beginning of the second century CE.²⁴ For example, we find that Dioscurides considered *On Diseases II* to be written by a person called Hippocrates, who was in fact the grandson of the more famous Hippocrates. He also believed that a certain passage from *Epidemics VI* was actually by Thessalos, rather than Hippocrates.²⁵ Galen tells us that Dioscurides had created a list of the treatises that he considered to be the 'most genuine and most useful works'. According to Galen, Dioscurides included *Aphorisms*, *Prognostic*, *On Regimen in Acute Diseases*, *Airs, Waters and Places*, and *Epidemics I* and *III* among the most genuine Hippocratic treatises.²⁶ It was the work of Dioscurides, and then Artemidorus after him, which brought together a

²³ It is possible that the question of Hippocratic authenticity may have been studied earlier than this. Smith suggests that it is possible that the earlier sources that Erotian was drawing on for his opinion may have left *Prorrhetic II* out of their glossaries for some reason. See Smith, 1979: 234; van der Eijk, 1999: 17; von Staden, 1999a: 187; Nutton, 2004: 212-213.

²⁴ Smith, 1979: 234-236; Nutton, 2004: 213.

²⁵ For Galen's presentation of Dioscurides' opinion on the authenticity of *Diseases II*, see *Hipp. Epid.* VI.I.29, CMG V 10,2,2, p. 55,16-56,10 Wenkebach (XVIIa 888,9-889,6 K); *HNH*, II.1, CMG V 9,1, p. 58,7-15 Mewaldt (XV 110,12-111,4 K). See Smith, 1979: 237; Roselli, 1999: 370.

²⁶ *Hipp. Epid.* (III) Pref. CMG V 10,2,1, p. 60,4-61,13 Wenkebach (XVIIa 576,4-578,7 K). This was probably not an exhaustive list, but it does show that Dioscurides recognised a specific set of Hippocratic works as genuine. See Smith, 1979: 238-239.

set of texts, which could be collectively known as the Hippocratic Corpus.²⁷ The physician Rufus of Ephesus (first century CE) is another example of someone who actively engaged with the content of the Hippocratic works at this time. He wrote some commentaries on the Hippocratic texts, but these have unfortunately not survived.²⁸ Rufus was one of many physicians that attributed *On Diseases I* to Hippocrates, in contrast to Galen, who rejected it as inauthentic (see section 3.4.2 below).²⁹ Smith suggests that it seems likely that Galen used Rufus' commentaries as a source for his own writing on the Hippocratic works and that he read parts of Rufus' writing, which he found in the commentaries by Sabinus (see page 94 below).³⁰

This brings us to the period that just preceded Galen, with the main physicians working with Hippocratic texts being Marinus, his student Quintus, who in turn taught Lycus and Sabinus. Marinus is an important person in relation to Galen's view of the anatomical content of the Hippocratic Corpus. Galen respected Marinus' views on anatomy and, as Smith points out, he regards Marinus as the first to claim that *Epidemics II* contains information on the anatomy of the veins and nerves. Galen is critical of the rest of the content on anatomy in the Hippocratic Corpus as he believes that it is incorrect. Therefore, this one reference to a correct description of anatomy is essential for Galen to show that Hippocrates understood everything about the physiology and anatomy of the body.³¹ Galen tells us that Marinus wrote some commentaries on Hippocratic works, but Smith is concerned that Galen does not mention these commentaries anywhere else in his extant writing.³² When it comes to Quintus, Galen reports that he had not produced any published writing, but Galen uses him for some passages from the *Epidemics*, which Smith suggests may have come to Galen from his teacher Satyrus.³³ Galen was particularly hostile to

²⁷ Smith, 1979: 239-240; Nutton, 2004: 213.

²⁸ Smith, 1979: 240-241; Pormann, 2008: 4-5; 135-136 and 146-149.

²⁹ Pormann, 2008: 148.

³⁰ Smith, 1979: 243.

³¹ *Hipp. Epid.* II, CMG V 10,1, pp. 312,20-313,36; 330,39-331,8 Pfaff. See Smith, 1979: 65.

³² *Hipp. Epid.* VI, CMG V 10,2,2, pp. 286,27-288,36 Pfaff. In this commentary on *Epidemics VI*, Galen is quoting some of Lycus' reading of *Epidemics VI* and finds that it is based on the work of Marinus. Galen reports that there are many books attributed to Marinus in Rome, but he cannot find the one that refers to the relevant passage in *Epidemics VI*. See Smith, 1979: 65-68; Nutton, 2004: 219.

³³ *Hipp. Epid.* VI, CMG V 10,2,2, pp. 314,18-20; 500, 38-39 Pfaff; II, CMG V 10,1, p. 222,41-42 Pfaff; *Ant.*, I.14 (XIV 69,5-12 K). See Smith, 1979: 68.

Lycus, whom he criticises for failing to understand his own teacher (Quintus) and taking an Empiric stance when interpreting the Hippocratic works.³⁴ Sabinus published Hippocratic commentaries and was well regarded in the second century CE. He was a self-styled Hippocratean, and although Galen recommended some of his books, he was regarded by Galen as a rival in the competitive world of Roman society.³⁵ We find that Sabinus is part of the general debate on the authenticity of *On the Nature of Man*, where Galen outlines his own view against that of Sabinus (see section 3.2.1 below).

It is at this point that we reach a direct Hippocratic influence on Galen's early medical studies through some of his teachers. Galen had many teachers during his medical training, but there are four that are particularly important because of their views on the Hippocratic Corpus. These are Numisianus and Satyrus, who were students of Quintus, and also Stratonicus (a student of Sabinus) and Pelops (a student of Numisianus).³⁶ Galen considered his teacher Numisianus, who was also a student of Marinus, to be superior in anatomy, but he complained that some parts of Numisianus' analysis of the Hippocratic works were inadequate.³⁷ Satyrus, a student of Quintus, wrote some Hippocratic commentaries, which may have been used by Galen when he wrote about his views of Quintus. We find that Galen references Satyrus in his *Commentary on Prorrhetic I*, as part of his general aim to refute the authenticity of this work (see pages 97-99 below).³⁸ Then there is Stratonicus, a student of Sabinus, who influenced Galen on Hippocratic medical practice, but like Quintus, did not publish anything. Galen quotes what he remembers from a lesson by Stratonicus, who interpreted a passage from *Epidemics VI* on the association between black bile and haemorrhoids. Galen believes that Stratonicus was

³⁴ *Hipp. Epid.* III.I.4, CMG V 10,2,1, p. 14,12-17 Wenkebach (XVIIa 502,12-503,1 K). See Smith, 1979: 67-68.

³⁵ *Hipp. Epid.* III.I.4, CMG V 10,2,1, p. 17,22-26 Wenkebach (XVIIa 507,18-508,5 K); II, CMG V 10,1, pp. 329,40-330,5 Pfaff. On one occasion, Galen defends some of the content of Sabinus' commentary on *Aphorisms* against the view of Julian (one of Galen's own teachers): *Adv. Jul.* 3, CMG V 10,3, pp. 39,12-40,9 Wenkebach (XVIIIa 255,1-14 K). See Smith, 1979: 71-72; Nutton, 2004: 212.

³⁶ See Mattern, 2013: 36-80.

³⁷ AA, I (II 217,17-218,4 K). There is also one passage from *Epidemics II*, which tells us about Numisianus' through Pelops, who was one of his students (and also a teacher of Galen). We are informed that Galen finds them both in error about the ability to infer temperament from external features (*Hipp. Epid.* II, CMG V 10,1, pp. 345,20-351,17 Pfaff). See Smith, 1979: 69; Mattern, 2013: 56-57.

³⁸ *Hipp. Epid.* VI, CMG V 10,2,2, p. 412,30-413,1 Pfaff; *Hipp. Prorrh.* I.5, CMG V 9,2, p. 20,11-15 Diels (XVI 524,11-15 K). See Smith, 1979: 70; Mattern, 2013: 39-42 and 47-48.

following a traditional interpretation of this passage on black bile being normalised by haemorrhoids.³⁹ Pelops was very influential on Galen's medical training with reference to the Hippocratic works. He taught Galen about humoral pathology and even wrote a work called *Introduction to Hippocrates* along with many private commentaries on Hippocratic works, which Galen used in some of his own commentaries.⁴⁰ From these teachers, Galen gained training in medicine that used different methods to draw upon even the most obscure and brief passages in the Hippocratic Corpus. Galen then went on to develop his own style of 'reading' the Hippocratic treatises and using them to defend specific points in medical debates.⁴¹

All of this shows that when Galen started to study medicine there was already a long tradition of interpretation and commentary on the texts of the Hippocrates Corpus. However, we have seen that there already had been some analysis on the consistency of language and doctrine of the different Hippocratic texts to ascertain authenticity. We know from his writing that Galen had access to the lists of 'authentic' Hippocratic works, such as the one compiled by Dioscurides, and he had also been taught by physicians who have their own opinion of what should be considered as genuine Hippocratic treatises. However, Galen did not just accept these views on Hippocratic authenticity without some analysis of his own. He wrote a specific book on his assessment of the authenticity of Hippocratic works, called *The Authentic and Spurious Writings of Hippocrates*, which demonstrates that he was actively involved with addressing this question on what constitutes a genuine Hippocratic text.⁴² Unfortunately this text is now lost, but Galen does quote a small section from it in his *Commentary on On the Nature of Man*, which provides a short description of his method and criteria for the determination of genuine Hippocratic works:

³⁹ *Hipp. Epid.* VI, CMG V 10,2,2, p. 303,12-16 and 412,24-26 Pfaff. See Smith, 1979: 70-71 and 132-133; Nutton, 2004: 212; Mattern, 2013: 58.

⁴⁰ *Hipp. Epid.* VI, CMG V 10,2,2, p. 291,3-12 Pfaff. For Pelops' humoral pathology: *Aff. Dig.* 3.6, CMG V 4,1,1, p. 75,16-21 De Boer (V 112,13-113,1 K); *Hipp. Epid.* VI, CMG V 10,2,2, p. 500,14-21 Pfaff. For Pelops' commentaries: *Hipp. Epid.* VI, CMG V 10,2,2, pp. 412,31-413,1 Pfaff. For Pelops' 'Introduction to Hippocrates': *Ant. Musc.* XVIIIb 927,7-9 K. See Smith, 1979: 69-70; Nutton, 2004: 217; Mattern, 2013: 58.

⁴¹ Smith, 1979: 73-74.

⁴² *HNH*, Pref. CMG V 9,1, p. 7,19-21 Mewaldt (XV 9,15-16 K); Jouanna, 2012c: 320; Roselli, 2015: 534-535.

ἔχει δὲ τὸν μὲν πρῶτον λόγον, ἔνθα περὶ τῶν στοιχείων καὶ τῶν χυμῶν διέρχεται, παντοίως ἐχόμενον τῆς Ἱπποκράτους τέχνης, ὥσπερ γε καὶ τὸν δεύτερον, ἔνθα καὶ τὰ διακριτικὰ τῶν ἐπιδημιῶν τε καὶ σποραδικῶν νοσημάτων. τὸν δὲ περὶ τῆς τῶν φλεβῶν ἀνατομῆς ἐναργῶς παρεγκείμενον ἔχει, μοχθηρὸν ὅλον· οὔτε γὰρ τοῖς φαινομένοις ὁμολογεῖ καὶ τοῖς ἐν τῷ δευτέρῳ τῶν Ἐπιδημιῶν εἰρημένοις μάχεται. τῶν δ' ἐξῆς τὰ μὲν παρέγκειται, περὶ ὧν ὅτ' ἐξηγούμεθά σοι τὸ βιβλίον ἀκριβωθήσεται, τὰ δὲ ἐστὶν ἀξιόλογα καὶ διὰ βραχέων καλῶς εἰρημένα καὶ τῆς Ἱπποκράτους ἐχόμενα τέχνης, ὥσπερ ὅσα περὶ τῆς ὑγιεινῆς διαίτης εἴρηται.

It contains a first account, where it expounds concerning the elements and humours, in accordance with the method of Hippocrates, as well as a second account, where it expounds on the differences between epidemic and sporadic diseases. It also contains an appended work concerning the anatomy of blood vessels, which is completely spurious. For this appended work is not consistent with actual observation, and is at odds with what is said in the second book of the *Epidemics*. Although after this it sets down those topics which were investigated in the book which I have already written about, still these things are noteworthy, well-expressed and concise, and adhere to the system of Hippocrates, as do also those things which are said concerning the healthy regimen.⁴³

The context of this passage is the question of the authenticity of *On the Nature of Man* and *Regimen in Health*.⁴⁴ Here we find some of Galen's criteria for authenticity, where he accepts or rejects parts of a treatise for different reasons. In the passage above, Galen talks about an appended work on blood vessels, which he rejects because it is not consistent with actual observation and that it does not agree with the content of a section in *Epidemics II*. Therefore, Galen is testing this passage on the basis of what he himself has seen from dissection, but also by comparison with another text from the Hippocratic Corpus. Galen trusts this particular section from *Epidemics II* as a standard that the passage from *On the Nature of Man* must be in agreement with to be authentic. Galen then tells us that his expectation is that the writing should be consistent with what he considers to be the style of writing of Hippocrates, using such terms as noteworthy (ἀξιόλογος) and concise (βραχύς). In addition, the content must also agree with what Galen calls the 'method' (τέχνη) of Hippocrates. This passage summarises Galen's criteria for the determination of the authenticity of

⁴³ *HNH*, Pref. CMG V 9,1, p. 8,9-18 Mewaldt (XV 10,18-11,11 K), translation by Lewis.

⁴⁴ I discuss the issues concerning the authenticity of these texts from the Hippocratic Corpus in more detail later, see section 3.2.1 below.

Hippocratic works, which is based on two main factors; language (λέξις) and doctrine (διάνοια). So in the passage above, we have Galen identifying the λέξις of part of the treatise as being consistent with what he expects of Hippocrates' writing style. The other type of determination of authenticity based on διάνοια has two different aspects. The first is whether the content of the treatise actually matches what Galen considers to be experiential evidence (e.g. from dissection) and this is what he believes Hippocrates would have concurred with. The other type of test for doctrine is when Galen compares the treatise in question with what he considers to be a model passage from another treatise (or a different part of the same treatise), which he has already identified as being authentically Hippocratic. We can see this in the above passage when Galen compares the description of the blood vessels with information from *Epidemics II*.

Galen considered Hippocrates to be not only an excellent physician, but also an accomplished writer. Therefore, Galen was looking out for any grammatical mistakes in the Hippocratic texts, as a way of determining authenticity. There were two main areas of grammar which Galen particularly focused on: barbarisms (βαρβαρισμός: sounding of words) and solecisms (σολοικισμός: meaning and construction of words).⁴⁵ When Galen analyses a text, he never reports what he considers as genuine writing by Hippocrates to contain such barbarisms. When it comes to solecisms, Galen is more relaxed, as he acknowledges that sometimes such mistakes do not distort the meaning to such an extent that understanding is lost. But this is only the case when there are not too many solecisms in a particular treatise that would then produce too much obscurity.⁴⁶ What we find is that the analysis of the construction of the language is used as an indication of authenticity by Galen. In the case of specific words used in the text, he is looking out for anachronisms that for him should not be present in Hippocrates' writing.⁴⁷ A good example of Galen applying this type of analysis of authenticity to a specific text is in his *Commentary on Prorrhetic I*.

⁴⁵ *Hipp. Fract.* I.1 (XVIIIb 324,2-8 K); *Hipp. Aph.* V.62; VII.68 (XVIIIb 865,14-18; XVIIIa 183,13-16 K); *Diff. Puls.* II.5 (VIII 587,8-11 K). See Sluiter, 1995: 522.

⁴⁶ *Hipp. Aph.* VII.56; VII.58 (XVIIIa 167,4-9; 170,1-7 K). See Sluiter, 1995: 522-523 and 527-528.

⁴⁷ See section 3.2.1 below, for an example of Galen's rejection of a term for 'continuous fever' as anachronistic in *On the Nature of Man*.

This commentary is interesting, as it is a rare case of a line-by-line exegesis of a text that was not considered by Galen as worthy of being attributed to Hippocrates. Galen's commentaries were usually produced to provide interpretation and explanation of any uncertainty in the treatises that were considered to be genuine Hippocratic works, which were used to teach Hippocratic doctrine. The reason why Galen decided to write the *Commentary on Prorrhetic I*, after receiving requests for it, was due to his confidence that under his expert guidance he could explain and draw attention to the parts of this treatise that are useful.⁴⁸ Galen is concerned about the lack of clarity in *Prorrhetic I*, in comparison to his expectation of Hippocrates' excellent writing style.⁴⁹ So we have Galen's criticism of the style of language (λέξις), which might obscure the intended meaning. For Galen, this is not always accidental, as there are cases where he believes that the language used by the author of *Prorrhetic I* is intentionally obscure: this is something that he believes Hippocrates would never do.⁵⁰ In the case of this treatise, Galen is less relaxed about the presence of solecisms, as for him there are too many for the text to be considered worthy of Hippocrates, or a genuine work of the Hippocratic tradition.⁵¹ In parallel to this criticism of language, Galen also analyses this treatise in terms of its presentation of doctrine (διάνοια). The main issue that Galen raises is that this author has a tendency to refer to symptoms as if they occur all the time, when in fact they are infrequent. The opposite is also a problem, when there is a general case that is treated as something that is only applied to one condition. Galen explains that this type of mistake is due to this author not understanding the content of the Hippocratic *Epidemics*, as this treatise tells us how to differentiate correctly between what is generally or particularly valid.⁵² Here again, Galen is comparing one text (*Prorrhetic I*) with

⁴⁸ *Hipp. Epid.* (III) Pref. CMG V 10,2,1, pp. 61,17-62,7 Wenkebach (XVIIa 578,11-579,2 K); *Hipp. Prorrh.* II.1; III.7, CMG V 9,2, pp. 52,1-4; 115,3-25 Diels (XVI 588,17-589,3; 723,9-725,3 K). See Roselli, 2015: 533-534; 541 and 556.

⁴⁹ For example, Galen emphasises the clarity of a genuine Hippocratic text such as *On Prognostic in Diff. Resp.* III.4 (VII 905,5-9 K) and *Hipp. Prorrh.* I.1, CMG V 9,2, p. 3,20-27 Diels (XVI 490,10-18 K). See Roselli, 2015: 538-540.

⁵⁰ *Hipp. Prorrh.* III.16, CMG V 9,2, p. 128,1-5 Diels (XVI 749.16-750.5 K).

⁵¹ *Hipp. Prorrh.* I.4, CMG V 9,2, pp. 13,27-14,13 Diels (XVI 511,3-512,5 K). See Anastassiou and Irmer, 1997, volume II.1, p. 433; Roselli, 2015: 548 and Craik, 2015: 239.

⁵² For a general statement about the issues involving doctrine, see *Hipp. Prorrh.* II.1, CMG V 9,2, p. 51,6-7 Diels (XVI 587,7-8 K). For an example of his criticism of a particular case being applied as a general rule, see *Hipp. Prorrh.* II.31; II.40, CMG V 9,2, pp. 79,14-15; 85,26 Diels (XVI 650,1-2; 663,6 K). For the opposite problem, where a general rule is only applied to a single case, see *Hipp. Prorrh.* II.38, CMG V 9,2, p. 83,9-19 Diels (XVI 658,3-15 K). Galen

the content of other texts (for example, parts of the *Epidemics*), which he considers to be authentic. Therefore, on the basis of language (λέξις) and doctrine (διάνοια), Galen is able to state what he considers to be authentic in the Hippocratic Corpus, thereby rejecting passages, or even whole books as inauthentic, which should be ignored when it comes to understanding Hippocrates' view of medicine.

Therefore, we find that Galen was not only fully aware of the 'Hippocratic Question'; but that also he was engaged in his own answer to it. There are three categories of texts that Galen used to classify the authenticity of the various treatises in what we now consider to be the works of the Hippocratic Corpus. The first category contains those works that he believes can be attributed directly to Hippocrates. The second category contains the treatises that are in agreement with what Galen considers to be the views of Hippocrates, but that were written by his close followers such as Polybos. Lastly, there are those treatises that contain too much material that is too far away from what he identifies as genuine Hippocratic language and doctrine. In general, Galen is not so concerned about the distinction between the first and second of these categories, as long as the text is consistent with what he considers as being the true doctrine of Hippocrates, even if it is written by someone else.⁵³ With Galen's criteria for authenticity involving the analysis of language and doctrine in mind, I now want to investigate the treatises from the Hippocratic Corpus that are relevant to my thesis in terms of whether Galen considers them to be genuinely Hippocratic (either by Hippocrates himself, or by one of his close followers), or rejects them as being inauthentic. In each case, I will briefly summarise the main points of their content in relation to the way that humours, such as types of phlegm and bile, are used to explain the cause of disease, with a particular emphasis on any references to black bile in each treatise.

remarks on the correct way to determine general and particular cases in the *Epidemics* in *Hipp. Prorrh.* III.34; III.7, CMG V 9,2, pp. 147,22-27; 115,3-25 Diels (XVI 788,12-789,1; 723,10-725,3 K). See also Roselli, 2015: 554-556.

⁵³ Flemming, 2008: 342.

3.2 Category 1: Texts from the Hippocratic Corpus that Galen considered to be written by Hippocrates

We have seen that Galen had referred to the list of Dioscurides' 'most genuine and most useful works': *Aphorisms*, *Prognostic*, *Epidemics I and III*, *On Regimen in Acute Diseases* and *Airs, Waters and Places*. We shall find that all of these treatises were also considered by Galen to be authentic and they are used by him as Hippocratic evidence to support his presentation of the characterisation of black bile. However, even in these treatises, there are cases where Galen questions the authenticity of single passages, or whole sections, which he suspects have been amended or even added in by some of the editors of the transmitted texts. In addition to these treatises, Galen also identified *On Humours*, *On Diseases of Women I, II and III*, *Koan Prognoses*, *On Breaths* and *On the Nature of Bones* as authentic works by Hippocrates. Again, we find that Galen also points out the parts of these texts that he believes are not authentic. These treatises, although not part of Dioscurides' 'most genuine and most useful works', are important for the understanding of the way that Galen characterises black bile in terms of its role in producing disease in the body. Further to this, there are two other important Hippocratic treatises that are missing from Dioscurides' list. Firstly, although *Airs, Waters and Places* is considered to be a very important genuine Hippocratic text, *On the Sacred Disease*, which contains similar material, is not listed and we shall find that Galen seems to ignore the content of this treatise. But, there is some very important material in *On the Sacred Disease*, which would be useful to support some of Galen's arguments involving the role of humours in the production of different types of diseases. However, the most significant omission in terms of Galen's writing on black bile from Dioscurides' list is *On the Nature of Man*. We have seen that this treatise was essential for Galen's presentation of Hippocrates in terms of the four-humour system and to some of his arguments relating to Hippocrates' status as a physician-philosopher. Therefore, it is important for Galen to include *On the Nature of Man* as one of the genuine Hippocratic works, so what does he say about the authenticity of this treatise?

3.2.1 *On the Nature of Man and On Regimen in Health*

When it comes to black bile, *On the Nature of Man* is the main treatise in the Hippocratic Corpus that presents this substance as part of a set of four fundamental fluids, which have become known as the four humours. In addition to the text of *On the Nature of Man* itself, there is an associated treatise called *On Regimen in Health*. However, there is a question over whether *On Regimen in Health* should be regarded as part of *On the Nature of Man*, or as a separate work in its own right.⁵⁴ Galen's view was that these two works should be considered as separate treatises, as he wrote a separate commentary on *On Regimen in Health*. But, I am going to include *On Regimen in Health* alongside *On the Nature of Man* in this section, as Galen engaged with the debate about the authorship of the content of both these treatises, and argued for a solution that divides *On the Nature of Man* into two distinct parts, with *On Regimen in Health* regarded as a separate work. He names Hippocrates as the originator of the first eight chapters of *On the Nature of Man*, but concedes that *On Regimen in Health* may have been written by Polybos. However, he denies Hippocratic authenticity to chapters nine to fifteen of *On the Nature of Man*, suggesting instead that these were written by a forger who wanted to create a larger volume to impress the Attalid and Ptolemaic kings, who put a higher price on longer works.⁵⁵ In Galen's opinion, the first eight chapters of *On the Nature of Man* contain the key Hippocratic doctrines (διάνοια), such as health and disease being explained in terms of the proper mixture or separation of the four humours.⁵⁶ We have seen already (see pages 95-96 above) that in his *Commentary on On the Nature of Man*, Galen quotes his (lost) work *The Authentic and Spurious Writings of Hippocrates* on this very issue of the authenticity of this treatise, and that he had analysed the various sections in terms of proper Hippocratic language (λέξις) and doctrine (διάνοια). A little later in the commentary, he attempts to strengthen his argument by connecting

⁵⁴ Craik points to the difference of opinion in modern scholarship, where we have both Littré and Jones regarding them as two separate works and Jouanna combining them in his 1975 translation and commentary. For more information on this debate, see Jones, 1931: xxvi-xxvii; Littré, 1962 (VI): 70; Jouanna, 2002a: 20-21; Craik, 2015:208-209.

⁵⁵ *HNH*, II Pref. CMG V 9,1, p. 57,4-21 Mewaldt (XV 108,4-109,17 K); *Hipp. Vict.* Pref. CMG V 9,1, p. 89,3-14 Mewaldt (XV 174,5-175,9 K). See Smith, 1979: 166-172; 201-202 and 219-221; Hanson, 1998: 33; Jouanna, 2012c: 320-321 and Craik, 2015: 208-209.

⁵⁶ *HNH*, Pref. CMG V 9.1, pp.6,6-7,21 Mewaldt (XV 7,4-9,16 K). See Smith, 1979: 170; Jouanna, 2012c: 314 and 333.

a passage in the *Phaedrus* with the first eight chapters of *On the Nature of Man*. This association provides an example of Plato's description of Hippocrates' methodology for medicine.⁵⁷ However, when it came to the content of *On Regimen in Health*, he judged this text to be close enough in language (λέξις) and doctrine (διάνοια) to be a Hippocratic treatise, but not necessarily written by Hippocrates himself.⁵⁸

Galen concedes that it is possible that the author of *On Regimen in Health* might have been Polybos. But, he is adamant that chapters nine to fifteen of *On the Nature of Man* cannot possibly be attributed to Hippocrates, or even to one of his close associates, such as Polybos. At the end of his *Commentary on On the Nature of Man*, Galen accuses Sabinus and 'most of the exegetes' (τῶν πλείστων ἐξηγητῶν) of first praising the content of these seven chapters and then claiming that the author was Polybos. Galen criticises them for believing that a Hippocratean, like Polybos, could have written the material in these chapters of *On the Nature of Man*, as, according to Galen, the information in this section does not correspond to Hippocratic language and doctrine.⁵⁹ For example, in chapter nine of *On the Nature of Man* there is a section on diseases that are caused by repletion (πλησμονή) in the body. Galen acknowledges that some diseases arise from this type of repletion, but says that this is not necessarily the underlying cause of the disease. Galen defines disease as a certain condition that harms the function of the body. Therefore, he does not believe that repletion alone is harmful, but instead it causes harm through some intermediary condition. Furthermore, repletion can be defined in two ways. The first is in terms of a fundamental property and the second is in terms of the capacity of a vessel. We are told that the former causes the humours to be corrupt and will tend to send a humour to the weakest part of the body. The latter definition causes the vessels in the body to rupture and can be fatal by the blockage of the body's transpirations. But Galen says that the writer of this part of *On the Nature of Man* is incorrect in using repletion to counteract the draining

⁵⁷ Plato, *Phdr.* 270c-d; Galen, *HNH*, Pref. CMG V 9.1, pp. 8,19-9,11 Mewaldt (XV 11,11-13,4 K).

⁵⁸ *Hipp. Vict.* Pref. CMG V 9,1, p.89,3-14 Mewaldt (XV 174,5-175,9 K). See Flemming, 2008: 341; Jouanna, 2012c:315 and 324.

⁵⁹ *HNH*, II.22, CMG V 9,1, pp. 87,15-88,13 Mewaldt (XV 171,9-172,14 K). See Smith, 1979: 171; Manetti and Roselli, 1994: 1555-1556.

of humours in the body. Galen's view is that all Greeks know that repletion is applied to excesses of a well-balanced quality. In this case the humours are emptying and so rebalance cannot be produced by repletion. In addition, there are some doctors who do not use the draining of humours as the cause of disease; instead they reserve this term to describe the weakening of the body. However, Galen counters this argument with the statement that diseases do arise from imbalanced draining, as this causes a cooling effect and can produce fever.⁶⁰ These are examples of Galen's argument that this part of *On the Nature of Man* cannot be by Hippocrates (or someone following his doctrine), as this material is not consistent with what Galen considers to be Hippocrates' doctrine of medicine.

Another example that Galen provides to reject this section of *On the Nature of Man* is the content referring to blood vessels. The problem that Galen identifies is that, in the eleventh chapter of *On the Nature of Man*, we are told that there are four pairs of the major blood vessels in the body. Galen says that this is a clear error that Hippocrates (or a close follower like Polybos) would not make. Furthermore, it is inconsistent with the content of *Epidemics II*, which Galen acknowledges as containing proper Hippocratic doctrine (see section 3.3.1 below). Galen's rejection of this passage as not being Hippocratic includes authorship by any Hippocrateans who would follow closely the doctrines of Hippocrates, such as Polybos. In this way, Galen is writing against the view of Aristotle, who quotes this passage on blood vessels in *On the History of Animals* and attributes it to Polybos. The issue here is about correct knowledge about the inner structure of the body and Galen defends Hippocrates' general presentation of anatomy, saying that he did not need to provide a lot of detail at this time. However, the information he does present is correct and so this is why this section cannot be attributed to Hippocrates or one of his close followers.⁶¹ This is an example where Galen makes a decision on authenticity in terms of doctrine (διάνοια), which he analyses from both the point of view of general

⁶⁰ Hippocratic Corpus, *Nat. Hom.* 9, CMG I 1,3, p. 188,3-6 Jouanna (VI 52,4-7 L); Galen, *HNH*, II.1, CMG V 9,1, pp. 58,15-59,12 Mewaldt (XV 111,3-114,10 K).

⁶¹ Aristotle, *HA*, III.3, 512b13-513a8. See Lloyd, 1993: 131; Nutton, 2004: 85; Jouanna, 2012c: 314-315. Jouanna argues that Galen's failure to acknowledge Aristotle's quotation of this passage in *On the History of Animals* and his attribution of it to Polybos threatens Galen's argument against the authenticity of this middle section of *On the Nature of Man*. See Jouanna, 2012c: 322-323.

medical knowledge, which he believes that Hippocrates would agree with, and from a passage in another text from the Hippocratic Corpus that he has identified as being Hippocratic.

A further example comes from the fifteenth chapter of *On the Nature of Man*, where quotidian fevers are said to be of less duration than tertian. Galen points out that this is inconsistent with the content of *Epidemics I* and *Aphorisms*, both of which he considers to be examples of genuine works by Hippocrates (see section 3.2.3 and 3.2.4 below).⁶² Galen acknowledges that a physician who believes that the quotidian fever reaches a crisis in a shorter time than the tertian is not very skilled in medicine. But Galen does not say that this part of *On the Nature of Man* has been written intentionally as a lie. Instead, this has been constructed from a theory, which associates constant fevers with an excess of fire, quotidian to air, tertian to water and quartan to the earth. Galen cites a passage in Plato's *Timaeus* as representing this view.⁶³ Galen then puts forward what he believes to be the most plausible account. The origin of the different fevers is due to the hot element and the difference between the fevers is due to the amount of heat that they contain. So the most constant fever contains the most fire, and then on to the difference in time with a decrease of hotness.⁶⁴ This issue of the inconsistency of the cause of the different fevers in *On the Nature of Man* has been blamed by commentators, such as Sabinus, on Polybos being mistaken when writing this text. Sabinus has assumed that Polybos had not had access to *Epidemics I* and *Aphorisms*. But Galen does not think that the writer of this part of *On the Nature of Man* was a Hippocratic writer, as the author calls the 'continuous (συνεχής) fever' the 'non-intermittent (σύννοχος) fever', which Galen believes Hippocrates would never have done. Galen explains this as a more recent term used by physicians, who do not know about the different terminology used by the ancient authors.⁶⁵ So again we find

⁶² Hippocratic Corpus, *Nat. Hom.* 15, CMG I 1,3, pp. 202,10-204,21 Jouanna (VI 66,10-68,16 L); cf. *Aph.* IV.59 (IV 522,15-16 L); Galen, *HNH*, II.22, CMG V 9,1, pp. 85,18-86,4 Mewaldt (XV 167,16-169,1 K). See Smith, 1979: 171.

⁶³ Plato, *Ti.*, 86a; Galen, *HNH*, II.22, CMG V 9,1, p.86,4-24 Mewaldt (XV 169,1-170,6 K).

⁶⁴ *HNH*, II.22, CMG V 9,1, pp. 86,25-87,14 Mewaldt (XV 170,6-171,9 K).

⁶⁵ Hippocratic Corpus, *Nat. Hom.* 15, CMG I 1,3, pp. 202,10-204,21 Jouanna (VI 66,10-68,16 L); Galen, *HNH*, II.22, CMG V 9,1, pp. 87,14-88,13 Mewaldt (XV 171,9-173,4 K). However, as Roselli has argued, this method is not robust enough to reject this type of language, as other Hippocratic writing suggests that this was an acceptable Ionic form for this time period. See Roselli, 2015: 537.

that Galen has questioned the authenticity of a part of a treatise based on issues of doctrine (διάνοια) from what he considers as correct knowledge of medicine and by reference to other texts in the Hippocratic Corpus, which contradict this material, but are considered by him as authentic. This shows that Galen is willing to go against a traditional view of the authorship of *On the Nature of Man*, even if this contradicts the writing of Aristotle and Plato. This treatise is important to Galen, as the first eight chapters contain material on the four-humour system, but he is willing to reject some parts of this work as not being authentic, as they do not fit into his own view of what constitutes the correct doctrine (διάνοια) of Hippocrates on issues concerning aetiology of disease and information on anatomy.

The majority of the references to black bile are in the first eight chapters of *On the Nature of Man*, which, according to Galen, correspond to the section of this treatise that is genuinely by Hippocrates. The importance of this content for Galen is demonstrated by his use of this material to present what he believes is a theory created by Hippocrates and also to support his own biological theory of the body that draws upon the theory of the four humours.⁶⁶ This content is the subject of much of the discussion in Galen's *On the Elements According to Hippocrates* and he uses it to support his argument for the superiority of Hippocrates' methodology in relation to philosophy.⁶⁷ We find that black bile is referred to in chapters nine to fifteen of *On the Nature of Man*, which Galen rejects as being Hippocratic. In the fifteenth chapter, the types of fever are discussed in relation to yellow bile and black bile. The cause of the quartan

⁶⁶ For example, *Nat. Hom.* 4-7, CMG I 1,3, pp.172,13-15; 174,12-176,1; 176,13-178,1; 180,3-7; 182,8-9; 184,13-14 and 186,8-9 Jouanna (VI 38,19-40,2; 40,16-17; 42,12-14; 44,14-15; 44,17-18; 46,13-14; 48,16-17 and 50,7-9 L). Galen makes frequent reference to this material on the humours and black bile throughout his writing. For section IV: *Hipp. Elem.* 10.1-3, CMG V 1,2, pp. 138,15-140,1 De Lacy (I 492,1-10 K); *Prop. Plac.* 12.5, CMG V 3,2, p. 98,5-7 Nutton; *At. Bil.* 5; 6, CMG V 4,1,1, pp. 79,1-24; 83,20-24 De Boer (V 119,14-121,10; 128,6-10 K); *PHP*, VIII.4.13-17; 24; 6.1-14, CMG V 4,1,2, pp. 500,26-502,9; 504,3-15; 512,25-516,6 De Lacy (V 674,14-675,17; 677,6-678,4; 689,1-692,12 K). For section V: *HNH*, I.28, CMG V 9,1, p. 37,12-27 Mewaldt (XV 69,8-70,10 K); *Adv. Iul.* 8.9-10, CMG V 10,3, p. 65,14-21 Wenkebach (XVIIIa 292,8-293,1 K); *PHP*, VIII.5.26-39, CMG V 4,1,2, pp. 510,8-512,24 De Lacy (V 685,8-688,17 K). For section VI: *At. Bil.* 7, CMG V 4,1,1, p. 87,10-15 De Boer (V 135,13-136,1 K); *Hipp. Elem.* 13.12-16, CMG V 1,2, p. 152,4-15 De Lacy (I 503,17-504,14 K); *SMT*, III.27 (XI 616,11-14 K); *Purg. Med. Fac.* II (XI 330,7-14 K). For section VII: *Hipp. Epid.* III.1.6, CMG V 10,2,1, pp. 32,25-33,3 Wenkebach (XVIIa 534,14-17 K); *Hipp. Epid.* II, CMG V 10,1, pp. 4,13-5,25 Pfaff; *HNH*, II.22; CMG V 9,1, p. 87,5-11; 24-31 Mewaldt (XV 87,1-9; 88,5-13 K); *Temp.* II.3; III.4 (I 603,7-14; 673,11-674,1 K). See Anastassiou and Irmer, 1997, volume II.1, pp. 362-365 and volume II.2, pp. 269-279.

⁶⁷ See 'Galen's strategy for his portrayal of Hippocrates as a philosopher', above.

fever is related to the properties and nature of the black bile humour. Galen's rejection of this material is shown by the absence of any direct reference to this material in presenting his biological theory of the body, which is in contrast to his frequent use of the content of the first eight chapters of this treatise.⁶⁸ When it comes to *On Regimen in Health*, there are no references to black bile at all.⁶⁹ This might be one of the reasons for Galen's lack of interest in *On Regimen in Health*, as it does not contain any important information on the humours, compared with the first eight chapters of *On the Nature of Man*. But, it is not sufficiently different in language and doctrine for Galen to reject it, as he does with chapters nine to fifteen of *On the Nature of Man*. Whatever his reasons, the way that Galen engages and makes decisions on the content of *On the Nature of Man* and *On Regimen in Health*, shows how he is selective in the material that he considers as either Hippocratic or inauthentic in relation to his own judgement on what constitutes the language and doctrine of Hippocrates.

3.2.2 Prognostic

One of the reasons that Galen gives for writing a commentary on the Hippocratic *Prognostic* is that he believes that previous interpretations of this work are inadequate and that he, more than anyone else, is able to draw out the true meaning of Hippocrates' writing to those who want to learn about it.⁷⁰ Galen makes frequent remarks in this commentary to emphasise that this treatise is genuinely by Hippocrates. We find that he praises this work highly in terms of what he regards as being the best form of Hippocratic writing (λέξις).⁷¹ However, despite this high praise for *Prognostic*, Galen still singles out a passage where he believes that there is room for doubt about the authenticity of a small part of the text. In the sixth section of *Prognostic* there is a passage concerning the different types of sweating that may benefit or harm a patient during acute cases of fever. Galen discusses the content of this passage in his

⁶⁸ *Nat. Hom.* 15, CMG I 1,3, p. 204,12-19 Jouanna (VI 68,6-14 L).

⁶⁹ There is a passage that refers to the purging of phlegm in winter and bile when the body is hot, see *Salubr.* V (VI 78,3-11 L).

⁷⁰ *Hipp. Prog.* III.6, CMG V 9,2 p. 328,11-22 Heeg (XVIIIb 230,6-231,1 K). See Flemming, 2008: 332-333.

⁷¹ *Hipp. Prog.* I.1; I.4; III.6, CMG V 9,2 pp. 197,12-14; 205,5-8; 328,11-22 Heeg (XVIIIb 2,6-8;15,16-16,4; 230,6-231,1 K). See Manetti and Roselli, 1994: 1538; Anastassiou and Irmer, 1997, volume II.1, p. 395; Craik, 2015: 235.

Commentary on Prognostic and is concerned that Hippocrates does not refer to critical days when discussing sweat anywhere else. Galen suggests that this error might be explained by an addition from the Hippocratic editors Artemidorus and Dioscurides.⁷² This is an example of Galen identifying a potentially inauthentic passage in terms of issues concerning what he considers to be the true doctrine (διάνοια) of Hippocrates that he generally finds in the texts that he believes are authentic. It also allows him to reject short sections and passages from a work that he mostly regards as by Hippocrates. This flexibility is useful for Galen, as sometimes there are parts of treatises that may not be compatible with his view of what is and is not Hippocratic. Therefore, this allows him to ignore anything that he does not agree with or that may contradict his argument.

In this treatise there are no instances of the explicit use of terms such as ‘black bile’ (χολή μέλαινα) or ‘melancholic affections’ (μελαγχολικός). However, there is a general reference to bile and phlegm. For example, when the author of *Prognostic* calls pus, faeces and vomit ‘bilious’ and ‘phlegm-like’, it is intended as descriptions that are useful for prognosis.⁷³ We find that *Prognostic* does not follow the four-humour system of *On the Nature of Man*. Instead, this treatise is about the signs that must be interpreted correctly for good diagnosis and prognosis and there are many descriptions of the material that is excreted from the body during illness. Colour is an important factor and there are occasions where the presence of the black urine, faeces or saliva is identified.⁷⁴ However, Galen chooses to interpret the content of *Prognostic* in terms of the humoral theory of *On the Nature of Man*. For example, Galen associates black bile with the presence of certain black substances in the material evacuated from the body. Therefore, even though there is no explicit reference to black bile in *Prognostic*, Galen explains the presence of different types of black substances, during certain illnesses, as a clear indicator of the problems

⁷² Hippocratic Corpus, *Prog.* VI (II 122,18-124,12 L); Galen, *Hipp. Prog.* I.26, CMG V 9,2 pp. 241,10-243,16 Heeg (XVIIIb 81,4-85,6 K). See Roselli, 2015: 534-535.

⁷³ *Prog.* XVII; XVIII and XXIV (II 152,13-164,3 and 180,6-188,5 L). See Craik, 2015: 235.

⁷⁴ For black urine in the Hippocratic *Prog.* (XII (II 142,1-3 L)). Galen uses this passage in *At. Bil.* (7, CMG V 4,1,1 pp. 90,13-91,16 De Boer (V 141,11-143,9 K)) and in *Cris.* (I.12 (IX 606,1-11 K)). See Anastassiou and Irmer, 1997, volume II.2, pp. 324-325 and 329. For the other passages on black faeces and saliva: Hippocratic Corpus, *Prog.* XI and XIV (II 138,1-2 and 146,1-15 L); Galen, *Hipp. Aph.* II.14 (XVIIIb 471,4-8 K) and *Cris.* I.5 (IX 565,3-567,6 K). See Anastassiou and Irmer, 1997, volume II.1, p. 417 and volume II.2, p. 330.

associated with the black bile humour in the body. This is the case of a reference in the *Prognostic* to faeces that are black, which Galen in his commentary interprets as being caused by excess black bile (χολή μέλαινα).⁷⁵ For Galen, *Prognostic* is one of the core Hippocratic texts and we shall see that it is very important for his characterisation of the physical properties of black bile that are helpful to him for its identification for prognosis and diagnosis of diseases that are caused by this humour.⁷⁶

3.2.3 *Aphorisms*

The treatise, *Aphorisms*, contains a large number of short passages, which are characterised as 'maxims' on a range of medical issues. The seven section division of *Aphorisms* that we use now was the one favoured by Galen.⁷⁷ The original concept of an 'aphorism' has its basis in a set of important memorisable statements that were used in teaching. Craik provides a brief summary on the main content of each of the sections. But it should be noted that these classifications are only general and there are aphorisms in each of these sections that have different content. In the first section we find information relating to diet regimes and purgation. In the second, there is content on sleep and prognosis. The third section contains material on the seasonal effects on health and disease. The observation of the signs of the effect of fevers on the body is in the fourth section and there is a diverse set of topics covered in the fifth section. Lastly, in the sixth and seventh sections, we find information about the signs and symptoms of different diseases.⁷⁸ Galen attributes the majority of this treatise to Hippocrates, but denies authenticity to certain aphorisms throughout all the sections and in particular the ones at the very end of section seven. Galen's concern here is that the content of parts of this treatise does not meet his criteria for the high Hippocratic standard. Problems occur towards the

⁷⁵ Hippocratic Corpus, *Prog.* XI (II 134,13-138,14 L); Galen, *Hipp. Prog.* II.22, CMG V 9,2 p. 277,17-21 Heeg (XVIIIb 142,10-15 K). For more examples, see Galen, *Hipp. Prog.* II.46; III.32, CMG V 9,2 pp. 296,12-297,5; 355,23-357,9 Heeg (XVIIIb 175,1-176,2; 277,14-280,6 K).

⁷⁶ We find that Galen refers to the content of *Prognostic* when it comes to the physical description of black bile and his analysis of the cause of quartan fevers by black bile. See chapter 4 'Galen's characterisation and physical description of the black bile humour', section 4.2 and chapter 6 'The diseases caused by black bile', section 6.2 below.

⁷⁷ This is the way that his *Commentary on Aphorisms* is set out.

⁷⁸ Craik, 2015: 30-34.

end, with what Galen calls disorderly placement and hurried writing, which come under the category of Galen's concerns about style and language (λέξις).⁷⁹ Galen raises the problems associated with the final aphorisms at the end of section seven. He ends his commentary when he reaches the eighty-first aphorism of section seven, even though there are still another six after this one. This is because Galen believes that the *Aphorisms* has undergone an editing process by different commentators over time.⁸⁰ This is an example of Galen analysing doctrine (διάνοια) by comparison with other treatises that he considers to be genuinely Hippocratic. More generally, Galen considered *Aphorisms* to be an excellent example of Hippocrates' use of brevity in language to convey complex medical information, which would normally require much more detailed explanation.

We can find references to blood, phlegm, yellow bile and black bile throughout *Aphorisms*. However, this does not mean that the author of this work was using the framework of the four-humour system of *On the Nature of Man*. Phlegm, yellow bile and black bile are considered to be pathogenic substances and are referred to as either the cause of certain diseases or are observed in the evacuated waste from the body during illness. There are issues concerning the interpretation of some passages from *Aphorisms* that contain material relating to black bile. For example, there is an inconsistency concerning the presence of harmful material in any evacuated waste from the body in a set of aphorisms in the fourth section. In some cases the presence of black bile in evacuated waste is beneficial, but there are some aphorisms where black bile in vomit, urine and faeces is considered to indicate a dangerous illness.⁸¹ Another example comes from a later part of *Aphorisms*; in the seventh section there is an aphorism that describes the association between evacuations from the bowels and black bile. When Galen comments on this text he tells us that many commentators, such as Bacchius, and the Empiricists, Heraclides and Zeuxis, have accepted this aphorism as being genuine, but Galen has reservations about its style of

⁷⁹ *Hipp. Aph.* VII Pref. (XVIIIa 101,1-10 K). See Manetti and Roselli, 1994: 1536-1538.

⁸⁰ *Hipp. Aph.* VII.81 (XVIIIa 194,7-12 K). See Smith, 1979: 129-130; Anastassiou and Irmer, 1997, volume II.1, p. 58-59.

⁸¹ *Aph.* IV.21-25 (IV 508,5-510,12 L). See Craik, 2015: 33. Galen's use of these passages will be discussed in more detail in chapter 5 'The cleansing of harmful black bile from the body', see section 5.4 below.

language (λέξις) and questions its authenticity. This shows that Galen did not just accept the identification of passages as being Hippocratic by other commentators, but judged the content under his own criteria of authenticity.⁸² More content relating to black bile can be found in the third, fourth, sixth and seventh sections of *Aphorisms*, where there are a large number of passages that refer to the melancholy illness or temperament that Galen associates with black bile.⁸³ The twenty-third aphorism in the sixth book is particularly important in Galen's discussion about melancholy in *On Affected Places*, as evidence that Hippocrates wrote about melancholy.⁸⁴ In general, Galen draws heavily on the content of *Aphorisms* to support his theory of health and disease with particular reference to black bile, which emphasises the importance of this treatise as one of the most important, genuine, Hippocratic works that he favours to support his presentation of black bile from a Hippocratic basis.⁸⁵ However, as the examples show, Galen is able to be selective about which aphorisms he is willing to accept and can reject any that he considers to be incompatible with his notion of Hippocrates' theory of medicine and his own biological theory.

3.2.4 *Epidemics I and III*

The importance of *Epidemics* to Galen is shown from his many references to its content and the fact that he produced commentaries on the first, second, third, and sixth book of this collection.⁸⁶ When Galen began to work with the content of different books of the *Epidemics*, it appears that there was already a separation of the texts into three distinct groups: *Epidemics I and III*; *Epidemics II, IV and VI*; and *Epidemics V and VII*.⁸⁷ In terms of the title, in ancient medicine the word 'Epidemic' (ἐπιδημία) is applied frequently to seasonal disorders, for

⁸² Hippocratic Corpus, *Aph.* VII.69 (IV 602,1-3 L); Galen, *Hipp. Aph.* VII.69 (XVIIIa 185,13-186,5 K). See Smith, 1979: 130; Sluiter, 1995: 523 and Anastassiou and Irmer, 1997, volume II.1, p.142.

⁸³ *Aph.* III.14; 20; 22; IV.9; VI.11; 23; 56; VII.40 (IV 492,4-6; 494,16; 496,4-8; 504,6-7; 566,5-6; 568,11-12; 576,19-21; 588,8-9 K). For examples of Galen's commentary and use of this material see Anastassiou and Irmer, 1997, volume II.1, pp. 6-7, 42, 133, 138-139 and volume II.2, pp. 86-89.

⁸⁴ See chapter 6 'The diseases caused by black bile', section 6.1 below.

⁸⁵ For example, see 4 'Galen's characterisation and physical description of the black bile humour', section 4.4, chapter 5 'The cleansing of harmful black bile from the body', section 5.4 and chapter 6 'The diseases caused by black bile', section 6.1 below.

⁸⁶ Craik, 2015: 89.

⁸⁷ *Diff. Resp.* II.7-8; III.1 (VII 854,4-855,14; 890,15-891,10 K). See Smith, 1979: 121; Hanson, 1998: 33-34.

example the different types of fever, which we find in the books of *Epidemics*, as well as many other treatises in the Hippocratic Corpus. In fact, the content of *Epidemics* has a wider remit than fevers, as we find a variety of diseases, not just those that occur in the different seasons. Alternatively, the title *Epidemics* might refer to the definition of this word in terms of the experiences of doctors travelling Greece.⁸⁸ The classification of the seven books of *Epidemics* into the three sets corresponds to Galen's view regarding the Hippocratic authenticity of each of the books. So, from Galen's three stage categorisation (see page 99 above), each of the seven books can be characterised in terms of authenticity. So we find that *Epidemics I* and *III* were considered by Galen to be the oldest and most authentic works of Hippocrates, which is consistent with both his style of language (λέξις) and doctrine (διάνοια).⁸⁹

Both *Epidemics I* and *III* lack a systematic structure. *Epidemics I* has separate material relating to information on the affect of place on a person's constitution, and individual patient case studies. *Epidemics III* contains both of these sections, with the addition of general information on medicine.⁹⁰ The patient case studies contain observations of phlegm and bile in vomit, urine and faeces, but this does not include any mention of black bile specifically. In fact, black bile (χολή μέλαινα) as a physical substance does not appear at all in either *Epidemics I* or *III*. However, there are a few passages that might be related to the presence of black bile from a secondary point of view, such as the observation of black sediment in urine and in the diagnosis of the melancholy illness.⁹¹ But, although black bile as a physical substance is not specifically referred to in *Epidemics I* and *III*, Galen still writes that this humour is the underlying cause of certain medical conditions in his commentary on these two texts.⁹² This is similar to the situation in *Prognostic*, when Galen also emphasises black bile in his commentary, as the basis for the signs relating to

⁸⁸ Generally, the term ἐπιδημία is more appropriately applied to 'visiting' a place or a person, which might apply to the travel of doctors to far-off places. See Craik, 2015: 63-64.

⁸⁹ See Anastassiou and Irmer, 1997, volume II.1, pp. 174; 229-230, see also Mattern, 2008: 29.

⁹⁰ Craik, 2015: 65 and 73.

⁹¹ For black sediment in urine, see *Epid. I*, Case II (II 684,16-17 L) and *Epid. III*, Case III (III 40,12-14 L). For melancholy illness, see *Epid. III*, XIV and Case II (III 98,1-3 and 112,11-12 L). See also Jouanna, 2012b: 235.

⁹² For *Epidemics I* see: *Hipp. Epid.* I.II.21; I.III.1; I.III.18, CMG V 10,1, pp. 59,27-29; 107,29-30 and 129,15-17 Wenkebach (XVIIa 115,3-6; 214,1-2 and 257,8-10 K). For *Epidemics III* see: *Hipp. Epid.* III.I.6; III.I.21; III.II.13; III.III.72, CMG V 10,2,1, pp. 32,25-33,1; 50,13-16; 102,9-11; 155,15-20 Wenkebach (XVIIa 534,14-15; 565,1-4; 637,10-12; 728,2-8 K).

certain diseases, even when this humour is not mentioned in the treatise (see section 3.2.2 above). Therefore, this shows that Galen is interpreting the content of these Hippocratic texts in order to emphasise black bile as the cause of certain ailments where black substances are observed in evacuated material during some types of illness. This will be important when it comes to Galen's explanation of black bile as the cause of the quartan fevers.⁹³

3.2.5 *On Regimen in Acute Diseases*

The treatise *On Regimen in Acute Diseases* is generally presented as being divided into two parts. The first part is thought to be consistent with accepted Hippocratic writing, but the second part is considered to be of dubious authenticity and so has been designated as 'spurious' (νόθος). Modern naming of these texts follows this separation, for example using the abbreviated name of the first part: *Acut.*, and the second part: *Acut. [Sp.]*.⁹⁴ This division has been influenced by Galen's opinion of the authenticity of *On Regimen in Acute Diseases*. His decision is based on four categories: (i) worthy of Hippocrates in both language (λέξις) and doctrine (διάνοια), (ii) worthy only in language, (iii) worthy only in doctrine, (iv) worthy in neither language or doctrine. Galen rejects the Hippocratic authenticity of the last part of *On Regimen in Acute Diseases* (*Acut. [Sp.]*) on the basis of this fourth category.⁹⁵ We find that, according to Galen, the first part was not published during Hippocrates' lifetime. This is because, although the content is consistent with Hippocrates' language and doctrine, Galen considered the ordering of some of the passages to be different from what is found in genuine Hippocratic works.⁹⁶ He emphasises the authenticity of this first part in his commentaries on other Hippocratic texts, as he lists *On Regimen in Acute Diseases* alongside the other treatises that he

⁹³ See chapter 6 'The diseases caused by black bile', section 6.2 below.

⁹⁴ Sometimes the second part is named: *Acut. [Appendix]*. See Craik, 2015: 1.

⁹⁵ *HVA*, IV Pref. CMG V 9,1, pp. 271,9-11; 271,22-272,3 Helmreich (XV 733,2-4; 733,17-734,4 K). See Smith, 1979: 136-137; Anastassiou and Irmer, 1997, volume II.1, pp. 20-21; Craik, 2015: 4 and Roselli, 2015: 536-537.

⁹⁶ For example: *HVA*, II.55, CMG V 9,1, pp. 216,24-217,2 Helmreich (XV 624,5-625,14 K). See Anastassiou and Irmer, 1997, volume II.1, p. 2.

considers to be authentic, such as *Prognostic* and *Epidemics I* and *III*.⁹⁷ Galen makes a comparison between his own *On the Therapeutic Method* and the Hippocratic *On Regimen in Acute Diseases*, stating that from an educational view his own work is more complete and ordered than this Hippocratic work. But this does not mean that it is not genuine, just that Hippocrates cannot be expected to have completely systemised such a vast subject in medicine.⁹⁸ This is an example of where Galen explains away issues involving the structure of the text because he values the language and doctrine of the work. But this does not apply to the whole work and Galen is able to make a judgement of what he considers to be worthy of Hippocrates and in this case there is a point in the text where the content is rejected as inauthentic.

We find that *On Regimen in Acute Diseases* is concerned with the alleviation and cure of the most severe diseases, listed in the text as pleurisy, pneumonia, phrenitis and ardent fever. The text provides a large amount of information on whether certain foods, drinks and medicines are beneficial or harmful to people with different constitutions. For example, vinous wine is not suited to the bilious, as it causes swelling in the spleen and liver. Hydromel (ὕδρομελι) is also not suitable for those of a bilious constitution, but it can also promote the downward evacuation of bilious material and the effect is more intense for the bilious. The acidity (ὀξύτης) of vinegar (ὄξος) benefits those who suffer from bitter bile (πικρόχολος) more than the sufferers of black bile (μελάγχολος). Water as a cure on its own seems to be a problem for acute diseases, and we find that it is of no use as a medicine and can even be harmful (κακός). Its bitterness increases the bile of naturally bilious people.⁹⁹ When it comes to the content on black bile, there is a difference between the two sections of *On Regimen in Acute Diseases*. In the first section there is only one place where a substance is identified with the properties of black bile, such as being black in colour and acidic. However, there is no direct use of the term 'black bile' (χολή μέλαινα). Instead, the presence of black bile is inferred from 'those who suffer from black

⁹⁷ For example: *Hipp. Epid.* II, CMG V 10,1, pp. 275,31f; 402,17 Pfaff; *Hipp. Epid.* III.I.2, CMG V 10,2,1, p. 3,16-19 Wenkebach (XVIIa 484,13-16 K); *Hipp. Prog.* CMG V 9,2 p. 206,13-15 Heeg (XVIIIb 18,7-9 K). See Anastassiou and Irmer, 1997, volume II.1, p. 2.

⁹⁸ *HVA*, II.36, CMG V 9,1, p. 196,13-17 Helmreich (XV 583,10-16 K). See Manetti and Roselli, 1994: 1542.

⁹⁹ *Acut.* L; LIII; LXII (II 332,3-9; 336,8-342,2; 358,7-360,9 L).

bile' (μελαγχολικοῖσι) and the use of the word 'black' on its own, which is sometimes interpreted as being 'black bile', although in this case it is in the plural form: μελάνων.¹⁰⁰ We shall see that this is an important passage, as it contains information on the differences in the physical properties of yellow bile and black bile, which is similar to the way that Galen characterises these humours. We find that Galen references the content of this passage, where he points out that Hippocrates has shown how the properties of yellow bile and black bile differ.¹⁰¹ However, this is the only significant passage on black bile in this first section of *On Regimen in Acute Diseases*, which is in contrast to the large amount of material on black bile in the appendix section. For example, black bile (χολή μέλαινα) and affection due to black bile (μελαγχολικός) are named as the cause of different diseases, such as problems with the passage of air through the vessels or mental illness.¹⁰² Galen glosses and references many passages from this appendix section of *On Regimen in Acute Diseases* that indicates that there are specific words or phrases in this section that he regards as being compatible with the content of genuine Hippocratic texts.¹⁰³ However, he does not reference the passages that contain information relating to black bile from the appendix section of *On Regimen in Acute Diseases*.

3.2.6 *Airs, Waters and Places*

Galen attributes *Airs, Waters and Places* to Hippocrates, as being of the same high standard of language (λέξις) and doctrine (διάνοια) as the best examples of authentic treatises such as *On Prognostic*, *Aphorisms* and *Epidemics I* and *III*.¹⁰⁴ There is much in *Airs, Waters and Places* that supports the view of how the environment can affect the body in regards to health and illness on the basis

¹⁰⁰ *Ibid.* LXI (16 L) (II 356,8-358,6 L).

¹⁰¹ See chapter 4 'Galen's characterisation and physical description of the black bile humour', section 4.1 below.

¹⁰² For problems with air in the vessels, see *Acut. [Sp.]*, VII (5 L); XXXVII (14 L) (II 404,8-406,1; 468,10-470,1 L). These two passages are referred to by Galen in his commentary on this treatise, see *HVA*, IV.27; IV.79, CMG V 9,1 pp. 295,24-29; 337,15-17 Helmreich (XV 781,6-12; 863,9-12 K). See also Anastassiou and Irmer, 1997, volume II.1, pp. 23-24. For the other cases where black bile is the cause of mental illness, see *Acut. [Sp.]*, XVI (8 L) and XXIX (10 L) (II 426,4-5 and 450,6-9 L).

¹⁰³ Anastassiou and Irmer, 1997, volume II.1, pp. 20-25 and II.2 pp. 24-30.

¹⁰⁴ For example, *Hipp. Aph.* III.11 (XVIIb 578,4-579,9; 582,18-584,6 K); *Hipp. Aer.* fol. 63v14-21. See Anastassiou and Irmer, 1997, volume II.1, p. 26-27 and 38-40.

of fundamental properties and substances, such as the qualities (hot, cold, dry and wet) and humours (phlegm and bile). For example, the inhabitants of a city that is exposed to hot winds and protected from colder winds, which makes the water hot in summer and cold in winter, are moist and are affected by phlegm that moves down through their bodies. In places where there are the opposite conditions, exposure to cold winds and sheltered from the hot winds, the people are affected by bile instead.¹⁰⁵ The content of *Airs, Waters and Places* has an affinity with some of the other treatises in the Hippocratic Corpus, such as *Ancient Medicine* and *On Breaths* in relation to explaining the ‘art of medicine’, and with *On Flesh* in terms of the importance of environmental factors on health.¹⁰⁶ The material on phlegm has some parallels with the content of *On the Sacred Disease* (see section 3.2.7 below), but a case for common authorship has not yet been proven.¹⁰⁷ However, *Airs, Waters and Places* is not associated with the content of *On the Nature of Man* and we find that references to bile and phlegm are in terms of their cause of disease in the body, with no mention of their status as fundamental substances that are important for health. Further to this, there is no reference to black bile (χολή μέλαινα) as a physical substance. However, there is one passage that refers to the melancholic temperament, which Galen associates with black bile.¹⁰⁸ Jouanna claims that this Hippocratic treatise contains the oldest attested reference to melancholy. However, he also suggests that the absence of a specific association between black bile and melancholy is because ‘black bile’ had not been established as an innate humour of the body. Therefore the author of this text explains the cause of melancholy from a pathogenic change of bile.¹⁰⁹ This passage is important in Jouanna’s analysis of Galen’s characterisation of black bile in different treatises,

¹⁰⁵ For the effects of different climates and seasons on the body in relation to the qualities (hot, cold, dry and wet) and humours (phlegm and bile), see *Aer.* III-IV and X-XI (II 14,20-22,14 and 42,7-52,9 L). See also Craik, 2015: 7.

¹⁰⁶ Craik, 2015: 10-11.

¹⁰⁷ It has been pointed out by van der Eijk that the common authorship of these two treatises from the Hippocratic Corpus has not been resolved and there are issues involving the difference in the content between the two texts in terms of conceptions of the ‘divine’. See van der Eijk, 2005: 56-57; Craik, 2015: 195.

¹⁰⁸ *Aer.* X (II 50,10-12 L). Galen refers to this passage in his *Hipp. Aph.* (III.14 (XVIIb 594,11-596,4 K)). See Anastassiou and Irmer, 1997, volume II.1, p. 42.

¹⁰⁹ Jouanna points out that this is the first time that the term ‘melancholy’ (μελαγχολία) is used in the extant Greek literature, but the absence of information on the symptoms of this illness implies that it was already well-known when this treatise was written. Jouanna suggests that the author of *Airs, Waters and Places* did not ‘invent’ melancholy, but is the first known source to write about the illness in this way. See Jouanna, 2012b: 232-233.

as he believes that Galen used this passage to show that Hippocrates was in agreement with his development of a biological theory based on different types of black bile. However, Galen does not quote or reference this passage in his explanation of the cause of melancholy in *On Affected Places*.¹¹⁰ In general, Galen regards *Airs, Waters and Places* as one of the genuine Hippocratic works. Its importance to him is emphasised by the fact that he wrote a commentary on it and he frequently references parts of this text. But, in terms of black bile, this treatise does not provide much material for Galen to use in his characterisation of this humour.

3.2.7 *On the Sacred Disease*

Galen does refer to the title of this treatise in his *Commentary on Joints*, and we find that he glosses a few of the terms present in this text.¹¹¹ But, it is not clear exactly what Galen thought about the content of *On the Sacred Disease* in terms of language (λέξις) and doctrine (διάνοια), as he does not quote or reference material from this treatise in comparison to his many references to the content of *Airs, Waters and Places*.¹¹² This treatise contains a large amount of material on phlegm, which is considered to be the cause of a disease that has a debilitating effect on the body, with the patients experiencing different kinds of symptoms, such as a sudden seizure. There is some material that associates excess bile with a mental condition that makes people noisy and restless.¹¹³ However, there is no mention of the black bile humour or any information on melancholic related diseases, even though the effect of physical humours on the brain is an important topic in this treatise. Like *Airs, Waters and Places*, it does not follow the content of *On the Nature of Man* and the material relating to phlegm and bile describe the negative effect of these substances on the body

¹¹⁰ See chapter 1 'Introduction', sections 1.2 and 1.3 above, and chapter 6 'The diseases caused by black bile', section 6.1 below.

¹¹¹ *Hipp. Artic.* 26 (XVIIIa 356,6-8 K); *Gloss.* XIX 74,6-8; 77,10; 127,8-10 and 152,11 K. See Anastassiou and Irmer, 1997, volume II.1, pp. 340-341.

¹¹² There has been some discussion of the possibility that Galen rejected the authenticity of *On the Sacred Disease*. But, the evidence for this comes from a comment in a tenth century CE manuscript: Marcianus ven. gr. 269,84v. However, as Littré points out, we do not find this denial of authenticity in any of the extant writing by Galen. See Littré, 1961 (I): 353-354; Anastassiou and Irmer, 1997, volume II.2, p. 256.

¹¹³ *Morb. Sacr.* VIII-X (V-VII L) (VI 368,10-374,20 L). For the information relating to bile: *Morb. Sacr.*, XVIII (XV L) (VI 388,12-390,9 L). See van der Eijk, 2011: 32; Craik, 2015: 192.

as the cause of certain mental and physical conditions. In contrast to *Airs, Waters and Places*, Galen does not appear to be interested in *On the Sacred Disease*. We have already seen that its content on the brain would have been useful in Galen's attempt to reconcile the work of Hippocrates and Plato in relation to the tripartite division of the soul. But, despite his quotation of other Hippocratic texts, he ignores the relevant passages from *On the Sacred Disease*.¹¹⁴

3.2.8 *On Humours*

It seems likely that Galen considered *On Humours* to be a genuine work by Hippocrates. However, the *Commentary on On Humours* that had originally been attributed to Galen is itself now considered to be inauthentic. The version contained in the sixteenth volume of the Kühn collection of Galenic works has been identified as inauthentic, and may have been produced in the Renaissance period.¹¹⁵ Therefore, information on Galen's view of *On Humours* must be taken from what he says about this treatise in other works. The fact that Galen tells us that he had written a commentary on this treatise, and his frequent references to its passages, suggests that *On Humours* was part of the works that Galen identified as genuinely Hippocratic. The large amount of material that Galen references and quotes from this work, along with attribution of the content to Hippocrates, indicates that the language (λέξις) and doctrine (διάνοια) was of a standard comparable to the other works that he considered

¹¹⁴ See chapter 2 'Galen's strategy for his portrayal of Hippocrates as a philosopher', section 2.3 above.

¹¹⁵ The commentary that Galen wrote on the Hippocratic *On Humours* was composed of three books. There are a few references to this commentary in Galen's commentary on *Epidemics: Hipp. Epid. III.1* CMG V 10,1, pp. 102,23-25; 108,24-25 Wenkebach (XVIIa 204,12-15; 215,16-18 K); III.2 Pref. CMG V 10,2,1, p. 61,11-13 Wenkebach (XVIIa 578,4-7 K); *Lib. Prop.* 9 (XIX 35-36 K). See von Staden, 2009: 138. However, Galen's actual commentary is lost and only now survives in fragments. For more information on the commentary on *On Humours* in the Kühn Galenic collection that is considered to be a Renaissance forgery, see Deichgräber, 1972. More generally, see Manetti and Roselli, 1994: 1540; Anastassiou and Irmer, 1997, volume II.2, pp. xi-xii; Craik, 2015: 130. This commentary follows the same structure of the genuine commentaries by Galen, such as *Aphorisms*, as it contains a short preface and then a line-by-line exegesis of short sections of the Hippocratic text in sequence from the very first sentence to the very last one in this treatise. There are sections of this commentary that contain information on material that represents Galen's elemental theory of health and disease. For example, near to the start there are references to the four-humour system of the Hippocratic *On the Nature of Man* in terms of the elements, qualities and humours, which is similar to the content of Galen's *Elements According to Hippocrates*. In fact, this Galenic treatise is named as a source for further reading. See Pseudo-Galen, *Hipp. Hum.*, 1 XVI 4,11-61,10 K.

as authentic.¹¹⁶ However, there are no instances of black bile or the affections that come from black bile in this treatise. The content more generally refers to various bodily fluids that are important for understanding the nature of health and disease in the body. There is a broader range of ‘humours’ discussed, which does include blood and bile, but they are just part of a larger set of bodily fluids, such as saliva, nasal discharge and tears.¹¹⁷ When it comes to bile, the summer season can affect the body if there is an increase in bile, which will tend to cause ‘diseases of the spleen’ (ὑπόσπληνος). In Galen’s biological theory, black bile is associated with the spleen and is more likely to cause disease in this organ than (yellow) bile.¹¹⁸ Unfortunately Galen does not refer to this passage from *On Humours* and in the absence of his actual commentary we do not know how he would interpret this material on bile and the spleen. However, it might be understandable that he does not use this passage, as it associates the spleen with yellow bile rather than black bile.

3.2.9 *On Diseases of Women I, II and III*

The three books under the title *On Diseases of Women* are a loosely connected collection of works. Galen refers to the third book of this series as *On Infertile Women* and we find that he draws frequently from the content of the whole collection.¹¹⁹ Galen attributes all three books to Hippocrates, but it seems that they do not have the same status in terms of language (λέξις) and doctrine (διάνοια) of the best of Hippocrates’ works such as *Prognostic*, *Aphorisms* and *Epidemics I* and *III*.¹²⁰ In these three books there are references to phlegm and bile in terms of health and disease in the body. However, black bile (χολή)

¹¹⁶ For example, see *HVA*, II.45, CMG V 9.1 p. 207,6-11 Helmreich (XV 604,13-16); *Hipp. Aph.* I.20; I.22; IV.4 (XVIIb 437,5; 443,4; 663,9 K). For more examples see Anastassiou and Irmer, 1997, volume II.1, pp. 306-307 and II.2, p. 243; Garofalo, 2005: 445. The fact that Galen wrote a commentary on a treatise from the Hippocratic collection does not automatically mean that he considered it to be genuine (see discussion of the Hippocratic *Prorrhetic I*, pages 97-99 above). However, it does provide some indication that Galen might have considered it to be genuine in the absence of any negative remarks about its authenticity.

¹¹⁷ The humour phlegm is also absent from *On Humours*. See Craik, 2015: 130-131.

¹¹⁸ See chapter 5 ‘The cleansing of harmful black bile from the body’, section 5.4 below.

¹¹⁹ Galen glosses a large amount of material from all three books and references passages from *On Diseases of Women I* in some of his treatises. See Anastassiou and Irmer, 1997, volume II.1, pp. 342-357 and 448-449; II.2 pp. 257; Craik, 2015: 204.

¹²⁰ *Hipp. Epid.* II, CMG V 10.1 pp. 297,16-22 and 344,16-18 Pfaff; *Hipp. Aph.* IV.2; V.36; V.45 (XVIIb 660,3; 827,2; 838,12 K); *Gloss.* XIX 88,16; 105,8; 145,15 K. See Anastassiou and Irmer, 1997, volume II.1, pp. 341-342 and 350.

μέλαινα) only appears once, in the second book, when we are told that black bile is the cause when a female patient is suffering from pains in the neck and head, complains of dizziness, and produces black urine.¹²¹ We shall see that this material on the effect of black bile would have been useful to Galen in *On Black Bile* when he criticises Erasistratus' explanation of the cause of different fevers, particularly for female patients. However, Galen does not quote or reference this passage at all in any of the treatises that have survived.¹²²

3.2.10 Koan Prognoses

The content of *Koan Prognoses* is set out in a similar way to *Aphorisms*, with short passages intended as brief statements on various aspects of health and disease. However, in this treatise the material is generally on prognosis and so is narrower in its content than *Aphorisms*.¹²³ We find that there are situations where Galen draws upon the content of *Koan Prognoses*. For example, there are some words and phrases from this treatise that are listed in Galen's *Glossary of Hippocratic Terms*.¹²⁴ It seems that Galen regarded some parts of this treatise as being higher in quality, in terms of language (λέξις) and doctrine (διάνοια), than other parts, as he lists the superior passages alongside what he considers to be the most genuine Hippocratic texts such as *On Prognostic*, *Aphorisms* and *Epidemics*.¹²⁵ Material on phlegm and bile relates to the cause of disease, such as the swelling of the hypochondriac in people with excess bile and the observation of a large amount of phlegm in the evacuated matter of people who have symptoms of trembling in conjunction with a pain in the navel.¹²⁶ There is one passage in this treatise that makes a direct connection between fever and black bile (χολή μέλαινα). Another passage is less explicit about the black bile, as it describes saliva (πτύαλον) that is black (μέλαινα)

¹²¹ *Mul. II*, 182 (VIII 364,12-17 L).

¹²² See chapter 6 'The diseases caused by black bile', section 6.4 below.

¹²³ Craik, 2015: 49.

¹²⁴ *Gloss.* XIX 69; 81 K. See Smith, 1979: 156-157 and Craik, 2015: 50.

¹²⁵ *Hipp. Epid.* (III.II) Pref. CMG V 10,2,1 p. 62,6-12 Wenkebach (XVIIa 578,18-579,8 K). See Anastassiou and Irmer, 1997, volume II.1, p. 167.

¹²⁶ *Coac.* 284; 294 (V 646,17-18; 648,20-650,1 L). See Craik, 2015: 50.

and bilious-like (χολώδης), which is observed during a fever.¹²⁷ There are no other references to black bile explicitly, but we do find several passages that associate the disease relating to black bile (μελαγχολικός) with certain types of mental illness.¹²⁸ We find that Galen does gloss and reference many different passages from *Koan Prognoses*, but he does not seem to be interested in the material relating to black bile or melancholy.¹²⁹ There is also information on the identification of black substances in urine that would have been useful for Galen's criticism in *On Black Bile* of Erasistratus' work on this topic. However, Galen chooses to draw upon the content of *Prognostic* and ignores the relevant passages in *Koan Prognoses*.¹³⁰

3.2.11 *On Breaths*

The question on the authorship of *On Breaths* is still open for debate, but there are some parallels between the content of this treatise and other texts in the Hippocratic Corpus.¹³¹ From Galen's point of view, although he does not refer to this treatise by name in any of his extant writing, he does in fact refer to Hippocrates as the source of passages that he quotes from *On Breaths*. This indicates that at least some of the content of this work was of a sufficiently high standard in terms of language (λέξις) and doctrine (διάνοια) for Galen to attribute it directly to Hippocrates.¹³² One particular example is Galen's frequent use of 'opposites are the cure of opposites' (τὰ ἐναντία τῶν ἐναντίων ἐστὶν ἰήματα), which is found in *On Breaths*.¹³³ Further to this, there is some similarity between the opening section of *On Breaths* and the beginning of Galen's *Commentary on Aphorisms* that might indicate that he has been

¹²⁷ *Coac.* 68; 237 (V 598,16-17; 636,7-9 L).

¹²⁸ *Ibid.* 87; 92; 93; 128 (V 602,11-12; 17-20; 610,1-3 L).

¹²⁹ Anastassiou and Irmer, 1997, volume II.1, pp. 167-169 and II.2 pp. 118-120.

¹³⁰ See chapter 6 'The diseases caused by black bile', section 6.4 below.

¹³¹ For example, Craik refers to similarity with parts of the content of *On the Nature of Man*, such as the removal or addition of key substances in the body and a distinction between two types of disease. See *Flat.* I and VI (90,2-92,15 and 96,20-98,13 L); *Nat. Hom.* 9, CMG I Jouanna (VI 52,4-56,12 K). Craik also discusses other examples, such as *On the Sacred Disease*, *On Fractures* and *On Diseases I*. See Craik, 2015: 100-101.

¹³² For example, Galen names Hippocrates to quoted sections of *On Breaths* in *AA*, VIII.4 (II 674,9-15 K); *CAM*, 11.2-3, CMG V 1,3, pp. 86,27-88,1 Fortuna (I 260,16-261,6 K) and *MM*, XI.9 (X 761,8-10 K). See Anastassiou and Irmer, 1997, volume II.2, pp. 224-225.

¹³³ *Flat.* I (VI 92,10-11 L). For Galen's many references to this passage see Anastassiou and Irmer, 1997, volume II.1, pp.281-287 and volume II.2, pp. 225-227 and Lloyd, 1996: 268-269.

influenced in his writing by the content of this treatise.¹³⁴ There are also many other references by Galen that could be linked to parts of *On Breaths*.¹³⁵ When it comes to the content on health and disease in *On Breaths*, the explanation is in terms of the effect of ‘wind’, which has the power to heat or chill parts of the body. For example, the air drawn into the body during eating and drinking can chill the blood and cause a fever. There is no material on yellow bile or black bile in this treatise, but there is a reference to phlegm, which when mixed with acrid humours can cause ulceration in the body.¹³⁶ We shall see that this is similar to Galen’s characterisation of a harmful form of black bile in *On the Natural Faculties* and *On Black Bile*.¹³⁷ However, Galen does not refer to any of this content on the corrosive effect of this mixture of phlegm with acidic substances in the body. Instead, we shall see that he reserves the property of acidity to ulcerate the body to a harmful form of black bile.

3.2.12 *On the Nature of Bones*

It is the case that Galen refers to some terms and passages from *On the Nature of Bones*, which indicates that he engaged with the content of this treatise.¹³⁸ Sometimes Galen chooses to refer to this treatise under the title of *Leverage*, instead of *On the Nature of Bones*.¹³⁹ It is difficult to tell exactly what Galen thinks about its standard of language (λέξις) and doctrine (διάνοια). There are occasions when Galen clearly identifies Hippocrates as the source of some of the material from this treatise. However, in one particular case the content on anatomy in this treatise is close to the anatomy described in a section from *On the Nature of Man*, which Galen had identified as being inauthentic (see section

¹³⁴ Compare Hippocratic Corpus, *Flat.* I (VI 90,1-92,15 L) with Galen, *Hipp. Aph.* I.1 (XVIIb 354,2-355,3 K). See Craik: 2015: 102.

¹³⁵ *HVA*, I.43, CMG V 9,1 p. 157,13-15 Helmreich (XV 502,1-4 K); *Hipp. Aph.* II.34 (XVIIb 530,14 K); *Hipp. Epid.* VI.II.9, CMG V 10,2,2 p. 69,13-15 Wenkebach (XVIIa 914,6-8 K); IV.27 p. 245,7 Pfaff; *Hipp. Off. Med.* III.33 (XVIIIb 906,12 K). See Anastassiou and Irmer, 1997, volume II.1, p. 281.

¹³⁶ *Flat.* VII; VIII; X (VI 100,8-12; 100,21-22; 106,3-15 L).

¹³⁷ See chapter 4 ‘Galen’s characterisation and physical description of the black bile humour’, section 4.2 below.

¹³⁸ For example, *Gloss.* XIX 114,2-3; 128,1-2 K. See Craik, 2015: 225.

¹³⁹ *Hipp. Aer.* 93r14-94v4: ‘Hippokrates hat diese Venen auch in seinem Buch erwähnt, das Mochlikon heisst, wo er sagt:’ (Hippocrates has mentioned these veins in his book, which is called *Leverage*, where he says:). See Anastassiou and Irmer, 1997, volume II.1, p. 45 and 391-392.

3.2.1 above).¹⁴⁰ We shall see that his rejection of the material relating to the anatomy of the spleen from *On the Nature of Bones* is part of his systematic assessment of the anatomical content of the Hippocratic Corpus. We have seen that Galen generally regarded the anatomical information in many of the texts from the Hippocratic Corpus as incorrect, with the notable exception of material in *Epidemics II*.¹⁴¹ When it comes to information on the humours in *On the Nature of Bones*, we find that both blood and bile are discussed in terms of their respective association to the function of the organs in the body.¹⁴² But, there is no reference to phlegm or black bile in this treatise.

3.3 Category 2: Texts from the Hippocratic Corpus that Galen considered to be Hippocratic treatises

This category contains treatises that Galen believes were not written by Hippocrates himself. However, they do contain material that is close enough to the content of what he regards as the genuine works of Hippocrates. Therefore, in his opinion, these treatises would be produced by Hippocrates' closest associates, who followed his doctrine. This allows Galen to draw upon these works as being Hippocratic, but he has even more flexibility to reject parts of them, if he feels that they are not in agreement with a particular argument or a point that he is making.

3.3.1 *Epidemics II, IV and VI*

The three books, *Epidemics II, IV and VI*, can be considered to be in the second category of authenticity, as Galen approves of their general content, but does not consider that they have the same level of language style (λέξις) that he

¹⁴⁰ Compare chapter nine of the Hippocratic *Oss.* (IX (IX 174,13-178,2 L)) with chapter eleven of the Hippocratic *Nat. Hom.* (11, CMG I 1,3, pp. 192,15-196,15 Jouanna (VI 58,1-60,19 L)) and Galen's *PHP* (VI.3.29, CMG V 4,1,2 p. 380,8-9 (V 528,12-14 K)). See Anastassiou and Irmer, 1997, volume II.2, p. 299.

¹⁴¹ See chapter 5 'The cleansing of harmful black bile from the body', section 5.3 below.

¹⁴² For the passages on blood, see *Oss.* IV; IX; XII; XIII (IX 170,18-21; 176,14-178,2; 182,10-184,13; 184,20-186,9 L). For those on bile and the gall-bladder, see I; XVII; XVIII (IX 168,10-12; 192,9-11; 192,22-194,13 L).

expects from Hippocrates in *Epidemics I* and *III*.¹⁴³ For example, Galen tells us in his *Commentary on Epidemics VI* that there are variations in language, but not in the overall doctrine (διάνοια) that can be considered as being true to Hippocrates.¹⁴⁴ There are a large number of references to blood, phlegm and bile in all three books. However, if we look for black bile specifically, we find the content varies between *Epidemics II*, *IV* and *VI*. For example, a passage from *Epidemics II* tells us that patients who are full of blood (ἔναιμος), and are bilious (ὑπόχολος), should show signs of heartburn (ὄξυρεγμιώδης) and they may finally end up evacuating a black substance (μέλαινα). Both Smith and Littré correctly translate μέλαινα as black bile, but it should be noted that this is the only occurrence of black bile as a physical substance in *Epidemics II*.¹⁴⁵ But, there are two passages in this treatise that refer to the melancholic condition (μελαγχολικός), which can lead to illnesses relating to problems associated with black bile in the body.¹⁴⁶ However, we are on firmer ground in *Epidemics IV*, as there is a clear use of the term 'black bile' (χολή μέλαινα) in the description of the substance vomited by the wife of Eumenes.¹⁴⁷ Another example, this time in *Epidemics VI*, explains a situation where black bile appears together with blood, phlegm and bile. In this passage, the colour of the tongue indicates predominance of certain types of substance in the body:

Γλῶσσα οὖρον σημαίνει· γλῶσσαι χλωραὶ χολῶδεις, τὸ δὲ χολῶδες ἀπὸ πίονος· ἐρυθραὶ δὲ ἀφ' αἵματος· μέλαιναι δὲ ἀπὸ μελαίνης χολῆς· αὔαι δὲ ἀπὸ ἐκκαύσιος λιγνυώδεος καὶ μητρῶου μορίου· λευκαὶ δὲ ἀπὸ φλέγματος.

The tongue indicates the urine. Greenish tongues are bilious. Bilioussness is from fat. Ruddy ones are from blood. Black ones are from black bile. Dry ones are from smoky burning and from the area of the womb. White ones are from phlegm.¹⁴⁸

¹⁴³ *Hipp. Epid. II*, CMG V 10,1, p. 302,38-43 Pfaff. See Anastassiou and Irmer, 1997, volume II.1, pp. 199-200; 241-242 and 248; Hanson, 1998: 33-34.

¹⁴⁴ *Hipp. Epid. VI*.I.2; VI.II.37; VI.II.47; VI.II.48; VI.IV.5; VI.V.36, CMG V 10,2,2, pp. 7,12-13; 104,16-20; 121,28-29; 123,11-14; 195,12-14; 320,13 Wenkebach (XVIIa 800,12-13; 975,17-976,4; 1006,2-3; 1008,11-15; XVIIb 131,7-9; 310,5-6 (where care of lexis is considered pure nonsense) K). See Roselli, 2015: 537.

¹⁴⁵ *Epid. II*, III.15 (V 116,4-5 L); cf. *Epid. VI*, VI.14 (V 330,7-8 L).

¹⁴⁶ *Epid. II*, V.1 and VI.1 (V 128,8-9 and 132,16-17 L).

¹⁴⁷ *Epid. IV*, I.16 (V 154,6-9 L).

¹⁴⁸ *Epid. VI*, V.8 (V 318,5-8 L), translation by Smith.

We can see that the author of this passage has classified blood, phlegm, bile and black bile in relation to the colours, red, white, 'greenish' and black respectively. It is tempting to make a comparison with the content of *On the Nature of Man*, as the presence of blood, phlegm, bile and black bile together could suggest a link between these two treatises. However, it does not necessarily follow that the author of *Epidemics VI* was using the four-humour system of *On the Nature of Man*. Firstly yellow bile is not named as a physical substance, in the same way as blood, phlegm and black bile. Instead, there is a reference to the cause of biliousness from fat (πιόν) and an association between yellow bile and fat is not found in *On the Nature of Man*. Secondly the colour of the tongue from the bilious condition is greenish-yellow (χλωρός). The content of *On the Nature of Man* identifies a yellow (ξανθή) type of bile, but there is no reference in this treatise to the colour greenish-yellow. Finally, there is the inclusion of the dry (αῦξη) tongue that comes from smoky burning (ἔκκαυσις λιγνυώδης) and the womb (μητρῶος μόριον), which is also not mentioned in *On the Nature of Man*. This shows that there are other types of conditions and substances that affect the tongue and indicate certain problems in the body. However, there is other material that refers to black bile on its own in *Epidemics VI*. For example, problems with black bile in the body can be alleviated by haemorrhoids. Both of these passages relating to black bile are cited by Galen to support his own theory about the nature of the body.¹⁴⁹ There is also a passage in *Epidemics VI* that describes a connection between epilepsy and the melancholic condition.¹⁵⁰ This passage is quoted by Galen for evidence that Hippocrates had postulated the cause of mental afflictions from the physical mixtures in the body.¹⁵¹ We shall see that there is important information in these three books of *Epidemics* regarding the physical description of black bile, diseases of the spleen and information on fevers that are similar to the way that

¹⁴⁹ For the colour of the tongue as an indicator of presence of the four humours and other substances, see *Epid. VI*, V.8 (V 318,5-8 L). For Galen's comments and use of this passage, see *Hipp. Epid.* VI.I.2; VI.V.16, CMG V 10,2,2, pp. 10,5-8; 296,9-23 Wenkebach (XVIIa 805,15-806,1; XVIIb 277,1-278,2 K); *PHP*, VIII.5.10-11, CMG V 4,1,2, p. 506,30-35 De Lacy (V 681,15-682,5 K). See Anastassiou and Irmer, 1997, volume II.1, p. 263 and II.2, p. 219. For black bile and haemorrhoids, see *Epid. VI*, V.15 (V 320,3-4 L) and Galen, *Hipp. Epid.* VI.V.25; CMG V 10,2,2, pp. 302,20; 303,18-25 Wenkebach (XVIIb 285,1-287,16 K); *Hipp. Aph.* IV.25 (XVIIb 690,9-14 K); *Ven. Sect. Er.* IV (XI 158,7-11 K). See also Anastassiou and Irmer, 1997, volume II.1, pp. 264-265 and II.2, p. 97.

¹⁵⁰ *Epid VI*, VIII.31 (V 354,19-356,3 L). See Jouanna, 2012b: 235-236.

¹⁵¹ See chapter 6 'The diseases caused by black bile', section 6.1 below.

Galen characterises black bile in terms of its physical properties and its function as a innate humour and harmful substance in the body.¹⁵²

3.3.2 *On Internal Affections*

It seems that Galen knew about the content of *On Internal Affections*, as part of a larger work with the more general title *On Affections*.¹⁵³ Galen, in agreement with the general opinion of this treatise at the time, considered *On Internal Affections* to be part of a set of what were known as Hippocratic works on the study of diseases. However, these texts were later than the ones that he considered to be written by Hippocrates himself. Therefore, this text comes under the category of being close enough in terms of language (λέξις) and doctrine (διάνοια) for Galen to consider it a Hippocratic work.¹⁵⁴ Just like the case in *Epidemics VI* (see section 3.3.1 above), there is an interesting section in this treatise that explains the cause of different diseases in the spleen by blood, phlegm, yellow bile and black bile.¹⁵⁵ However, again, as we have seen in *Epidemics VI*, there is no other indication in this text that the author is following the four-humour system of *On the Nature of Man*.¹⁵⁶ These passages on the diseases of the spleen in *On Internal Affections* will be important for my discussion of the association between black bile and the spleen in Galen's medical theory.¹⁵⁷ Further to this, there are several passages that provide material on the observation of black bile during different types of illness. For example, a disease in the lungs is caused by intensive exercise (ταλαιπωρία), blood (αἷμα) and black bile (χολή μέλαινα). Another passage informs us that disease can be produced in the kidneys if black bile collects there. The same is

¹⁵² See chapter 4 'Galen's characterisation and physical description of the black bile humour', section 4.1 and chapter 6 'The diseases caused by black bile', section 6.2 below.

¹⁵³ *Hipp. Aph.* VI.27 (XVIIIa 39,1-4 K); *Hipp. Artic.* 18 (XVIIIa 512,15-16 K). See Anastassiou and Irmer, 1997, volume II.1, pp. 313-314.

¹⁵⁴ Craik, 2015: 136.

¹⁵⁵ Galen does not quote or reference this section of *On Internal Affections* in any of his extant writing. This is interesting, as he could use it as evidence for the four-humour system outside of *On the Nature of Man*.

¹⁵⁶ *Int.*, XXX, XXXII-XXIV (VII 244,6-246,22 and 248,14-252,16 L). The associations between each humour and season of the year does not completely correspond to that of *On the Nature of Man*, as blood causes disease in the spleen in summer, phlegm affects the spleen in spring and yellow bile is just referred to as hot with no season mentioned. Only black bile, which affects the spleen in autumn is consistent with the content of *On the Nature of Man*.

¹⁵⁷ See chapter 5 'The cleansing of harmful black bile from the body', section 5.4 below.

true for the liver and the spleen. Black bile is also said to be the reason for the body becoming dark in colour, as it can be deposited in the small vessels near the surface of the skin.¹⁵⁸ In general, Galen glosses a large amount of material from *On Internal Affections*, along with a few references to its content.¹⁵⁹ However, he does not quote or reference the material relating to the way that black bile is responsible for causing different types of disease in the body.

3.4 Category 3: Texts from the Hippocratic Corpus that Galen considered to be inauthentic

This last category contains the treatises that Galen either explicitly rejected as being by Hippocrates or Hippocratic, or ones about which he is completely silent. I have included these treatises for two reasons. Firstly, there are the texts that contain material on black bile that is comparable to Galen's characterisation of this humour. Secondly, there are other texts, which do not contain any material on black bile, but offer alternative theories that are useful for comparison with Galen's biological system, which help us to understand more about how and why he wrote about black bile.

3.4.1 *Epidemics V, and VII*

I have already covered the other five books of *Epidemics* (see section 3.2.4 and 3.3.1 above), which Galen considered to be Hippocratic works. However, we find that he rejected *Epidemics V* and *VII* as inauthentic in terms of the language (λέξις) and doctrine (διάνοια), which he considered to be the standard of the Hippocratic tradition.¹⁶⁰ In a similar way to the other books of the *Epidemics*, there are a large number of references to blood, phlegm and bile in

¹⁵⁸ Hippocratic Corpus, *Int.*, IV-V; XVI; XXVII; XXXIV and XLIII (VII 178,3-180,2; 204,17-206,9; 236,8-240,7; 252,6-16 and 272,17-274,18 L).

¹⁵⁹ Anastassiou and Irmer, 1997, volume II.1, pp. 313-319 and II.2, p. 247.

¹⁶⁰ For *Epidemics V*, see *Hipp. Epid.* II, CMG V 10,1, pp. 310,41-311,2; 350,13 Pfaff; *Hipp. Epid.* (VI) Pref. CMG V 10,2,2, p. 5,8 Wenkebach (XVIIa 796,8 K). See also Anastassiou and Irmer, 1997, volume II.1, pp. 244-245. For *Epidemics VII*, see *Hipp. Epid.* (IV) Pref.; VI.III.14; VI.III.15 CMG V 10,2,2 pp. 5,8; 144,15-16; 146,7-8 Wenkebach (XVIIa 796,8; XVIIb 39,5-6; 42,6-8 K). See also Anastassiou and Irmer, 1997, volume II.1, p. 277; Hanson, 1998: 33-34.

both *Epidemics V* and *VII*. When it comes to black bile, there are three passages in *Epidemics V* where this humour is observed in relation to different illnesses. For example, there is an association with too much drink and black bile in the case of one patient who is said to have gone insane. In two other cases, a patient is observed to vomit black bile.¹⁶¹ In terms of the content of *Epidemics VII*, there is one passage that refers to different colours seen from a bilious discharge, one of which is black. But, there is no reference to the physical black bile substance itself.¹⁶² It is interesting that, although he believes that *Epidemics V* and *VII* are not genuine Hippocratic works, Galen glosses a large amount of material from both of them in his *Glossary of Hippocratic Terms*.¹⁶³ However, we do not find any specific information that could support his presentation of black bile, in contrast to the other five books of the *Epidemics*.

3.4.2 On Diseases I-III

The first three books of *On Diseases* do not follow a sequential pattern and so are not considered to be linked in the way that their naming suggests.¹⁶⁴ Galen did know about the existence of these books and refers to what we now call *Diseases I* as *On the Cases of Purulence*.¹⁶⁵ He has a negative attitude to the content of material from these three books of *On Diseases* and he does not consider them to be genuine Hippocratic works.¹⁶⁶ However, Galen reports that there were some ancient writers who attributed *On Diseases II* to Hippocrates (the son of Thessalos), who was a grandson of the great Hippocrates, although Galen does not support this theory himself.¹⁶⁷ Therefore, from the lack of any positive statement by Galen on the Hippocratic authenticity of *On Diseases I, II* and *III*, alongside the absence of these books in his listing of the best genuine Hippocratic texts (for example see *Prognostic*, section 3.2.2 above) and no

¹⁶¹ *Epid. V*, I.2; 22 and 40 (V 204,8-10; 222,1-2 and 232,4-5 L).

¹⁶² *Epid. VII*, I.74 (V 432,20-23 L).

¹⁶³ Anastassiou and Irmer, 1997, volume II.1, pp. 245-247 and 277-280.

¹⁶⁴ Craik, 2015: 169. The same is true for *On Diseases IV*, see section 3.4.3 below.

¹⁶⁵ *Hipp. Artic.* 18 (XVIIIa 512,15-513,5 K); *HVA*, II.38; III.15, CMG V 9.1 pp 198,3-6; 237,4-7 Helmreich (XV 587,5-8; 663,17-664,2 K). See Smith, 1979: 127; Anastassiou and Irmer, 1997, volume II.1, p. 328 and Craik, 2015: 170.

¹⁶⁶ Anastassiou and Irmer, 1997, volume II.1, pp. 328-329.

¹⁶⁷ *Hipp. Epid.* VI.I.44, CMG V 10,2,2 p. 55,16-19 Wenkebach (XVIIa 888,9-13 K). See Anastassiou and Irmer, 1997, volume II.1, p. 332 and Craik, 2015: 179.

commentary by him, I will regard all three books from *On Diseases* as being considered inauthentic by Galen. In terms of their content, we find in *On Diseases I* that all diseases are said to be caused by phlegm and bile in the body, exertion of body or external wounding, and by the effects of heat or cold.¹⁶⁸ In particular, bile and phlegm are considered to be innate substances in the body and so are necessary for health.¹⁶⁹ In this treatise, bile may turn into black bile, which produces different types of disease in the body, such as paralysis or melancholy.¹⁷⁰ There is also a passage that describes the anatomy of the spleen, which is useful for comparison with Galen's work on this organ.¹⁷¹ In *On Diseases II*, we find again that disease is caused primarily by phlegm and bile, in the similar way to the first book.¹⁷² There is also reference to diseases caused by black bile (χολή μέλαινα), again as an altered form of bile, such as in the case of problems over the control of the body. Further to this, an important passage for Galen's characterisation of the physical properties of black bile is found in *On Diseases II*. There is a description of a substance that has the acidic properties, which is similar to the properties that Galen attributes to a form of black bile, but the substance is not actually named in this text.¹⁷³ *On Diseases III* follows a similar framework for the cause of disease as the other two books, as phlegm and bile are the main cause of different types of disease in the body. However, this time there are no direct references to the presence of the physical substance, named black bile (χολή μέλαινα). But there is one passage where a patient has a severe illness associated with black bile (μελαγχολικός).¹⁷⁴ In a similar way to *Epidemics V* and *VII*, Galen glosses a large number of terms and phrases from all three books of *On Diseases* in his *Glossary of Hippocratic Terms*. This includes the 'black disease' from *On Diseases II*, which provides information on the physical properties of black bile that Galen uses in his characterisation of a harmful type of this humour.¹⁷⁵

¹⁶⁸ We do not find a direct use of 'yellow bile' (χολή ξανθή) in these texts, but since black bile is specifically referred to with its colour adjective, the use of term bile alone may indicate that yellow bile is intended as the meaning.

¹⁶⁹ *Morb. I, II* (VI 142,13-20 L). See Craik, 2015: 169.

¹⁷⁰ *Morb. I, III* and *XXX* (VI 144,13-17; 11-12; 200,8-11 L). See Craik, 2015: 171.

¹⁷¹ See chapter 5 'The cleansing of harmful black bile from the body', section 5.3 below.

¹⁷² Craik, 2015: 177-178.

¹⁷³ Hippocratic Corpus, *Morb. II, VI*; *LXXIII* (VII 14,8-22; 110,14-112,12 L).

¹⁷⁴ Hippocratic Corpus, *Morb. III, XIII* (VII 132,18-134,7 L).

¹⁷⁵ See chapter 4 'Galen's characterisation and physical description of the black bile humour', section 4.4 below.

3.4.3 *On Diseases IV*

The traditional view of *On Diseases IV* was that it should be considered as part of a set of three integrated treatises with *On Generation* and *On the Nature of the Child*. However, Craik has argued against this grouping, and offers an alternative view of *On Diseases IV*. She suggests that, although *On Diseases IV* may be by the same author as *On Generation* and *On the Nature of the Child*, it should not be regarded as part of a close sequential set with these two treatises.¹⁷⁶ There is no explicit statement by Galen regarding the content of this treatise, but it is likely that he would not have considered this text to be a genuine Hippocratic work. However, *On Diseases IV* contains a detailed and sophisticated presentation of how four substances are responsible for the development of our bodies, from conception, to our growth into childhood and then in later life. These four substances are phlegm, blood, bile, and a watery fluid (φλέγμα, αἷμα, χολή, ὕδρωψ). In comparison to the four-humour system of *On the Nature of Man*, only blood and phlegm are named in the same way. The presence of ‘bile’ could indicate either yellow or black, but the association of the bile with the gall-bladder (τὸ χωρίον τὸ ἐπὶ τῷ ἥπατι) in *On Diseases IV*, and that the description of the other three moistures as thicker (παχύς) and heavier (βαρύτες) than bile, indicates a similar substance to yellow bile.¹⁷⁷ However the main difference between the texts is the use of the watery fluid in *On Diseases IV* in contrast to the black bile in *On the Nature of Man*. There is no reason why black bile should have been chosen by the author of *On Diseases IV*, as the four humour system of *On the Nature of Man* is not a dominant theory in the Hippocratic Corpus or in ancient medicine more generally.¹⁷⁸ Another important concept in *On Diseases IV* is an explanation of

¹⁷⁶ Craik, 2015: 117 and 187.

¹⁷⁷ *Morb. IV*, I (32 L); II (33 L); IX (40 L) (VII 542,6-10; 544,9; 560,7-11 L).

¹⁷⁸ According to Lonie, there are three possible reasons why black bile was not chosen as one of the four moistures in *On Diseases IV*. The first is based on an assumption that at the time *On Diseases IV* was written, black bile was not known to be a substance that existed in the body. Alternatively, even if black bile was identified as an important substance, it is not one of the fundamental fluids. Lastly, another reason could be based on the identification of the spleen as one of the ‘springs’ of the fundamental fluids that is associated with the watery moisture and not with black bile. Lonie considers all three to be plausible explanations for the use of the watery moisture over black bile by this Hippocratic writer, which comes from a combination of

the storage and distribution of the moistures around the body based on the concept of 'springs' (πηγή). Each of the four fluids has its own specific 'spring', the heart for blood, the head for phlegm, the liver for bile and the spleen for the watery moisture.¹⁷⁹ Therefore, this treatise offers an alternative four-fluid theory to the one in *On the Nature of Man* that also contains material on the way that the organs store and distribute these important substances in the body in terms of health and disease. This is useful for a comparison with Galen's use of the four-humour system and his description of the function of the spleen in the body to remove unwanted black bile from the body.¹⁸⁰

3.4.4 *On Places in Man*

Galen does not attribute *On Places in Man* to Hippocrates or the related Hippocratic tradition that followed his doctrine. However, he does acknowledge that this work is one of the older books from the development of scientific writing in the fifth century BCE.¹⁸¹ Galen's general view of the inauthenticity of *On Places in Man* is not always applied throughout his writing. For example, he makes frequent citations to passages and terms from this work and sometimes attributes them to Hippocrates.¹⁸² When it comes to the actual content of *On Places in Man*, we find a theory of health and disease that describes the flow of seven fluxes, which start from the head, going to the rest of the body at random. The seven points where the fluids eventually reach in the body are; the nostrils, ears, eyes, chest, spinal cord and the flesh near the vertebrae and hips.¹⁸³ Phlegm is considered to be the main type of fluid that flows as a flux. For

observation and the development of a theory based on the presence of springs in the body. See Lonie, 1981: 60.

¹⁷⁹ *Morb. IV*, II (33 L) (VII 542,18-544,9 L). This term πηγή was used by Democritus for the origin of disease (DK 68B 149 = Plu. *animine an corp. aff.* 2 500d), see Craik, 2015: 188-189.

¹⁸⁰ See chapter 5 'The cleansing of harmful black bile from the body', section 5.2 below.

¹⁸¹ *Hipp. Epid. VI. II.9*, CMG V 10,2,2 p. 67,1-12 Wenkebach (XVIIa 909,12-910,9 K). In Galen's *Commentary on Airs, Waters and Places* (91v7-92r6), he says: 'Denn obwohl dieses Buch nicht zu den authentischen und unverfälschten Schriften des Hippokrates gehört, so zweifeln wir doch nicht, dass es von einem der alten Wissenschaftler stammt.' 'Although this book does not belong to the authentic and unadulterated writings of Hippocrates, so we have no doubt but that it comes from one of the old scientists.' See Anastassiou and Irmer, 1997, volume II.1, pp. 322-333.

¹⁸² Galen often quotes terms and passages from *On Places in Man*, attributing them to Hippocrates, but he does not actually name the text. See Anastassiou and Irmer, 1997, volume II.2, pp. 249-250. See also Craik, 2015: 161.

¹⁸³ *Loc. Hom.* 1 (VI 276,1-278,13 L). See Jouanna, 2001: 336-337.

example, fluxes occur when there is an excess of phlegm and this causes the vessels in the body to become saturated, which creates pain and disease. These phlegm-induced fluxes can cause problems in the nostrils and eyes. Excess phlegm also causes fever, as it causes inflammation in the tissues.¹⁸⁴ Craik suggests that in *On Places in Man*, phlegm is a type of moisture that causes swelling in the body, but this substance is itself otherwise not harmful. However, problems occur when phlegm changes into a more dangerous substance.¹⁸⁵ The promotion of phlegm in the body can also bring about relief and curative effects. Foods that produce more phlegm in the body can relieve the problems of too much water entering the omentum (large fatty structure that hangs off the colon).¹⁸⁶ Therefore, phlegm can be considered to be an essential substance that is beneficial to the health of the body. However, under certain conditions is also the basis for certain diseases in the body, either directly due to excess phlegm, or because it has become a harmful substance.

There is also a large amount of material on bile in *On Places in Man*. For example, we are told that patients who have too much bile can suffer fatigue. Bile is also said to be present when a person has a flux, which moves to the region of the chest. Further to this, bile is responsible for some dangerous disorders, such as jaundice and ulcers. There is only one reference to black bile (χολή μέλαινα), which is observed in the vomit of people who have suffered a mortal wound. How this is distinguished from very dark blood is not mentioned and there is no reference to the way this substance is identified apart from its visible description. Yellow bile (χολή ξανθή) is not referred to specifically in this text, so instead there is a general use of the word 'bile'. There is also reference to the pathogenic properties of blood, which is reported to cause angina, when it congeals in the neck.¹⁸⁷ Craik has suggested that the characterisation of blood, phlegm and bile in this text is closer to that found in *Diseases IV* than the content of *On the Nature of Man*.¹⁸⁸ The most significant point about the content of *On Places in Man*, in terms of my analysis of Galen's presentation of black

¹⁸⁴ *Loc. Hom.* 9; 11; 13.1-2; 27.1-8 (VI 290,21-292,25 ; 296,15-18; 298,14-15; 318,3-9 L). See Craik, 1998: 131.

¹⁸⁵ Craik, 1998: 14-15.

¹⁸⁶ *Loc. Hom.* 24; 34 (VI 314,19-316,10 ; 326,10-21 L).

¹⁸⁷ *Loc. Hom.* 10.7-11; 16; 30; 33.4-6 (VI 294,6-9; 308,13-23; 322,21-25; 324,17-18 L).

¹⁸⁸ Craik, 1998: 14-15.

bile, is from a passage on a disease of the spleen. We find that in *On the Natural Faculties*, Galen quotes a version of this material from *On Places in Man*.¹⁸⁹ However, although Galen does not name the treatise, he does attribute the passage to Hippocrates. The content of this passage cannot be found in any other extant text of the Hippocratic Corpus and so it is likely that Galen is using a passage from *On Places in Man* and passing it off as if it comes from a genuine Hippocratic treatise.¹⁹⁰

3.4.5 *Ancient Medicine*

In ancient times, there were some commentators, such as Erotian, who considered this treatise to be written by Hippocrates.¹⁹¹ In contrast, Galen was not impressed with the content of *Ancient Medicine* and did not consider it an authentic Hippocratic work. He did not think that the material presented in this work was consistent with what he believes was developed by Hippocrates and those that followed true Hippocratic doctrine.¹⁹² The general idea presented in *Ancient Medicine* is a rejection of an explanation of medicine based on an attempt to explain health and illness in terms of a theory that should be applied to more abstract philosophical questions.¹⁹³ An example provided of this type of postulate is 'opposites cure opposites', which is the type of statement found in treatises such as *On Breaths* (see section 3.2.11 above).¹⁹⁴ The term humour (χυμός) is also an important concept in this treatise, but it is not related to the humoral theory found in *On the Nature of Man*.¹⁹⁵ Instead, this is more of a general term for fluids, which are distinct in terms of their flavour, such as bitter, salt and sour. However, this theory is not intended to apply to all things in the

¹⁸⁹ Hippocratic Corpus, *Loc. Hom.* XXIV, (VI 314,19-316,10 L); Galen, *Nat. Fac.* II.9 (II 132,4-133,6 K). See Anastassiou and Irmer, 1997, II.2, p. 250.

¹⁹⁰ See chapter 5 'The cleansing of harmful black bile from the body', section 5.4 below.

¹⁹¹ Erotian, *vocum Hippocraticum collectio*, 38,6-9; 40,4-6; 130,11-13. See Anastassiou and Irmer, 1997, volume I, pp. 458-459. Littré has attempted to support the authenticity of *Ancient Medicine* by suggesting that the twentieth chapter of this work is the source for Plato's writing on Hippocrates' methodology in the *Phaedrus* (270c-e). See Jones, 1923a: 3-9; Littré, 1961 (I): 294-296; Craik, 2015: 284.

¹⁹² Craik, 2015: 284-285.

¹⁹³ *VM*, I-II (I 570,2-574,7 L).

¹⁹⁴ *VM*, XIII (I 598,15-16 L). The terms used are different from *On Breaths*, as the author of *Ancient Medicine* refers first to one of the four qualities (hot, cold, dry and wet): 'τούτων τὸ ἕτερον' and then the opposite is denoted by ὑπεναντίος. However, the general meaning is the same.

¹⁹⁵ Craik, 2015: 283.

universe; in this treatise these fluids can only explain the nature of humans, animals, plants, food or drink.¹⁹⁶ We are told that the human body contains many different types of substance, being characterised in terms of qualities, such as salt and bitter, sweet and acid, astringent and insipid, and a vast amount of other substances. The humours are distinct in terms of smell and taste and it is the doctor's task to facilitate the natural flow of the humours to prevent their disruption and separation. The substances listed here are paired as opposites and the process of understanding a particular substance and its direct opposite was important to this text. The mechanism of the function of these substances is based on the concept of power (δύναμις). We are told that the humour in the body can only be known by its δύναμις, and we can interpret this by the humour's potential to act and affect other parts of the body. Therefore, the senses of smell and taste are just two of the aspects that can be used to determine the humour's capacity to affect parts of the body. The content of *Ancient Medicine* attempts to provide a theory of the body related to a vast number of different substances. There are many kinds of properties, when substances are mixed, there is no harm, but if one substance is separated off (ἀποκρίνω), there is pain.¹⁹⁷ There is only one reference to yellow bile (χολή ξανθή), when we are told that the bitter principle (πικρότης) is also known by the name of this humour.¹⁹⁸ There are no explicit statements in this treatise on black bile itself. However, there is some useful material relating to the physical properties of certain substances that is comparable to the way that Galen characterises a harmful form of black bile. The description of the ulceration in the body by very acidic substances is similar to Galen's explanation of the corrosive effect of a type of black bile on the body. In addition, the author of *Ancient Medicine* explains the structure of the spleen in a similar way to Galen.¹⁹⁹

3.5 Summary

¹⁹⁶ Schiefsky, 2005: 79-80.

¹⁹⁷ *VM*, XIV (I 600,7-604,11 L); Demont, 2005: 272 and Schiefsky, 2005: 251.

¹⁹⁸ *VM*, XIX (I 616,4-620,6 L).

¹⁹⁹ See chapter 5 'The cleansing of harmful black bile from the body', section 5.2 below.

We have seen that there was already a tradition of debate on the authenticity of the texts within the Hippocratic Corpus at the time that Galen began his medical training in the second century CE. Galen engaged with the 'Hippocratic Question' himself and he chose the texts from Dioscurides' list of 'most genuine and most useful works' as his baseline for the standard of language and doctrine that any particular text, or part of a text, should meet in order to be considered as a genuine Hippocratic work. These texts are *Aphorisms*, *Prognostic*, *On Regimen in Acute Diseases*, *Airs, Waters and Places*, and *Epidemics I* and *III*. However, Galen analysed the content of these treatises in terms of the transmission of the original texts through the hands of the commentators and editors, such as Dioscurides and Artemidorus. In each case we can find situations where Galen rejects the authenticity of a section or passage that he believes has been altered because it does not agree with his concept of the true language and doctrine of Hippocrates, such as in the case of the end of *Aphorisms* and the appendix section of *On Regimen in Acute Diseases*. Therefore, Galen has the flexibility to use or reject any material from these sources without directly criticising Hippocrates. This means that if he disagrees with anything then he can say that it was added in by a commentator or editor. In addition to this list of core texts, I have also identified *On Humours*, *On Diseases of Women I, II and III*, *Koan Prognoses*, *On Breaths* and *On the Nature of Bones*, as treatises that Galen considers to be written by Hippocrates and contain useful material for an understanding of his characterisation of black bile. In the case of *On the Sacred Disease*, we found that there was important information relating to the explanation of disease involving phlegm and bile that would have been useful for Galen to include in his writing on the effect of the humours on mental illnesses and for his argument to associate the work of Hippocrates and Plato on the tripartite theory of the soul. However, in contrast to Galen's frequent use of material from *Airs, Waters and Places*, he seems to ignore the content of *On the Sacred Disease* in the extant Galenic Corpus. Further to this, *Epidemics II, IV, VI* and *On Internal Affections* were identified by Galen as containing material that is close enough in language and doctrine to be classified as Hippocratic works, even if they were not written by Hippocrates himself.

One issue that Galen cannot ignore is that *On the Nature of Man* is missing from Dioscurides' 'most genuine and most useful works' of Hippocrates. It seems that this text was not generally considered to be written by Hippocrates, with the Aristotelian view that it was a later work by Polybos. However, Galen argued for a division of this text, with the first eight chapters attributed to Hippocrates and the other seven chapters as a Hellenistic forgery. He did concede that the work that has become known as *Regimen in Health*, which is sometimes appended onto the end of *On the Nature of Man*, was written by Polybos. It was important for Galen to establish the authenticity of the first eight chapters in *On the Nature of Man*, as they contain information on what he regarded as the philosophical methodology of Hippocrates relating to the origin of matter in the body in relation to the qualities, elements and humours. This allows Galen to use the first eight chapters as a source for certain parts of his characterisation of black bile. In contrast, he needed to reject the other seven chapters of *On the Nature of Man* because of issues relating to language and doctrine that he believed were incompatible with the content of some of the texts in the Hippocratic Corpus that he considered as genuine Hippocratic works, such as *Aphorisms* and *Epidemics II*. However, Galen's emphasis on the Hippocratic authenticity of the first eight chapters of *On the Nature of Man* could be problematic for Galen. For example, his claim that the four-humour system in this treatise was created by Hippocrates implies that this humoral theory is the basis of the aetiology of disease in the other texts that he has identified as genuine Hippocratic treatises. We can see that Galen attempts to interpret the content of *Prognostic*, *On Regimen in Acute Diseases* (first section), *Airs, Waters and Places*, and *Epidemics I* and *III* in relation to black bile, even when there is little or no reference to this humour in the treatise. What we find is that Galen assumes that the content should reflect the importance of black bile as one of the four humours. In contrast, the situation for *Aphorisms* is much easier for Galen, as there is a large amount of material on black bile. However, we shall see that Galen is selective in the information that he draws upon from *Aphorisms* to characterise the cause of disease from black bile, as sometimes he rejects aphorisms if he does not agree with their content.

We shall find that when it comes to his presentation of black bile, Galen is more likely to quote and reference the content of 'core' treatises rather than the other

texts that he claims are genuine Hippocratic works, which actually contain more information on black bile. For example, when he is attacking Erasistratus' work on fevers, Galen quotes *Prognostic* in such a way as to suggest that this is what Hippocrates intended in the first place, even though this treatise does not explicitly refer to black bile. At the same time he ignores some important passages on black bile and fever from *Koan Prognoses* and *On Diseases of Women II*, which may have provided better evidence for his argument. However, Galen goes further than this and actually uses material from treatises that he has identified as inauthentic and even goes so far as to attribute the content to Hippocrates. We shall see this in the case of the physical properties of harmful black bile from *On Diseases II* and diseases of the spleen from *On Places in Man*. In both cases Galen does not refer to the name of the text itself and so covers his tracks in order not to explicitly show that he is being inconsistent with his 'authentic' sources. The way that Galen can imply association between a variety of texts in the Hippocratic Corpus, along with his flexibility to select passages in terms of authenticity, allows him to present his characterisation of black bile, without having to justify any inconsistency between the sources. In fact, Galen is even more devious in the way that he operates this type of strategy. We shall see in the next three chapters that this is all part of the way that Galen is manipulative with not only the Hippocratic Corpus, but also with what he writes in his own treatises. It is more important to Galen that he is able to respond to a particular issue or to create a good argument to refute his opponents than to be consistent with his sources.

4 Galen's characterisation and physical description of the black bile humour

4.1 Galen's qualitative and structural characterisation of black bile

When it comes to the actual practice of medicine, Galen stresses the need for a physician to be able to identify substances, such as black bile, correctly in order to properly diagnose an illness.¹ There are a number of characteristics that can be used to identify different substances based on its appearance or how it feels when it is touched. I am going to start with the way that black bile is characterised in terms of the four qualities, hot, cold, dry and wet, as they represent the most basic properties that affect the body.² For example, in *On Mixtures*, these four qualities are presented as being the most fundamental properties for understanding health and disease in the body. The priority given to these four qualities by Galen is demonstrated by the opening lines of his *On Mixtures*:

Ὅτι μὲν ἐκ θερμοῦ καὶ ψυχροῦ καὶ ξηροῦ καὶ ὑγροῦ τὰ τῶν ζώων σώματα κέκρται καὶ ὡς οὐκ ἴση πάντων ἐστὶν ἐν τῇ κράσει μοῖρα.

Animal bodies are a mixture of hot, cold, wet and dry; and these qualities are not mixed equally in each case.³

This provides Galen with a model for how health and disease can be explained in terms of four simple qualities. In his system, these four qualities are classified as different types of interaction between physical entities. This means that in reality, the qualities are contained within physical substances. However, this is something that Galen believes has been misunderstood by some physicians and philosophers.⁴ Therefore, when Galen talks about the four qualities existing within the most fundamental substances in the universe, he is referring to the cosmic elements fire, air, earth and water. This is the most basic level of matter,

¹ See chapter 6 'The diseases caused by black bile', section 6.4 below.

² Klibansky, Panofsky and Saxl, 1964: 10; Porter, 2003: 26; Hankinson, 2008b: 219; Jouanna, 2012b: 229-230 and 2006: 117-119.

³ *Temp.* I.1 (I 509,1-3 K), translation by Singer.

⁴ For more information on Galen's mis-attribution of element theory to Hippocrates and his dependence on Aristotelian natural philosophy, see Hankinson, 2008b: 210-224; Kupreeva, 2015: 153-196.

but when it comes to the human body (and other sanguineous animal bodies), he defines it in terms of the qualities within the ‘proximate elements’ of the body, which are the four humours: blood, phlegm, yellow bile and black bile. For example, in *On the Doctrines of Hippocrates and Plato*, Galen argues that Hippocrates was the first to demonstrate the true nature of substance in the body in terms of qualities, elements and humours. In this system, both the four cosmic elements and the four humours are made up of pairings of the different qualities. For Galen, both Plato and Aristotle followed Hippocrates and agreed with this model. Galen tells us that since he has discussed Hippocrates’ view of the elements in great detail in *On the Elements According to Hippocrates*, and he is not in the habit of repeating himself, he will only quote the passages from Plato’s writing in *On the Doctrines of Hippocrates and Plato*, where it shows agreement with Hippocrates’ view of the elements. Here he is choosing to quote from Plato’s *Timaeus* and wants to persuade his reader that this material is consistent with the writing of Hippocrates, such as in *On the Nature of Man*. He avoids a side by side comparison with quoted parts of this Hippocratic treatise by telling his reader to consult his other work, *On the Elements According to Hippocrates* for the material that confirms this agreement between Plato and Hippocrates on the elements.⁵

Galen regards *On the Nature of Man* as the main treatise for information on Hippocrates’ work on the four humours and their relation to the four qualities, elements and the seasons of the year. For example, we find the following passage in *On the Nature of Man*, where each humour is associated with the qualities that predominate in each of the four seasons:

οἱ ἄνθρωποι τοῦ ἤρος καὶ τοῦ θέρεος μάλιστα ὑπὸ τε τῶν
 δυσεντεριῶν ἀλίσκονται, καὶ ἐκ τῶν ῥινῶν τὸ αἷμα ῥεῖ αὐτοῖσι, καὶ
 θερμότατοί εἰσι καὶ ἐρυθροί· τοῦ δὲ θέρεος τό τε αἷμα ἰσχύει ἔτι, καὶ ἡ
 χολὴ αἵρεται ἐν τῷ σώματι καὶ παρατείνει ἐς τὸ φθινόπωρον· ἐν δὲ τῷ
 φθινοπώρῳ τὸ μὲν αἷμα ὀλίγον γίνεται, ἐναντίον γὰρ αὐτοῦ τὸ
 φθινόπωρον τῇ φύσει ἐστίν· ἡ δὲ χολὴ τὴν θερείην κατέχει τὸ σῶμα

⁵ For example, see Galen’s explanation in *Hipp. Elem.* (10.1-3, CMG V 1,2, pp.138,15-140,2 De Lacy (I 492,1-493,1 K)) for the importance of the four humours in sanguineous animals, and his argument for the general agreement between Plato and Hippocrates on the ‘elements’ of the body in *PHP* (VIII.2.12-4.35, CMG V 4,1,2, p. 492,22-506,3 De Lacy (V 664,8-679,16 K)). For more information see chapter 2 ‘Galen’s strategy for his portrayal of Hippocrates as a philosopher’, section 2.3 and 2.4 above.

καὶ τὸ φθινόπωρον. γνοίης δ' ἂν τοῖσδε· οἱ ἄνθρωποι αὐτόματοι ταύτην τὴν ὥρην χολὴν ἐμέουσι, καὶ ἐν τῆσι φαρμακοποσίησι χολωδέστατα καθαίρονται, δηλὸν δὲ καὶ τοῖσι πυρετοῖσι καὶ τοῖσι χρώμασι τῶν ἀνθρώπων. τὸ δὲ φλέγμα τῆς θερείης ἀσθενέστατόν ἐστιν αὐτὸ ἐωυτοῦ· ἐναντίη γὰρ αὐτοῦ τῆ φύσει ἐστὶν ἡ ὥρη, ξηρὴ τε ἐοῦσα καὶ θερμὴ. τὸ δὲ αἷμα τοῦ φθινοπώρου ἐλάχιστον γίνεται ἐν τῷ ἀνθρώπῳ, ξηρόν τε γὰρ ἐστὶ τὸ φθινόπωρον καὶ ψύχειν ἤδη ἄρχεται τὸν ἄνθρωπον· ἡ δὲ μέλαινα χολὴ τοῦ φθινοπώρου πλείστη τε καὶ ἰσχυροτάτη ἐστίν.

It is chiefly in spring and summer that men are attacked by dysenteries, and by haemorrhage from the nose, and they are then hottest and red. And in summer blood is still strong, and bile rises in the body and extends until autumn. In autumn blood becomes small in quantity, as autumn is opposed to its nature, while bile prevails in the body during the summer season and during autumn. You may learn this truth from the following facts. During this season men vomit bile without an emetic, and when they take purges the discharges are most bilious. It is plain too from fevers and from the complexions of men. But in summer phlegm is at its weakest. For the season is opposed to its nature, being dry and warm. But in autumn blood becomes least in man, for autumn is dry and begins from this point to chill him. It is black bile which in autumn is greatest and strongest.⁶

In Galen's *Commentary on On the Nature of Man*, when he reaches this part of the Hippocratic text, he reiterates the content of this passage in terms of the characterisation of black bile with the qualities and the season, as he says that 'black bile is dry and cold like autumn' (μέλαινα ... ξηρὰ καὶ ψυχρὰ, καθάπερ καὶ αὐτὸ τὸ φθινόπωρον). In an earlier section of this commentary, Galen refers to the qualities as one of the primary methods of distinguishing between the four humours.⁷ We find this too in Galen's *On the Natural Faculties*, where he asks: 'is there none which is virtually cold and dry? ... No, the black bile is such a humour, ... mainly in the fall of the year, ...' (οὐδεὶς δ' ἐστὶ ψυχρὸς καὶ ξηρὸς τὴν δύναμιν ... καὶ μὴν ἢ γε μέλαινα χολὴ τοιοῦτός ἐστι χυμὸς ... ἐν φθινοπώρῳ μάλιστα ...).⁸ In addition, we find in *On the Doctrines of Hippocrates and Plato* that 'black [bile] is cold and dry' (ψυχρὰ δὲ ἡ μέλαινα

⁶ *Nat. Hom.* 7, CMG I 1,3, pp. 182,19-184,14 Jouanna (VI 48,3-17 L), translation by Jones.

⁷ *HNH*, I.41; I.26, CMG V 9,1, pp. 51,31-32; 35,9-24 Mewaldt (XV 98,14-16; 65,3-66,5 K).

⁸ *Nat. Fac.* II.9 (II 130,18-131,5 K), translation by Brock.

καὶ ξηρὰ).⁹ Whereas, in *On Mixtures*, we are told that the illness called melancholy is cold and dry (ἡ ψυχρὸν καὶ ξηρὸν ὡς τὴν μελαγχολίαν), although this is not a direct statement about black bile itself, it is related to an illness which is produced by this humour.¹⁰ This shows that the association between black bile, autumn and the cold and dry qualities is important in Galen's theory of this humour and that in writing about black bile in this way he is following the content of the Hippocratic *On the Nature of Man*. This is also part of Galen's doxographical strategy, as we find that he not only names Hippocrates as the first to have identified this type of characterisation and association for the four humours, but also claims that this model of the humours, in terms of the pairings of the four qualities, was adopted and continued by some of the most prominent physicians and philosophers after Hippocrates.¹¹

However, Galen goes further than what is contained in the Hippocratic *On the Nature of Man* in terms of this description of black bile. For example, in his *Commentary on On the Nature of Man*, black bile is described as being 'earth-like' (γεώδης).¹² There is a similar statement comparing black bile to the 'cosmic element' earth in *On the Doctrines of Hippocrates and Plato*. In this treatise Galen quotes directly from Plato's *Timaeus* for the information regarding his discussion of the four elements, fire, air, water and earth, but he does not provide the equivalent quotations from Hippocrates' writing that makes this comparison between black bile and the element 'earth'. Galen cannot provide this material because there is no clear statement in any of the works in

⁹ *PHP*, VIII.4.21, CMG V 4,1,2, p. 502,22-25 De Lacy (V 676,14-19 K). Black bile is also described in terms of the cold and dry qualities in *Morb. Diff.* (XII.2 (VI 875,9 K)) and *Caus. Morb.* (VI.3 (VII 21,17-18 K)). In *PHP* (VIII.6.1-15, CMG V 4,1,2, pp. 512,25-516,6 De Lacy (V 689,1-692,12 K)), Galen provides a more comprehensive account of all four humours, their respective qualities and the influence of the seasons on the humours. This passage is also fully quoted in Galen's *Hipp. Epid.* (II, CMG V 10,1 pp. 4,13-5,25 Pfaff). In *Temp.* (II.3; III.4 (I 603,8-14; 673,11-674,1 K)), Galen also refers to this passage when he writes about the qualities of cold and wet in phlegm. See Anastassiou and Irmer, 1997, volume II.2, pp.277-279; II.1, pp.363-364.

¹⁰ *Temp.* I.3 (I 522,7-8 K). For more information on the way that Galen explains the cause of melancholy from black bile, see chapter 6 'The diseases caused by black bile', section 6.1 below.

¹¹ In *Nat. Fac.* (II.8 (II 110,12-111,10 K)), Galen lists Hippocrates with Diocles, Praxagoras, and Philistion, along with Plato, Aristotle and Theophrastus as the physicians and philosophers who postulated a medical system with the four qualities as its basis and the association with the four humours. See chapter 1 'Introduction', section 1.3.4 above.

¹² *HNH*, I.40, CMG V 9,1, p. 50,23-25 Mewaldt (XV 96,8-10 K).

the extant Hippocratic Corpus for this type of association.¹³ Therefore, Galen must use the similarity of the pairing of the qualities to make this connection, and then report that Hippocrates had made such a comparison himself.¹⁴ This brings the seasonal characterisation Galen has taken from *On the Nature of Man* into alignment with the more general universal philosophical theories of the elements by Plato and Aristotle. This is typical of Galen's strategy of presenting his theory as being in agreement with what he considers to be the best medical and philosophical authorities of the past.¹⁵ The clear hierarchical association between the qualities, cosmic elements and humours is important in Galen's biological model, as it connects the human body to all the substances in the universe by the pairing of the four qualities, hot, cold, dry and wet, in each of the four cosmic elements and humours. This is why it is necessary for Galen to ignore the fact that there is no explicit association of black bile with the cosmic element 'earth' in the Hippocratic Corpus because what matters here is that Hippocrates and Plato are shown to be in agreement. We have 'Hippocrates' saying that black bile is 'cold and dry' and Plato saying that the elemental earth is 'cold and dry' and so Galen puts these two statements together, as part of his aim to show agreement between them. Galen is not concerned about whether the Hippocratic Corpus contains direct statements about the association between black bile and the elemental earth. Instead, he reports this information, as what Hippocrates would have said if he was explicitly asked to make this connection. For Galen, it is important that there is consistency between his 'best physicians and philosophers' on the qualities, elements and humours, as this is a stronger defence against the types of rival theories based on discrete particles and atoms, which he wants to refute.

The elemental qualities are not the only way that black bile can be described as being distinct from other substances. There are a number of other key characteristics and properties that can be used to define black bile. The following passage from the Hippocratic *On the Nature of Man* provides some

¹³ The only use of the term, γεώδης, is in *Diseases IV* (XXIV (55 L) (VII 600,14-20 L)), which refers to milk that is earthy and phlegmatic, but this is not relevant to black bile.

¹⁴ *PHP*, VIII.4.21, CMG V 4,1,2, p. 502,24 De Lacy (V 676,17-18 K).

¹⁵ There are similar examples of this type of strategy in Galen's refutation of the views of the atomists, see chapter 2 'Galen's strategy for his portrayal of Hippocrates as a philosopher', section 2.4 above.

useful information on the way that black bile can be characterised in relation to the other three humours:

φημί δὴ εἶναι αἷμα καὶ φλέγμα καὶ χολὴν ξανθὴν καὶ μέλαιναν. καὶ τούτων πρῶτον μὲν κατὰ νόμον τὰ ὀνόματα διωρίσθαι φημί καὶ οὐδενὶ αὐτῶν τὸ αὐτὸ ὄνομα εἶναι, ἔπειτα κατὰ φύσιν τὰς ιδέας κεχωρίσθαι, καὶ οὔτε τὸ φλέγμα οὐδὲν εἰκέναι τῷ αἵματι, οὔτε τὸ αἷμα τῇ χολῇ, οὔτε τὴν χολὴν τῷ φλέγματι. πῶς γὰρ ἂν εἰκότα ταῦτα εἶη ἀλλήλοισιν, ὧν οὔτε τὰ χρώματα ὅμοια φαίνεται προσορώμενα, οὔτε τῇ χειρὶ ψαύοντι ὅμοια δοκεῖ εἶναι; οὔτε γὰρ θερμὰ ὁμοίως ἐστίν, οὔτε ψυχρὰ, οὔτε ξηρὰ, οὔτε ὑγρὰ. ἀνάγκη τοίνυν, ὅτε τοσοῦτον διήλλακται ἀλλήλων τὴν ιδέην τε καὶ τὴν δύναμιν, μὴ ἔν αὐτὰ εἶναι, εἴπερ μὴ πῦρ τε καὶ ὕδωρ ἓν ἐστίν. γνοίης δ' ἂν τοῖσδε, ὅτι οὐχ ἓν ταῦτα πάντα ἐστίν, ἀλλ' ἕκαστον αὐτῶν ἔχει δύναμιν τε καὶ φύσιν τὴν ἑωυτοῦ·

I say they are blood, phlegm, yellow bile and black bile. First I say that the names of these according to convention are separated, and that none of them has the same name as the others; furthermore, that according to nature their essential forms are separated, phlegm being quite unlike blood, blood being quite unlike bile, bile being quite unlike phlegm. How could they be like one another, when their colours appear not alike to the sight nor does their touch seem alike to the hand? For they are not equally warm, nor cold, nor dry, nor moist. Since then they are so different from one another in essential form and in power, they cannot be one, if fire and water are not one. From the following evidence you may know that they are not all one, but that each of them has its own power and its own nature.¹⁶

This passage refers to the main differences between the four humours in terms of their physical and qualitative properties. The first example uses a basic characterisation in terms of colour.¹⁷ In the naming of the four humours, as we see from the passage above, the two types of bile are distinguished by colour; yellow and black. This difference in colour can be used for all four humours to determine various types of disease. In this way, a doctor can make a diagnosis when he observes that a particular part of the body, or a substance secreted from the body, is a certain colour. We find that Galen writes about the

¹⁶ *Nat. Hom.* 6, CMG I 1,3, pp. 174,12-176,11 Jouanna (VI 40,16-42,10 L), adapted from a translation by Jones.

¹⁷ Bradley, 2009: 128-129 and 131-133. For example, the first century CE physician Celsus (*Medicina*, II.4.7) writes that green or black vomit is a bad sign. When it comes to urine, red means there is a problem, but if it is 'white like flower petals' then this is even worse. We shall see that Galen uses this concept of the importance of the differences between the colours of substances in waste material, such as in urine, later, see chapter 6 'The diseases caused by black bile', section 6.4 below.

importance of the different colours of the humours, as he tells us that the spit of people suffering from pleurisy is often red or yellow in colour, indicating a predominance of blood or yellow bile in the body.¹⁸ In *On the Doctrines of Hippocrates and Plato*, Galen refers to what he calls Hippocrates' method of diagnosing diseases in the body from the colour of the tongue, which indicates the predominance of each of the four humours, blood, phlegm, yellow bile and black bile, from the tongue changing to the colour of red, white, yellow and black, respectively. Here, Galen is referring to a passage from the Hippocratic *Epidemics VI*.¹⁹ More information on Galen's interpretation of this passage from *Epidemics VI* can be found in his *Commentary on Epidemics*, where he tells us that the appearance of a black tongue is an indication of the presence of too much black bile in the body.²⁰ When Galen refers to the red, white, yellow and black colour of the tongue, he is talking about an association with the 'ideal' colours of the four humours. In many cases there will be variations in colour due to different factors, such as consistency and mixture with other substances.²¹ In *On Black Bile*, Galen explains that blood can be redder (ἐρυθρότερος) from the veins, but is more yellow (ξανθότερος) from the arteries. Yellow bile can often seem to be a pale yellow (ώχρος) colour or even like the colour of raw egg-yolk (λεκιθώδης).²² When it comes to black bile, a black tongue can be an indication that this humour has become more dominant in the body, which can lead to certain types of illness. However, Galen is concerned that some physicians may make an incorrect diagnosis or prognosis of a disease based purely on the observation of 'black substances' in material secreted from the body.²³ Therefore, the variation of colour of the humours, due to its consistency, mixture with other substances, and the fact that other compounds can be black, means that observation of colour alone is not reliable enough to make a certain

¹⁸ CAM, 14.18-19, CMG V 1,3, p. 102,15-24 Fortuna (I 278,2-14 K). See Bradley, 2009: 134.

¹⁹ PHP, VIII.5.10-13, CMG V 4,1,2, p. 506,30-508,4 De Lacy (V 681,15-682,12 K). Here Galen is referring to the content of the Hippocratic *Epid. VI* (V.8 (V 318,5-8 L)). See Anastassiou and Irmer, 1997, volume II.2 p. 219 and chapter 3 'Galen's opinion on the authenticity of the individual treatises in the Hippocratic Corpus', section 3.3.1 above.

²⁰ *Hipp. Epid.* VI.1.2; VI.V.16; VI.VI.3, CMG V 10,2,2 pp. 10,5-8; 296,19-23; 328,13-17 (XVIIa 805,15-806,1; XVIIb 277,13-278,2; 322,6-10 K). See Anastassiou and Irmer, 1997, volume II.1 p. 263.

²¹ In PHP (VIII.5.17-20, CMG V 4,1,2 p. 508,14-28 De Lacy (V 683,7-684,9 K)), Galen quotes a passage from Plato's *Timaeus* (83a-c), where bile is described in terms of its different colours relating to its structure or its mixture with other humours.

²² *At. Bil.* 2, CMG V 4,1,1, pp. 72,10-12; 73,23-74,4 De Boer (V 106,6-9; 109,3-18 K).

²³ See chapter 6 'The diseases caused by black bile', section 6.4 below.

identification of black bile. Fortunately, there are other characteristics that can be used to identify this humour.

In the passage from *On the Nature of Man* quoted above (see page 142), we find ‘that according to nature their essential forms are separated, phlegm being quite unlike blood, blood being quite unlike bile, bile being quite unlike phlegm’ (ἔπειτα κατὰ φύσιν τὰς ιδέας κεχωρίσθαι, καὶ οὔτε τὸ φλέγμα οὐδὲν εἰοικέναι τῷ αἵματι, οὔτε τὸ αἷμα τῇ χολῇ, οὔτε τὴν χολὴν τῷ φλέγματι). This indicates that form (ιδέη) is an important determinant for the identification of a humour. We have already seen (pages 140-141 above) that Galen associates black bile with the elemental ‘earth’ and so its density and thickness come from both its cold and dry qualities and its earth-like nature. For example, in Galen’s *Commentary on On the Nature of Man*, black bile can be identified using this parameter of thickness:

ἢ τ’ αὖ μέλαινα διὰ παντὸς ἐστὶ παχυτέρα τῆς ὠχροῦς τε καὶ ξανθῆς, οὐκ ὀλίγον δὲ οὐδὲ κατὰ ταύτην ἐστὶ τὸ μᾶλλον τε καὶ ἥττον, ὥσπερ γε καὶ κατὰ τὸ αἷμα·

Black bile, in turn, is always thicker than the pale or yellow bile. And in black bile, the difference between the greater thickness and the lesser is not slight, just as is the case with blood.²⁴

Galen uses *παχύς* to describe the relative thickness of three of the humours. In addition, we find the same term being used by him in *On the Elements According to Hippocrates*, *On Mixtures*, and *On Black Bile* to describe black bile as being a thick substance.²⁵ The relatively thick nature of black bile is something that Galen uses to describe this humour so that it may be identified correctly. In this way, he is emphasising the importance of certain characteristics that can be used to determine the possibility of whether a particular black substance may be identified as being the black bile humour or not. One point to note is that Galen is using the term ‘thick’ *παχύς* to express the thickness of black bile in his *Commentary on On the Nature of Man*, even though this term is not actually used to describe black bile in the Hippocratic *On*

²⁴ *HNH*, I.26, CMG V 9,1, p. 36,3-5 Mewaldt (XV 66,13-16 K), translation by Lewis.

²⁵ For example, in *Hipp. Elem.* 13.23, CMG V 4,1, p.154,8-10 (I 506,5-7 K); *Temp.* II.3 (I 603,9-11 K); *At. Bil.* 3, CMG V 4,1,1, pp. 74,26-75,1 De Boer (V 111,9-12 K).

the Nature of Man, or any of the other extant texts in the Hippocratic Corpus.²⁶ However, we can see that the notion of black bile as a thick substance is found in the Hippocratic Corpus in terms of reference to its relative viscosity.²⁷ This is an example of Galen's choice of terminology that does not necessarily coincide with what is found in the Hippocratic Corpus, but is compatible with the physical description of black bile in some of the Hippocratic treatises.

The use of *παχύς* is not the only way to describe the structural density of black bile. Other qualities also indicate black bile's relative thickness. We have seen that black bile is characterised as a cold and dry humour. When it comes to the 'cold' quality, both yellow bile and blood are hotter humours than black bile and from everyday experience we find that hot fluids tend to flow more freely than cold ones. If we apply the same reasoning to the 'dry' quality, we would expect a dry substance like black bile to flow less freely than 'moist' blood. Both black bile and yellow bile are classified as 'dry', but black bile, being colder, will be more viscous. Therefore on the basis of the qualities of cold and dry, we would expect black bile to be a 'thicker' substance than yellow bile and blood. But what about the relative thickness of black bile compared to phlegm, which is characterised as a cold and moist humour? In order to attempt to answer this question I am going to investigate some of the texts from the Hippocratic Corpus and compare the descriptions of black bile and phlegm, in terms of their relative thickness, with what we find in Galen's writing. Starting with the Hippocratic *On the Nature of Man*, we find the following comparison between black bile and phlegm:

τεκμήριον δὲ τούτου, ὅτι τὸ μὲν φλέγμα ψυχρότατον, εἰ θέλοις
ψαῦσαι φλέγματος καὶ χολῆς καὶ αἵματος, τὸ φλέγμα εὐρήσεις
ψυχρότατον ἔον· καίτοι γλισχροτάτὸν ἔστι καὶ βίη μάλιστα ἄγεται
μετὰ χολὴν μέλαιναν·

²⁶ There is a reference in the Hippocratic *Aer.* (X (II 50,10-14 L)) to a thick residue when the humid and watery part of bile is dried up. But this author of this text does not call this residue 'black bile'.

²⁷ Examples from the Hippocratic Corpus of black bile being described as very viscous are given below.

A proof that phlegm is very cold is that if you touch phlegm, bile and blood, you will find phlegm the coldest. And yet it is the most viscid, and after black bile requires most force for its evacuation.²⁸

Here we see that black bile is described as being more difficult to remove from the body than phlegm. The start of the passage tells us that from observation, phlegm is colder than bile and blood. The lack of a colour adjective for bile may indicate yellow bile here.²⁹ The second part of the passage may be problematic, as we are told that phlegm is the 'most viscid' (γλισχροτάτον), but *after* black bile it requires more force to remove it from the body. This could be solved if we take γλισχροτάτον to mean 'very viscous' in an absolute sense, rather than as a relative superlative. The relative viscosity of phlegm and black bile will become important for a passage in a later section of this treatise (see page 148 below). However, Galen does not provide any comment on the interpretation of this passage, as in his *Commentary on On the Nature of Man*, he passes over this section of the text by saying that what is written here is self-evident and does not need any further explanation.³⁰ We find also that this passage is quoted in *On the Doctrines of Hippocrates and Plato*, as part of a longer section from *On the Nature of Man*, which Galen uses to support the case for the association between the four humours and the four seasons. But again, Galen does not comment on this specific point about the comparative viscosity of black bile and phlegm.³¹ Therefore, from these two texts we find that Galen is following the content of *On the Nature of Man* in his description of black bile in terms of 'stickiness' or 'viscosity'. But he is not adding any more detail in his own words and he does not attempt to differentiate between black bile and phlegm in terms of this viscosity. In addition, we find that in *On Mixtures* there is a reference to phlegm being a particularly sticky substance, but this is another case where Galen does not provide any comparative information between phlegm and the other humours in this context.³² Further to this, there are a couple of places in *On Black Bile* where viscosity is used, but these are more general cases referring to the cause of disease by substances that are viscous,

²⁸ *Nat. Hom.* 7, CMG I 1,3, p. 182,6-9 Jouanna (VI 46,13-14 L), translation by Jones.

²⁹ This is supported by the presence of the colour adjective for 'black bile' at the end of the passage.

³⁰ *HNH*, I.33, CMG V 9,1, pp. 42,31-43,14 Mewaldt (XV 81,1-82,1 K).

³¹ *PHP*, VIII.6.3, CMG V 4,2,1, p. 514,1-4 De Lacy (V 689,12-15 K).

³² There are references to phlegm being a particularly sticky substance in *Temp.* (III.4 (I 673,16-674,1 K)).

which includes black bile. But there is no separate statement to say that black bile is the 'stickiest' of the four humours.³³ This suggests that Galen does not think that this issue of which humour is the 'stickiest' is important enough to require detailed analysis and explanation of the content of the relevant parts of the Hippocratic Corpus. We are therefore left at this point with the only clear information being that black bile is thicker, stickier and colder than blood and yellow bile, but dryer and less cold than phlegm.

The description of black bile as the most difficult to remove from the body is consistent with the content of *On the Nature of Man* on the order of the humours during the purgation by drugs, as black bile always leaves the body after phlegm and yellow bile, when drugs targeting phlegm or yellow bile are used.³⁴ This evidence for the evacuation of black bile after phlegm on its own does not necessarily imply that black bile is thicker than phlegm, as in this system of purgation, blood is said to be the most difficult humour to evacuate from the body, but is thinner than phlegm and black bile. In this case, blood is regarded as being the humour closest to the nature of the body, which is the reason that it is the most difficult to remove.³⁵ However, we would not expect the same natural affinity to the body for black bile and so the more likely reason is the fact that its structure is thick and sticky, which impedes its movement. If we regard this property as the cause of the difficulty of removing black bile from the body, then it must be the thickest and stickiest of all the humours. More information can be found in other Galenic texts. For example, in *On Mixtures*, Galen regards black bile as being colder and thicker than blood, but phlegm is the coldest and wettest of all the four humours.³⁶ In addition, in *On the Therapeutic Method*, he describes phlegm as being thicker (παχύτερον) and stickier (γλίσχρον) than yellow bile, and like black bile, phlegm is more difficult to evacuate from the body.³⁷ Here we find that Galen is following the same characterisation of the humours in terms of the structural form as is found in the quoted passage from *On the Nature of Man* (see pages 145-146 above).

³³ *At. Bil.* 5; 7, CMG V 4,1,1, pp. 81,27-28; 86,25-28 De Boer (V 125,8-10; 134,12-16 K).

³⁴ *Nat. Hom.* 6, CMG I 1,3, p. 180,2-8 Jouanna (VI 44,12-18 L).

³⁵ *Temp.* II.3 (I 603,8-9 K); *HNH*, I.31, CMG V 9,1, p. 41,20-29 Mewaldt (XV 78,3-15 K).

³⁶ *Temp.* II.3 (I 603,10-11 K).

³⁷ *MM*, XIV.16 (X 1010,2-5 K).

Therefore, in terms of its structural consistency, black bile is considered by Galen as a thick and sticky humour, which is difficult to remove from the body.

However, there is another section in *On the Nature of Man*, which provides a more definite description of the viscosity of black bile:

μέλαινα γὰρ χολὴ τῶν ἐν τῷ σώματι ἐνεόντων χυμῶν γλισχροτάτον,
καὶ τὰς ἔδρας χρονωτάτας ποιεῖται.

For black bile is the most viscous of the humours in the body, and that which sticks fast the longest.³⁸

If we translate γλισχροτάτον as the superlative: ‘most viscous’, then we can support the solution to the potential issue in the earlier passage relating to the viscosity of phlegm (see pages 145-146 above). The explicit statement about the viscous nature of black bile in this passage indicates that we should interpret the earlier material as describing phlegm as a ‘very viscous’ substance, but less viscous than black bile. This is further supported by the qualitative properties of phlegm and black bile. They are both ‘cold’ humours, which indicates that they are viscous, but black bile is dryer than phlegm and so it is the more viscous. However, Galen has a problem with the content of the fifteenth section of *On the Nature of Man*, as it is part of the seven sections that he believes are inauthentic. He is concerned that parts of this section are inconsistent with what he considers to be the genuine Hippocratic doctrine.³⁹ We find that Galen generally tends to avoid the content of this passage. The one exception is in his *Commentary on On the Nature of Man*, where this passage does appear as part of a longer section on which Galen does provide some analysis. It is unfortunate that Galen does not actually discuss anything about this statement on the relative stickiness of black bile.⁴⁰ However, this may indicate that Galen felt that there was no need for interpretation of this material on the viscosity of black bile. Therefore, we can see that Galen draws upon the

³⁸ *Nat. Hom.* 15, CMG I 1,3, p. 204,12-14 Jouanna (VI 68,6-8 L), translation by Jones.

³⁹ For more information on Galen’s reasons for doubting the authenticity of this section of *On the Nature of Man*, see chapter 3 ‘Galen’s opinion on the authenticity of the individual treatises in the Hippocratic Corpus’, section 3.2.1 above.

⁴⁰ In *HNH* (II.22, CMG V 9,1, pp. 84,15-86,4 Mewaldt (XV 165,13-169,1 K)), Galen restricts his discussion to the material about the different fevers and does not say anything about this issue of whether black bile is the stickiest humour or not.

characterisation of black bile in *On the Nature of Man*, describing it as a cold, dry substance, which is the thickest and most viscous of the four humours. The inertia of black bile in the body, due to its sticky nature, will become important in terms of its effect on the body to cause specific diseases, which I will discuss later.⁴¹

We have seen already that Galen, in general, has been consistent with the content of the Hippocratic *On the Nature of Man* to describe black bile as being a black, cold, dry, thick and sticky substance. Galen's description of black bile is important for his writing, as he believes that it provides physicians with characteristics that can be used to identify the presence of black bile in the waste products evacuated from the body during an illness. For example, we find the following description in *On the Natural Faculties*:

ἔπειτα κατὰ τὴν αὐτοῦ μεταβολὴν δύο γεννώμενα περιπτώματα τὸ μὲν κουφότερόν τε καὶ ἀερωδέστερον, τὸ δὲ βαρύτερόν τε καὶ γεωδέστερον, ὧν τὸ μὲν ἄνθος, οἶμαι, τὸ δὲ τρύγα καλοῦσι. τούτων τῶ μὲν ἑτέρῳ τὴν ξανθὴν χολήν, τῶ δ' ἑτέρῳ τὴν μέλαιναν εἰκάζων οὐκ ἂν ἀμάρτοις, ...

Next, two residues produced by way of the change of this, the one being more light and air-like and the other being more heavy and earth-like; of these the one, as I understand, they call the flower and the other the lees. Of these you will not be wrong comparing yellow bile with the [former] one of these two, black bile with the [latter] one of these two, ...⁴²

In this passage, black bile is called 'heavy and earth-like' and this association with the elemental 'earth' is what we have already seen as a characterisation of black bile (see pages 140-141 above). However, I want to focus on the description of black bile as being like 'lees' (τρύξι). In the medical texts, we find that this term τρύξι is most commonly used for the lees of wine, which are the particles of yeast or other solid matter found in some types of wine. Galen uses this description in other treatises, such as *On Black Bile* where he uses both terms melancholic humour (μελαγχολικός χυμός) and black bile (μέλαινα χολή) when he describes black bile as being like the 'lees in wine' (ἐν οἴνῳ ἡ

⁴¹ For example, see chapter 6 'The diseases caused by black bile', sections 6.1-6.3 below.

⁴² *Nat. Fac.* II.9 (II 135,6-11 K), adapted from a translation by Brock.

τρούξι).⁴³ Galen also uses a more direct characterisation of black bile relative to blood, when he calls black bile (μέλαινα χολή) the ‘lees of blood’ (τρούγα τοῦ αἵματος), which we can find in *On Crises* and in his *Commentary on Aphorisms*. Therefore, he is reinforcing his description of black bile by saying that this humour should be considered as being the lees of blood. In other words when you look at composite blood, the part that is heavy, which resembles the lees is in fact black bile.⁴⁴

Therefore, Galen is using a well-known and observable substance, in this case ‘lees’ (τρούξι), for his description of a black solid substance, found in certain fluids, which he identifies as black bile. We find that he uses both the terms, ‘melancholic humour’ (μελαγχολικός χυμός) and ‘black bile’ (μέλαινα χολή), for this substance. But μέλαινα χολή is a much more common term for black bile in ancient medical treatises. If we investigate the content of the Hippocratic Corpus, we find a similar description in *On Diseases II*. In this case, some of the substances found in vomit are called dark like lees (οἶον τρούγα), which sometimes looks like blood (τοτὲ δὲ αἵματῶδες), sometimes like second-wine (τοτὲ δὲ οἶον οἶνον τὸν δεύτερον).⁴⁵ Further to this, there are a couple of examples of the use of the term ‘lees’ (τρούξι) in the Hippocratic *Epidemics V* and *Epidemics VII*. For example, we are told that a certain Eutychides had a choleric illness ending with him vomiting material that contains lees.⁴⁶ We have seen earlier that Galen had rejected the general content of *On Diseases II*, *Epidemics V* and *VII* as inauthentic.⁴⁷ However, it is possible that Galen may have drawn upon the content of the passage from *On Diseases II* for his characterisation of black bile, as he does gloss the content of this passage in his *Glossary of Hippocratic Terms*.⁴⁸ The reason why Galen is writing about the appearance of black bile in this way is that it is useful to doctors, as they will be familiar with

⁴³ *At. Bil.* 6, CMG V 4,1,1, p. 83,13 De Boer (V 127,15-16 K). See also *At. Bil.* 3; 7, (pp. 75,8-12; 87,8-10 (112,2-8; 135,11-12 K)).

⁴⁴ *Cris.* II.12 (IX 694,6-10 K); *Hipp. Aph.* IV.21 (XVIIb 682,1 K).

⁴⁵ *Morb. II*, 73,1 (VII 110,14-15 L).

⁴⁶ *Epid. V*, 1,79,6 (V 248,22 L); *Epid. VII*, 1,67,6 (V 430,15-16 L).

⁴⁷ See chapter 3 ‘Galen’s opinion on the authenticity of the individual treatises in the Hippocratic Corpus’, sections 3.4.1 and 3.4.2 above.

⁴⁸ I will be discussing Galen’s use of this passage from *On Diseases II* in more detail later, see section 4.4 below.

the appearance of lees in wine and therefore they will be able to look for a similar effect in the different types of waste fluids secreted from the body.

The description of black bile as a solid within other fluids is emphasised by Galen in another of his works. In *On Mixtures*, we find the following description being applied to black bile:

Τῶν δὲ χυμῶν ὁ μὲν χρηστότατός τε καὶ οἰκειότατός ἐστι τὸ αἷμα.
τούτου δ' οἶον ὑπόστασις τις καὶ ἰλύς ἢ μέλαινα χολή· ταῦτ' ἄρα καὶ
ψυχροτέρα τ' ἐστὶ καὶ παχυτέρα τοῦ αἵματος·

Of humours the most useful and particular is blood. Black bile is a kind of sediment and mud of this [blood]; it is therefore colder and thicker than blood.⁴⁹

Here, we find Galen describing black bile as a type of 'sediment' (ὑπόστασις) and 'mud' (ἰλύς) of blood. This is a distinctive characterisation of black bile relative to blood and is not found applied to the other two humours, phlegm and yellow bile in any of Galen's extant writing. This is understandable in the case of yellow bile, since this humour is considered to be hot and thin and therefore would not form a heavy precipitate like this. However, as we have seen earlier, phlegm is described as being a viscous substance (see pages 145-146 above), so there is the possibility that it could form white sediment in blood. But Galen does not describe the physical appearance of phlegm in this way, and so sediment and mud found in blood is reserved for black bile.⁵⁰ The use of ὑπόστασις to characterise black bile in terms of blood is only found explicitly like this in *On Mixtures*. If we look in the Hippocratic Corpus for the term for sediment (ὑπόστασις), we find that there are no similar direct statements that black bile is a type of sediment of blood in this way. Instead, there are some passages where sediment is observed in the evacuated waste from the body. For example, in the first and third books of *Epidemics*, the authors of these works refer to patients with fever who have black 'sediment' (ὑπόστασις) in the

⁴⁹ *Temp.* II.3 (I 603,7-10 K), adapted from a translation by Singer.

⁵⁰ In fact, we find that in *At. Bil.* (2, CMG V 4,1,1, p. 73,1-2 De Boer (V 107,12-13 K)), Galen describes the appearance of phlegm in blood as the opposite of sediment, as he says that phlegm can sometimes be seen to float on the surface of blood.

urine and faeces respectively.⁵¹ Another example is found in *Koan Prognoses*, where the presence of black ‘sediment’ (ὑπόστασις) in urine is a mortal sign.⁵² These passages use sediment as a description of the physical material in waste matter, but this is not the characterisation of black bile as sediment in blood, as we have seen in Galen’s *On Mixtures*. We know that Galen acknowledged *Epidemics I* and *III* as being some of the best works written by Hippocrates and he also believed that parts of *Koan Prognoses* were of a standard consistent with a genuine Hippocratic work.⁵³ However, although there are no quotations or references to any of these examples of black sediment in the majority of the extant works by Galen, he does comment on the passages from *Epidemics I* and *III* in his *Commentary on Epidemics*. In both cases of the black sediment found in waste material from the body, Galen warns that this is a bad sign of unconcocted and potentially destructive material in the body. It is significant that Galen does not refer to this black sediment as indicating the presence of harmful ‘black bile’ or ‘melancholic humour’ in the body when he interprets the content of these passages from *Epidemics I* and *III*. Instead, he refers to a more general type of harmful substance in the body. This might indicate that Galen does not want this substance to be identified as black bile for the purposes of diagnosis and prognosis.⁵⁴ If we investigate some of the Aristotelian sources, we find in the pseudo-Aristotle *Problemata* that there is a comparison between black bile (μέλαινα χολή) and the build-up of a type of sediment (ὑπόστασις) in the body when a person is suffering from quartan fever. But, again we do not find black bile being characterised as sediment in blood.⁵⁵ Therefore, there is precedence for this term ὑπόστασις being used to describe substances in evacuated material from the body that indicate that there is something potentially harmful in the body. But Galen’s use of ὑπόστασις is different from these Hippocratic and Aristotelian sources, as he characterises black bile as a type of sediment in blood. This is something that Galen believes is useful for the identification of black bile.

⁵¹ *Epid. I*, Case II (II 684,16-17 L); *Epid. III*, Case III (III 40,12-13 L).

⁵² *Coac.* 569 and 570 (V 714,15-16 and 716,3-4 L).

⁵³ See chapter 3 ‘Galen’s opinion on the authenticity of the individual treatises in the Hippocratic Corpus’, sections 3.2.4 and 3.2.10 above.

⁵⁴ *Hipp. Epid.* I.III.19, CMG V 10,1, p. 133,5-25 Wenkebach (XVIIa 265,4-266,6 K); III.I.5, CMG V 10,2,1, p. 52,5-8 Wenkebach (XVIIa 567,13-568,2 K).

⁵⁵ Pseudo-Aristotle, *Pr.* I.19, 861b19-21. I will be discussing black bile as the cause of quartan fever in more detail later, see chapter 6 ‘The diseases caused by black bile’, section 6.2 below.

In addition to this term ‘sediment’ (ὑπόστασις), we can see in the passage from *On Mixtures* (see page 151 above) that Galen also describes black bile as ‘mud’ (ἰλύς) in blood. The use of ἰλύς might indicate a more solid kind of matter in relation to other substances that are present, in this case blood. We also find this characterisation in *On Black Bile*, where Galen refers to black bile as being like mud (ἰλύς) in blood. But, in contrast to the more direct statement in *On Mixtures*, this is a more general statement about the need to remove impurities from the blood.⁵⁶ We also find the term ἰλύς in *On the Elements According to Hippocrates*, but this time, Galen is not actually referring to black bile.⁵⁷ However, in addition to what we have found in *On Mixtures* and *On Black Bile*, the description of black bile as being like mud in its appearance is quite common in Galen’s writing. For example, in *On the Therapeutic Method*, *On the Power of Cleansing Drugs* and *On the Composition of Drugs According to Places*, thick blood that resembles mud is associated with black bile (μέλαινα χολή).⁵⁸ This shows that Galen was characterising black bile as a more solid substance than the other three humours and that black bile can be observed as a type of black matter, which appears as a muddy substance in blood. An attempt to trace this form of black bile in the Hippocratic Corpus does not yield any explicit reference to black bile being characterised as ‘the mud of blood’ in this way.⁵⁹ However, if we investigate Aristotelian works, although there are no references to black bile as being described as appearing like mud, there is a passage in *Parts of Animals* that discusses the effect of ‘the mud of dark wine’ (ἡ ἰλύς τοῦ μέλανος οἴνου) on the colour of the ‘residue discharges’

⁵⁶ *At. Bil.* 7, CMG V 4,1,1, p. 87,8-10 De Boer (V 135,10-13 K).

⁵⁷ Galen uses both ἰλύς and τρούξις in his analogy between the composite form of blood and milk in *Hipp. Elem.* (11.11, CMG V 1,2, p.142,23-25 De Lacy (I 496,6-10 K)), but he does not mention here that these terms can also be applied to black bile.

⁵⁸ *MM*, XIII.16 (X 916,13-15 K); *Purg. Med. Fac.* III (XI 335,13-17 K); *Comp. Med. Loc.* VIII.6 (XIII 197,3-5 K).

⁵⁹ We find ἰλύς being used in the Hippocratic *Aer.* (IX (II 38,7-8 L)) to explain the presence of sediment of mud, which appears in the vessels of the body from the drinking of certain types of water. In the Hippocratic *Epid. VII* (XI (V 384,14-16 L)), this word is used to describe the muddy appearance of faecal matter, which is similar to its use in *Coac.* (456; 512; 567; 571 (V 686,10-12; 702,13-17; 712,19-714,7; 716,5-16 L)). In *Mul. I* (66,25-27 (VIII 138,1-2 L)), there is reference to the dregs of an ointment. However, none of these examples is referring to black bile or blood.

(περιττώματα) from the stomach.⁶⁰ If we combine this passage with the fact that Aristotle characterised black bile as a residue, and in the pseudo-Aristotle *Problemata* the cause of melancholy by black bile is compared with the effect of dark wine to produce inebriation, we find that from an overall Aristotelian perspective there may be some close association between the ‘mud of dark wine’ and ‘black bile’.⁶¹ This potentially could have influenced Galen’s writing in terms of this type of physical description of black bile.

We are now a long way from the characterisation of black bile in terms of the qualities ‘cold and dry’ and we have seen that Galen emphasises the importance of a physical description of black bile. Therefore, Galen has gone beyond the simple cold, dry and sticky substance found in the Hippocratic *On the Nature of Man* to create a broader description of black bile in terms of comparable common organic substances, such as ‘lees’ (τρώξι), ‘sediment’ (ὑπόστασις) and ‘mud’ (ιλύς). These are the types of descriptions of black bile or black substances, which are found in a range of sources beyond the content of *On the Nature of Man*. We have found these descriptions in other texts from the Hippocratic Corpus, such as *On Diseases II* and some of the books from the *Epidemics*. There are also some similar descriptions used as a comparison to black bile in some Aristotelian works. This shows that empirical information to form a consistent and useful description of black bile was more important to Galen than just basing the characterisation of black bile on the elemental qualities and its structural form of being thick and sticky that we find in *On the Nature of Man*. In this way the content of *On the Nature of Man* is just one source out of many that he can draw upon from the rest of the Hippocratic Corpus, and other material from some of the physicians and philosophers who wrote about medicine in the several centuries between the writing of the Hippocratic works and the second century CE. Galen’s aim is to present the physical description of black bile in a way that satisfies both the theoretical information, from the model of paired qualities which we find in texts like *On the Nature of Man*, and the kind of empirical information that is found in other texts from the Hippocratic Corpus, such as *On Diseases II*, the *Epidemics*, and also

⁶⁰ Aristotle, *PA*, III.3, 664b16-17.

⁶¹ Aristotle, *HA*, III.2, 511b1-11; Pseudo-Aristotle, *Pr.* XXX.1, 953a33-954a7. See chapter 1 ‘Introduction’, section 1.3.4 above.

the comparative description of different substances with black bile found in Aristotelian works. All of this theoretical and empirical information is presented by Galen in terms of his own biological model of human health and disease. However, as we have seen, Galen does not combine all this theoretical and observational information about black bile in one treatise. Instead, he has the flexibility to use whichever characterisation of black bile is useful to him in a particular argument. Another point to note is that in his characterisation of black bile as a physical substance such as ‘sediment’, ‘mud’ and ‘lees’, we have seen that Galen uses the term ‘melancholic humour’ (μελαγχολικὸς χυμὸς), as well as ‘black bile’ (μέλαινα χολή). I now want to investigate whether Galen is discussing the same substance, or different forms of black bile, when he defines and characterises this humour in his writing.

4.2 Galen’s development of different types of black bile

So far I have discussed Galen’s characterisation of black bile as if it were a single substance, which is the way that it is presented in the Hippocratic *On the Nature of Man*. However, Galen’s biological theory contains reference to different types of black bile with various properties, which explains how they function and affect the body in terms of health and disease. For example, the following passage from Galen’s *On Affected Parts* defines three types of substance relating to the black bile humour:

ὡσαύτως δὲ καὶ ὁ μελαγχολικὸς χυμὸς ἐν τῇ συστάσει σαφεῖς ἔχει τὰς διαφορὰς, ὁ μὲν οἶον τρυξ αἵματος, ἐναργῶς φαινόμενος ἰκανῶς παχὺς, ὥσπερ ἢ τοῦ οἴνου τρυξ· ὁ δὲ πολλῶ μὲν τούτου λεπτότερος κατὰ τὴν σύστασιν, ὀξὺς δὲ καὶ τοῖς ἐμέσασιν αὐτὸν φαινόμενος καὶ τοῖς ὀσμωμένοις· οὗτος καὶ ξύει τὴν γῆν, ἐξαίρων τε καὶ ζυμῶν καὶ πομφόλυγας ἐγείρων, οἷαι τοῖς ζέουσι ζωμοῖς ἐφίστανται· ὃν δ’ ἔφην εὐοικέναι παχεῖα τρυγί, τὴν τε ζύμωσιν οὐκ ἐργάζεται κατὰ τῆς γῆς ἐκχυθεῖς, πλὴν εἰ μὴ πάνυ σφόδρα τύχοι τότε κατοπτηθεῖς ἐν διακαεῖ πυρετῶ, καὶ ἥκιστα μετέχει ποιότητος ὀξειας, ἥνικα καὶ καλεῖν αὐτὸν εἴωθα μελαγχολικὸν χυμὸν ἢ μελαγχολικὸν αἷμα, μέλαιναν γὰρ χολὴν οὐδέπω δικαίῳ τὸν τοιοῦτον ὀνομάζειν. γεννᾶται δ’ ὁ χυμὸς οὗτος ἐνίοις πολὺς, ἢ διὰ τὴν ἐξ ἀρχῆς κρᾶσιν, ἢ δι’ ἔθος ἐδεσμάτων εἰς τοιοῦτον χυμὸν ἐν τῇ κατὰ τὰς φλέβας πέψει μεταβαλόντων.

Likewise the melancholic humour clearly shows different kinds of composition. One kind is like the sediment of blood and clearly manifests itself as quite thick, similar to the lees of wine. The other kind is much thinner in composition than that, and it appears acid to those who vomit or smell it; this also corrodes earth, it raises, ferments and stirs up bubbles like those that comes to the surface of a boiling soup. The one which I said resembles thick sediment does not produce the fermentation when it is poured out over the earth, unless it happens to have been burnt very intensely during a state of burning fever, and it only has very little share in the quality of acidity. Hence I am used to calling it melancholic humour or melancholic blood, for I think that it is not yet proper to call it black bile. For that humour is generated in some people in large quantity either as a result of their initial mixture or by a habit of eating foods that change into this during the digestion within the blood vessels.⁶²

This passage tells us that Galen differentiates between what he calls 'black bile' (μέλαινα χολή) and 'melancholic humour' (μελαγχολικός χυμός). We can see that μέλαινα χολή refers to the innate humour and this definition is consistent with Galen's use of this term in treatises such as *On the Elements According to Hippocrates* and *On the Doctrines of Hippocrates and Plato* because he is using the characterisation of black bile found in the Hippocratic *On the Nature of Man*. But, there are also two types of melancholic humour defined in the passage from *On Affected Parts*, one that is described as the 'sediment of blood' (τρύξι αίματος), which is 'thick' (παχύς) like the 'lees of wine' (τρύξι οίνου). Galen also names this as 'melancholic blood' (μελαγχολικόν αίμα). The other type of melancholic humour is a substance that is thinner, acidic and effervesces when in contact with the ground. This acidic melancholic humour is very important in Galen's explanation of diseases caused by black bile, which I will discuss in more detail later (see section 4.4 below). If we return to the thick, sediment-like melancholic humour (or melancholic blood), we can see in the passage from *On Affected Parts* above that Galen is keen to emphasise that it is different from innate black bile (one of the four humours) and it is not correct to call it 'black bile' (μέλαινα χολή). However, we have seen above (pages 149-150) that Galen refers to black bile (μέλαινα χολή) as the lees of blood in *On Crises* and in his *Commentary on Aphorisms*, and as a type of sediment in blood in *On Mixtures*. In these cases there is no indication that Galen is talking about a

⁶² *Loc. Aff.* III.9 (VIII 176,15-177,12 K), translation by van der Eijk.

different form of black bile that is distinct from the innate humoral form. I believe that Galen is making this statement about the distinction between ‘innate’ black bile and melancholic humour because of his explanation of the cause of the melancholy illness in *On Affected Parts*. We shall see this in my analysis of the way that Galen presents the melancholic humour as the cause of mental illness in this treatise. In this context, Galen is reluctant to associate the innate, fundamental black bile humour with the illness of melancholy directly. This is because of the content of the sources that he has used to produce his theory of how people can suffer from a mental illness like melancholy.⁶³

There are other examples of Galen making this type of distinction between different types of substance that are related in some way to the black bile humour. For example, in the following passage from Galen’s *Commentary on Aphorisms*:

μεμνησθαι γὰρ χρὴ τῶν περὶ τῆς μελαίνης χολῆς ἐν ἄλλοις
διωρισμένων, ὡς ἡ μὲν ὑπεροπτηθείσης γίνεται τῆς ξανθῆς χολῆς,
ἢπερ δὴ καὶ χαλεπωτάτη παντοίως ἐστίν, ἡ δ’ ἐκ τῆς τοῦ αἵματος, ὡς
ἂν εἴποι τις, ἰλύος καὶ τρυγός. παχυτέρα μὲν ἐκείνη τῆ συστάσει,
πολὺ δὲ ἀπολειπομένη τῷ μοχθηρῷ τῆς ποιότητος. εἴρηται δὲ καὶ ὅτι
τὴν οἶον τρύγα τοῦ αἵματος ἀκριβολογούμενοι μὲν οὐδέπω μέλαιναν
χολὴν ὀνομάζομεν, ἀλλὰ μελαγχολικὸν χυμὸν, καταχρώμενοι δὲ τοῖς
ὀνόμασι καὶ μέλαιναν ἔστιν ὅτε καλοῦμεν, ἐπειδὴ μικρὸν ὑστερον
ἔσεσθαι μέλλει μέλαινα μὴ φθασάντων κενῶσαι.

It is necessary to mention the distinctions that were made in other writings concerning black bile, since the one of them arising from yellow bile has been excessively heated, this is the one that is most difficult in all cases, and the other that comes from mud and lees, as you might say, of blood, this latter has a thicker consistency and falls short in the badness of its quality. It has been said that when we are being precise we do not call the lees of blood black bile, but rather melancholic humour. But when we are using terms loosely, we use black [bile], because it is going to become black [bile] if we do not remove it first.⁶⁴

We can see that it is important for Galen that he makes a clear distinction between the physical properties of these two types of ‘black bile’, one that is described as the ‘mud and lees’ of blood and the other that is very harmful and

⁶³ See chapter 6 ‘The diseases caused by black bile’, section 6.1 below.

⁶⁴ *Hipp. Aph.* VI.53 (XVIIIa 91,6-16 K). I would like to thank David Leith and John Wilkins for their help with the translation of this passage.

is produced from the heating of yellow bile. This latter type has the same properties as the acidic type of black bile, which is referred to in the passage from *On Affected Parts* above. In this passage from *Commentary on Aphorisms*, Galen points out that it is not precise to call the muddy or lees of blood ‘black bile’ (μέλαινα χολή), instead it is more correct to name it ‘melancholic humour’ (μελαγχολικός χυμός). But he then admits that the ‘black bile’ (μέλαινα χολή) that appears like a muddy substance has the potential to become ‘proper’ black bile, if it is not quickly removed from the body. This implies that Galen is using language more loosely in texts, such as *On Crises*, *On Mixtures*, and even other sections of *Commentary on Aphorisms*, when he refers to the sediment, muddy or lees of blood substances as ‘black bile’ (μέλαινα χολή), rather than ‘melancholic humour’ (μελαγχολικός χυμός).

We can find a justification of this type of ‘looseness’ of language in a passage at the end of Galen’s *On Black Bile*:

καὶ μέντοι καὶ παρὰ τὴν ὁμωνυμίαν ἑαυτούς, οὐ γὰρ ἡμᾶς γε, σοφίζονται τὸν γε μελαγχολικὸν χυμὸν, ὃν ἐν τοῖς ὑγιαίνουσι γεννᾶσθαι φαμεν, ἀκούοντες ἀεὶ κατὰ τῆς μελαίνης λέγεσθαι χολῆς, ἣν ἐν τῷ παρὰ φύσιν ἔχειν γεννᾶσθαι φαμεν. οὐ γὰρ ἡ αὐτὴ κατὰ γε τοὺς ἀκριβῶς ὑγιαίνοντάς ἐστι μέλαινα χολή καὶ τινὰς τῶν παρὰ φύσιν ἐχόντων, ἀμφοτέρως δὲ μελαγχολικὸν χυμὸν ὀνομάζειν οὐδὲν κωλύει.

By a process of homonymy for themselves, but not for us, they deal in subtleties about the melancholic humour, which we say is engendered in healthy people, as I always understand that it is said in contrast to black bile, which we say is created in an unnatural state because the black bile in people that are absolutely healthy is not the same as those who are in an unnatural state, but nothing prevents me from calling both melancholic humour.⁶⁵

In this passage, Galen is drawing attention to the fact that he understands that there is a difference between black bile that is produced in someone that is healthy and a person who is in a ‘unnatural state’ (παρὰ φύσιν).⁶⁶ He warns

⁶⁵ *At. Bil.* 8, CMG V 4,1,1, p. 93,22-28 De Boer (V 147,9-148,1 K), adapted from a translation by Grant. I would like to thank David Leith and John Wilkins for their help with the translation of this passage.

⁶⁶ Earlier in *At. Bil.* (8, CMG V 4,1,1, p. 92,9-22 De Boer (V 144,13-145,11 K)), Galen had informed us that some people (as usual he does not name them) have denied the existence of

that there are some people, whom he does not name, who use the term 'melancholic humour' (μελαγχολικός χυμός) as if it refers to the same type of black bile. Galen claims that he can use melancholic humour for both types of black bile because he knows the important differences between them. This is particularly important when it comes to identifying them in the waste material evacuated from the body during illness, as it will affect diagnosis and prognosis.

Another example of Galen's reference to different types of black bile can be found in *On the Natural Faculties*. We find again that Galen discusses issues with the naming of such substances:

... ἡ δ' αὖ μέλαινα κακοηθέστερα μὲν πολὺ καὶ αὕτη τῆς κατὰ φύσιν ὄνομα δ' οὐδὲν ἴδιον κεῖται τῷ τοιούτῳ χυμῷ, πλὴν εἴ πού τινες ἢ ξυστικὸν ἢ ὀξύδη κεκλήκασιν αὐτόν, ὅτι καὶ δριμύς ὁμοίως ὄξει γίγνεται καὶ ξύει γε τὸ σῶμα τοῦ ζώου καὶ τὴν γῆν, εἰ κατ' αὐτῆς ἐκχυθείη, καὶ τινα μετὰ πομφολύγων οἶον ζύμωσιν τε καὶ ζέσιν ἐργάζεται, σηπεδόνας ἐπικτήτου προσελθούσης ἐκείνῳ τῷ κατὰ φύσιν ἔχοντι χυμῷ τῷ μέλανι. καὶ μοι δοκοῦσιν οἱ πλεῖστοι τῶν παλαιῶν ἰατρῶν αὐτὸ μὲν τὸ κατὰ φύσιν ἔχον τοῦ τοιούτου χυμοῦ καὶ διαχωροῦν κάτω καὶ πολλάκις ἐπιπολάζον ἄνω μέλανα καλεῖν χυμόν, οὐ μέλαιναν χολήν, τὸ δ' ἐκ συγκαύσεως τινος καὶ σηπεδόνας εἰς τὴν ὀξειαν μεθιστάμενον ποιότητα μέλαιναν ὀνομάζουσιν χολήν. ... ὥσπερ γε καὶ τοῦ μέλανος χυμοῦ τὸ μὲν μήπω τὴν οἶον ζέσιν τε καὶ ζύμωσιν τῆς γῆς ἐργαζόμενον κατὰ φύσιν ἐστί, τὸ δ' εἰς τοιαύτην μεθιστάμενον ἰδέαν τε καὶ δύναμιν ἤδη παρὰ φύσιν, ὡς ἂν τὴν ἐκ τῆς συγκαύσεως τοῦ παρὰ φύσιν θερμοῦ προσειληφὸς δριμύτητα καὶ οἶον τέφρα τις ἤδη γεγονός. ὥδέ πως καὶ ἡ κεκαυμένη τρυξ τῆς ἀκαύστου διήνεγκε. θερμὸν γάρ τι χρῆμα αὕτη γ' ἱκανῶς ἐστίν, ὥστε καίειν τε καὶ τήκειν καὶ διαφθείρειν τὴν σάρκα. τῇ δ' ἑτέρῃ τῇ μήπω κεκαυμένη τοὺς ἰατροὺς ἐστὶν εὐρεῖν χρωμένους εἰς ὅσαπερ καὶ τῇ γῆ τῇ καλουμένη κερραμίτιδι καὶ τοῖς ἄλλοις, ὅσα ξηραίνειν θ' ἅμα καὶ ψύχειν πέφυκεν.

... on the other hand, the black bile itself [becomes] much more malignant than the according to nature [black bile]; no particular name has been given to such a humour, except that some people have called it corrosive or acidic, because it also becomes acidic like vinegar and corrodes the animal's body, and the ground, if it be poured out upon it, and it produces a kind of fermentation and seething, accompanied by bubbles, an abnormal putrefaction having become added to the

black bile in those who have a healthy constitution and that this humour is only produced in people that have a constitution that is contrary to nature (παρὰ φύσιν).

according to nature black humour. It seems to me also that most of the ancient physicians give the name black humour and not black bile to the according to nature portion of this humour, which is discharged from the bowel and which also frequently rises to the top [of the stomach-contents]; and they call black bile that part which, through a kind of combustion and putrefaction, has had its quality changed to acid. ... Similarly with the black humour: that which does not yet produce, as I say, this seething and fermentation on the ground, is according to nature, while that which changes to such a form and faculty, is contrary to nature; it has assumed an acidity owing to the combustion caused by contrary to nature heat, and has practically become transformed into ashes. In somewhat the same way burned lees differ from unburned. The former is a warm substance, able to burn, dissolve, and destroy the flesh. The other kind, which has not yet undergone combustion, one may find the physicians employing for the same purposes that one uses the so-called potter's earth and other substances which have naturally a combined drying and chilling action.⁶⁷

In this passage we have one type of black bile that is less harmful and is described as being 'according to nature' (κατὰ φύσιν). In contrast, another type of black bile is said to be very harmful to the body, as it is acidic, corrosive and effervesces when in contact with the ground. Galen refers to this type of black bile as 'contrary to nature' (παρὰ φύσιν). He discusses these two descriptions in terms of what he says some of the ancient physicians call them. So we find that the κατὰ φύσιν type was called 'black humour' (μέλας χυμός), and the παρὰ φύσιν type was named 'black bile' (μέλαινα χολή) by them.⁶⁸ Galen does not name these 'ancient physicians' at this point, but it is possible that this is the nomenclature used by Diocles to classify two different states of black

⁶⁷ *Nat. Fac.* II.9 (II 135,16-136,11; 137,5-17 K), adapted from a translation by Brock.

⁶⁸ The translation of the passage from *On the Natural Faculties* by Brock above refers to different portions or parts of the black bile humour. This allows Galen to differentiate between two substances that have very different properties, but that are closely related through the action of heat on the 'according to nature' black bile to produce the 'contrary to nature' black bile. We find in the passage above that Galen uses a unified view of black bile that has different forms depending on the presence of extreme heat. This is useful for Galen, as it allows him to combine the content relating to a single concept of black bile in the Hippocratic *On the Nature of Man* with the different observations and descriptions of black bile in other sources. However, as we have already seen in *On the Affected Parts* and *On Black Bile*, Galen sometimes does not emphasise the unified black bile because he is more concerned with making clear distinctions between different types of black bile. We shall see that the context of Galen's treatise, or even part of his treatise, is important to understand the way that he is presenting black bile, either as a unified substance with different parts, or as different substances that share a similar name. My use of the term 'type' here, rather than 'portion' or 'part', allows me to differentiate between the 'according to nature' and 'contrary to nature' states of black bile and is compatible with my more general use of terms for the different forms of black bile in this thesis.

bile.⁶⁹ However, we do not find this style of nomenclature of ‘black humour’ and ‘black bile’, to make an explicit distinction between two types of black bile, in any of the extant Hippocratic works. Therefore, Galen has no reason to include Hippocrates as one of these ‘ancient physicians’, who name types of black bile differently like this. What we find in Galen’s writing is that he adopts a pragmatic approach and in most cases he does not choose a naming convention to differentiate systematically between various forms of black bile in his writing. Therefore, in a lot of cases we will find the term ‘black bile’ (μέλαινα χολή), but sometimes it will be necessary for him to use the term ‘melancholic humour’ (μελαγχολικός χυμός) or ‘melancholic blood’ (μελαγχολικόν αἷμα). This will be the case when he has to distinguish between the different kinds of black bile in a particular text for his specific argument. However, what is clear from the passage in *On the Natural Faculties* above is that different types of black bile can be distinguished in terms of their ability to harm the body. We have seen that Galen has differentiated between them using the terms ‘according to nature’ (κατὰ φύσιν) and ‘contrary to nature’ (παρὰ φύσιν). I now want to investigate further why this distinction is important for understanding Galen’s characterisation of different forms of black bile.

These two terms ‘according to nature’ (κατὰ φύσιν) and ‘contrary to nature’ (παρὰ φύσιν) are very common and widespread in ancient medical literature and generally refer to the distinction between something that occurs naturally in the body as part of its normal function, in contrast to something that inhibits or has a negative effect on the health of the body, such as an external factor like too much heat or cold in the body. For example, we can find a definition of κατὰ φύσιν in *On the Doctrines of Hippocrates and Plato*:

πολλαχῶς δὲ τοῦ κατὰ φύσιν λεγομένου, τοῦτ’ ἀκούειν χρὴ νῦν ὁ κατὰ πρῶτον λόγον ὑπὸ τῆς φύσεως γίνεσθαι. κατὰ πρῶτον δὲ λόγον ἐκεῖνα γίνεσθαι φαμεν ὑπὸ τῆς φύσεως, ὧν ὥσπερ σκοπῶν ἀντιποιεῖται καὶ μὴ δι’ ἀκολουθίαν τινὰ ἐτέροις ἐξ ἀνάγκης ἔπεται.

⁶⁹ This passage is included by van der Eijk in the fragments that can be attributed to the work of Diocles: See F27[12] (van der Eijk) = Gal. *Nat. Fac.* II.9 (II 134,-136, K). See van der Eijk, 2001: 49-53. I say that it is possible that Diocles made this distinction, as we cannot completely rely on Galen’s testimony of Diocles’ terminology of black bile without an independent reference to Diocles’ actual writing on this subject.

And as the term ‘according to nature’ is used in many ways, we must here take it to be used of that which occurs through the agency of nature in the first instance. By ‘that which occurs through the agency of nature in the first instance’ I mean that which nature seeks as an end, and not that which necessarily follows something else.⁷⁰

In this passage, Galen tells us that *κατὰ φύσιν* can have many different meanings. Therefore, in order to put this term into a context, he provides a specific example. So, we have a case where ‘activity’ (*ἐνέργεια*) is classified as being ‘according to nature’ (*κατὰ φύσιν*). This is then contrasted with the term for ‘affection’ (*πάθος*), which is said to be ‘contrary to nature’ (*παρὰ φύσιν*). In this way, Galen is using *κατὰ φύσιν* and *παρὰ φύσιν* to explain the difference between two related phenomena, where one is acting naturally, and the other unnaturally in terms of its originally defined purpose.⁷¹ We have seen earlier that Galen uses a teleological framework to explain that all parts of the body have been designed by ‘Nature’ in terms of their purpose and function.⁷² This applies to the presence and function of black bile in the body and also allows Galen to make a distinction between conditions when black bile is functioning ‘according to nature’ (*κατὰ φύσιν*) and when it is acting ‘contrary to nature’ (*παρὰ φύσιν*).

I am going to consider two different ways that *κατὰ φύσιν* and *παρὰ φύσιν* can be applied to Galen’s presentation of the humours. Firstly, by applying the terms *κατὰ φύσιν* and *παρὰ φύσιν* to the humours, we can differentiate between different categories. For example in the case of phlegm, we find the following:

οὐ γὰρ ἐνδέχεται μὴ οὐχὶ θερμὸν εἶναι καὶ ξηρὸν αὐτὸν, ἢ θερμὸν καὶ ὑγρὸν, ἢ ψυχρὸν καὶ ξηρὸν, ἢ ψυχρὸν καὶ ὑγρὸν, ἀλλ’ ὅσον ἐπὶ πλεῖστον ἦκει πάχους καὶ ψύξεως, ἐκπίπτει μὲν τοῦ κατὰ φύσιν φλέγματος τῆς ιδέας, ἕτερος δὲ εἶναι δοκεῖ χυμὸς ὄλω τῷ γένει παρὰ

⁷⁰ Galen, *PHP*, VI.1.8-9, CMG V 4,1,2, p. 362,5-8 De Lacy (V 507,9-16 K), translation by De Lacy. See Jouanna, 2002b: 234-235.

⁷¹ In *PHP* (VI.1.10-30, CMG V 4,1,2, p. 362,10-30 De Lacy (V 507,18-509,7 K)), Galen uses the example of the heart pulsating within itself as *ἐνέργεια*, but when the heart undergoes a palpitation, this is *πάθος*. See Jouanna, 2002b: 235-236.

⁷² See chapter 2 ‘Galen’s strategy for his portrayal of Hippocrates as a philosopher’, section 2.5 above.

φύσιν. οὐ μὴν οὕτως γε ἔχει τὰ ληθές. ὅστις ἂν γὰρ ὑγρὸς ἦ καὶ ψυχρὸς τὴν δύναμιν, ἐν τῷ τοῦ φλέγματος γένει περιέχεται.

For it is not possible that this is not hot and dry, or hot and moist, or cold and dry, or cold and moist but inasmuch as it is to the greatest degree thick and cold, it falls outside the form of phlegm that accords with nature and rather seems to be another humour in the whole class contrary to nature. But this is definitely not the case. For if any [humour] is moist and cold in capacity, it is encompassed within the class of phlegm.⁷³

In this passage from *On the Causes of Diseases*, we can see that there is a general class of the humour ‘phlegm’, which is defined by the pairing of the cold and moist qualities. However, there can be many different variations, such as being thicker, colder, or wetter within this class. There is also an ‘ideal’ form of phlegm that has the proper balance of the qualities that define it as being ‘phlegm’. There are other types of phlegm that may be thicker, colder or wetter than the ‘ideal’ phlegm, but as long as they possess the pairing of ‘cold and moist’ qualities, they are still classified as *κατὰ φύσιν* phlegm, although not the ‘ideal’ form. However, if there is a loss of this pairing of ‘cold and moist’, then the substance can no longer be considered *κατὰ φύσιν*, and is a ‘contrary to nature’ (*παρὰ φύσιν*) type of phlegm. This could occur if phlegm were heated or dried out. If we apply this model to black bile, then any kind of black bile that has the pairing of qualities ‘cold and dry’ comes under the category of *κατὰ φύσιν* black bile. The ideal form of black bile is the innate humour that is described in the Hippocratic *On the Nature of Man*. However, Galen’s sediment, muddy and lees of blood forms of black bile are also *κατὰ φύσιν* black bile, as these substances have the ‘cold and dry’ pairing along with the other key properties of black bile, such as thickness. In contrast, as we have seen in the passage from *On the Natural Faculties* quoted earlier (see pages 159-160 above), the acidic form of black bile that is produced by combustion or putrefaction has changed its form and faculty, resulting in the loss of its ‘cold’ quality, and therefore is classed as being *παρὰ φύσιν* black bile. So, Galen’s use of *κατὰ φύσιν* and *παρὰ φύσιν* is one of the ways that he can distinguish between categories of black bile in terms of their qualitative properties. This applies to the way that Galen describes black bile as one of the four humours

⁷³ *Caus. Morb.* VI.3 (VII 22,14-23,3 K), translation by Johnston.

that is present 'naturally' (κατὰ φύσιν) in the body in *On the Elements According to Hippocrates*.⁷⁴

Another way to interpret Galen's use of the terms κατὰ φύσιν and παρὰ φύσιν is in the context of the humours 'acting' either 'according to nature' or 'contrary to nature'. This is related to the more general description of health and disease. For example in *On the Art of Medicine*, Galen defines good health as being 'according to nature' (κατὰ φύσιν) and sickness as being 'contrary to nature' (παρὰ φύσιν). This context of health and disease from the concept of κατὰ φύσιν and παρὰ φύσιν is also found in the Hippocratic Corpus, for example in *Prognostic* and *On the Nature of Man*.⁷⁵ This idea of a natural state can also be used to define any deviation of a humour that can lead to illness and disease. This movement away from what is natural brings in the term παρὰ φύσιν, which describes an unnatural state of a humour. We can see this in Galen's *On the Causes of Symptoms* where there is a more general description of the way that the humours can 'act' contrary to nature (παρὰ φύσιν) and so cause harm in the body:

χρώματα μὲν οὖν ὑπαλλαχθήσεται, συνελόντι μὲν εἰπεῖν, διὰ τοὺς χυμοὺς ἐξισταμένους τῆς κατὰ φύσιν ιδέας, ἢ ὑπονοστοῦντας εἰς τὸ βάθος, ἢ οἷον ἐπικλύζοντας τὸ δέρμα κατὰ μέρος δὲ, διὰ τὰς τοὺς χυμοὺς ἀναγκαζούσας αἰτίας εἰς τὰς τοιαύτας ἀφικνεῖσθαι κινήσεις τε καὶ διαθέσεις. ἔστι δὲ δήπου τὰ πάθη τὰ ψυχικὰ καὶ τοῦ περιέχοντος ἡμᾶς ἀέρος αἰ εἰς θερμότητά τε καὶ ψυχρότητα μεταβολαί. καὶ αὐτοῦ τοῦ σώματος γὰρ αἰ διαθέσεις, ἢ θερμότερον ἴσχυοντος, ἢ ψυχρότερον, ἢ ἔλαττον, ἢ πλέον, ἢ ὠθούμενον ἐκτός, ἢ ἀντισπώμενον ἔσω τὸ αἷμα. τούτου δ' ἐστὶ τοῦ γένους καὶ ἡ κακοχυμία πᾶσα, κατὰ τὴν ἑαυτῆς ιδέαν ἀλλοιοῦσα καὶ τὴν ἄπαντος τοῦ σώματος χροιάν, ἐν ἰκτέροις τε καὶ ὑδέροις καὶ ἐλέφασιν καὶ σπληνός καὶ ἥπατος ἀτονίαις. ἀνάλογον δὲ καὶ αἰ καθ' ὅτιοῦν μόριον ἄχρῳαι συστήσονται. τὰ δὲ κατὰ φύσιν ὑπαλλαχθήσεται σχήματα,

⁷⁴ For example: *Hipp. Elem.* 8.14; 13.3, CMG V 1,2, pp. 126,15-16; 148,20-22 De Lacy (I 480,11-13; 502,1-4 K). See also *PHP*, VIII.5.27; 35, CMG V 4,1,2, pp. 510,10; 512,4-5 De Lacy (V 685,10-11; 687,9-10 K).

⁷⁵ Gal. *Ars. Med.* XXI (I 358,7-9 K); Hippocratic Corpus, *Prog.* X (II 134,5 L); *Nat. Hom.* 2, CMG I 1,3, p. 168,5-8 Jouanna (VI 36,1-4 L). Jouanna points out that Galen also introduces an intermediary state (ἐν μεθορίῳ) between κατὰ φύσιν and παρὰ φύσιν, which is not found in the extant Hippocratic Corpus. See Jouanna, 2002b: 241.

πληρουμένων ἀμετροτέρων, ἢ κενουμένων τῶν μορίων, ἢ τῆς οἰκείας
χώρας μεθισταμένων, ἢ παρασπωμένων.

Colours, then, will be changed, to speak briefly, as a result of humours departing from their natural form, or sinking down to the depths, or overflowing, as it were, the skin, but in specific cases as a result of causes compelling the humours to come to such movements and conditions. There are, of course, the psychical affections and the changes of the air surrounding us towards hot or cold. And there are conditions of the body itself, which has its blood hotter, or colder, or less or more, or pushed to the exterior, or drawn to the interior. Of this class also is every bad humour which changes the colour of the whole body according to its own form, in jaundice, dropsy, elephas and weaknesses of the spleen and liver. Analogous too are the discolorations which will arise in relation to any part whatever. And the natural forms will be changed when the parts are filled or evacuated more excessively, or removed from their particular place, or forcibly drawn aside.⁷⁶

This passage tells us that Galen postulated that it is possible for the humours to 'change' from their 'according to nature' (κατὰ φύσιν) state and cause disease in the body. This is supported by a similar statement in *On the Art of Medicine*, where we find that the humours can 'deviate' into states that are 'contrary to nature' (παρὰ φύσιν) and cause harm to the body, such as causing disease in the liver and other organs.⁷⁷ In terms of the Hippocratic Corpus, we can see a similar idea of κατὰ φύσιν used to define the four humours, as being substances that always remain the same in accordance with nature.⁷⁸ When it comes to the opposing term, παρὰ φύσιν, there is only one instance of it in *On the Nature of Man*, and this defines the ability of the four humours to produce disease through the effects of their innate qualities, by heating, cooling, drying and moistening.⁷⁹ This definition of κατὰ φύσιν and παρὰ φύσιν can help us understand how the innate black bile humour can cause disease in the body. This form of black bile is natural, essential and is produced from the very beginning of life and performs a necessary part of the overall humoral mixture to maintain health in the body. However, it can act 'contrary to nature' (παρὰ

⁷⁶ *Symp. Caus.* XII.1 (VII 267,9-268, K), translation by Johnston.

⁷⁷ For example, *Ars. Med.* 19 (I 356,4-5 K).

⁷⁸ *Nat. Hom.* 5, CMG I 1,3, pp. 174,11-176,1 Jouanna (VI 40,15-17 L). At the same point in the text the author also defines the four humours as remaining the same in accordance with convention (κατὰ νόμον).

⁷⁹ *Nat. Hom.* 2, CMG I 1,3, p. 168,6-8 (VI 36,1-4 L). However, I cannot find any examples in the extant Hippocratic Corpus where παρὰ φύσιν is applied directly to the definition of black bile.

φύσιν) if it causes disease in the body by either being in excess in terms of the proper humoral mixture, or becomes separated from the mixture to settle in some part of the body. The same situation applies to the sediment, muddy and lees of blood types of black bile, which we have seen are also classified as κατὰ φύσιν black bile, but are considered to be the cause of diseases such as melancholy and quartan fevers.⁸⁰ But, these types of black bile are only acting παρὰ φύσιν, they are not themselves ‘contrary to nature’ substances. However, the acidic type of black bile is a παρὰ φύσιν state and so is itself ‘contrary to nature’ and is not part of the class of the natural black bile humour that is ‘cold and dry’. Instead, this is a case where substances, such as black bile or yellow bile, have undergone a transformation of their actual form and faculty to become a black substance with acidic and corrosive properties, which is extremely harmful to the body. This substance will cause damage to the bodily tissue and will produce disease in the body. Therefore, if a physician identifies that it is present in the body, it must be removed as quickly as possible, or the patient may die. This classification of black bile, as ‘according to nature’ (κατὰ φύσιν) and ‘contrary to nature’ (παρὰ φύσιν), is also useful when it comes to explaining what appears to be a potential inconsistency in Galen’s qualitative characterisation of the black bile humour.

4.3 A question of consistency in Galen’s qualitative characterisation of black bile

We have seen that Galen has postulated different forms of the black bile humour in order to explain how various types of disease can occur and he does this by drawing upon a wider set of sources than the one type of black bile characterised in *On the Nature of Man*. However, Galen’s writing about the different kinds of black bile has raised a case for concern about a possible inconsistency in Galen’s characterisation of this humour. In Jouanna’s analysis of Galen’s work on black bile, he compares passages from *On the Natural Faculties* and *On Black Bile*. The material from *On the Natural Faculties* describes black bile as a ‘cold and dry’ humour, which is predominant in

⁸⁰ See ‘The diseases caused by black bile’, sections 6.1 and 6.2 below.

autumn, and is generally linked to a particular time of life, regimes and climates that are cold and dry. This is consistent with the characterisation of black bile that we find in the Hippocratic *On the Nature of Man*.⁸¹ However, Jouanna has identified the following passage from *On Black Bile* as a potential problem for Galen's writing on black bile:

ἦν Ἴπποκράτης φησὶν ἀναγκαίαν μὲν ἔχειν τὴν γένεσιν, ὅπως δὲ μὴ γένοιτο πλείων, ἐδίδαξεν ἐξ αὐτῶν τῶν ἐναργῶς φαινομένων ἀρξάμενος. ἔν τε γὰρ τοῖς ζώοις, ὅσα θερμότερα καὶ ξηρότερα ταῖς κράσεσιν, φαίνεται γεννᾶσθαι πλέον, ἔν τε ταῖς θερμότεραις ἅμα καὶ ξηρότεραις ὥραις τε καὶ χώραις καὶ καταστάσεσιν, ἐπιτηδεύμασί τε τοῖς μετὰ κόπων καὶ φροντίδων καὶ ἀγρυπνιῶν, ἐδεσμάτων τε τῶν παχυμερῶν καὶ ξηροτάτων.

Hippocrates says that its [black bile] production is necessary, but he advised on how it might not be produced in excess, beginning his advice with examples that were clearly visible. More black bile seems to be produced in living beings which are hotter and drier in temperament, and also at hotter and drier times of the year, and in hotter and drier places and constitutions, and in patterns of life that are wrapped in depression, stress and insomnia, and of the driest foods that consist of thick particles.⁸²

The question that Jouanna poses is: if black bile is a 'cold and dry' humour, how is it possible for it to flourish in conditions that are 'hot and dry'? Jouanna reports that there has been some concern about the presence of this description of black bile, which is defined as being produced in 'hot and dry' conditions. It is Jouanna's opinion that this has caused there to be a tendency for this characterisation to be unconsciously erased (*que l'on a tendance à gommer inconsciemment*) from our thoughts about the nature of black bile in Galen's writing.⁸³ However, I think that the best way to investigate this perceived inconsistency is to try to understand more about how Galen distinguishes between different types of black bile that have very different physical characteristics and properties.

⁸¹ *Nat. Fac.* II.9 (II 130,15-131,9 K). See Jouanna, 2009: 238-239.

⁸² *At. Bil.* 6, CMG V 4,1,1, p. 82,9-16 De Boer (V 126,1-11 K), adapted from a translation by Grant.

⁸³ Jouanna, 2009: 242-243 and 250.

We saw from the passage in *On the Natural Faculties*, which I quoted earlier (see pages 159-160 above), that the ‘contrary to nature’ (παρὰ φύσιν) black bile can be produced from the combustion (σύγκαυσις) of the ‘according to nature’ (κατὰ φύσιν) black bile. However, if we investigate Galen’s writing on black bile more generally, we find that in the presence of a ‘hot and dry’ condition in the body, black bile can be produced from the burning of different substances, not just the ‘according to nature’ (κατὰ φύσιν) black bile, but other humours as well. From now on, I am going to refer to κατὰ φύσιν black bile as ‘natural black bile’ and παρὰ φύσιν black bile as ‘altered black bile’. This part of Galen’s theory of black bile is complicated because we find slightly different explanations for the production of black bile in a range of treatises. So far, from *On the Natural Faculties*, we know that a transformation occurs due to the heating of natural black bile to create the altered black bile with its acidic properties. If we move on to *On Black Bile*, we find the following statement by Galen:

καὶ διὰ τοῦτο ἔοικεν ἡ γένεσις αὐτῆς ὀλέθριος ὑπάρχειν ὑπεροπτηθέντος τοῦ μέλανος χυμοῦ συμβαίνουσα. πολὺ δὲ δήπου τῆς δε τὴν ἐκ τῆς ξανθῆς χολῆς ὑπεροπτηθείσης γινομένην μέλαιναν ὀλεθριωτέραν εἶναι νομιστέον, ὅσῳπερ καὶ ὁ χυμὸς τοῦ χυμοῦ δραστικώτερος, ἢ ξανθὴ χολὴ τῆς οἴου ὑποστάθμης τοῦ αἵματος.

Its [black bile’s] formation therefore appears to be destructive, the result of the black humour being heated too much. You must remember, of course, that black bile which results from an excessive heating of yellow bile is more destructive than the black bile I mentioned before, just as one humour is more drastic in its action compared with another humour; such as yellow bile [compared with] sediment of blood.⁸⁴

In this passage Galen refers to two different forms of altered black bile. One type is formed from the heating of the black humour (μέλας χυμός), which, as we have seen from the passage in *On the Natural Faculties* above (see pages 159-160), is the black bile that resembles sediment or lees in blood. The other kind of altered black bile comes from the heating of yellow bile. However, if we investigate other texts by Galen, we find a slight change in the way that he

⁸⁴ *At. Bil.* 3, CMG V 4,1,1, p. 75,6-12 De Boer (V 112,1-6 K), adapted from a translation by Grant.

describes which substances are heated to produce black bile. For example in *Commentary on Prorrhethics I*, *Commentary on Epidemics* and *Commentary on Aphorisms*, there are clear statements about a dual production of black bile, either from the roasting of yellow bile or *thick* blood.⁸⁵ There are two ways to interpret what Galen means by thick blood here. One is that he is referring to a thicker type of the pure blood humour. This is plausible, as Galen does discuss the presence of a thicker and thinner type of the pure blood humour in *On Black Bile*.⁸⁶ The other possibility is that Galen actually means the thick part of the composite blood, which is due to the presence of the natural black bile in the humoral mixture. Jouanna takes the first case, which implies that Galen has developed a theory based on the production of black bile from the excessive heating of yellow bile or blood in these treatises. He suggests that in *On the Natural Faculties*, Galen had only mentioned the production of black bile from the combustion of either natural black bile or from yellow bile. Whereas, in *On Black Bile*, Galen's view is that black bile is produced from the roasting of yellow bile or blood.⁸⁷

However, what we find is that both types of substance, pure blood and natural black bile in blood, are used by Galen when he refers to the production of altered black bile by combustion. I will start with the evidence that it is the natural black bile in blood, which is heated to produce altered black bile. We have already seen in the passage from *On Black Bile*, quoted above, that Galen describes one of the substances that is heated as the 'sediment' (ὑποστάθμης) of blood. This is the type of characterisation of black bile that Galen uses for his description of this humour. Further to this, in *Commentary on Prognostic*, Galen refers to the thick part of the blood as like the 'lees of wine' (τῶν οἴνων τρυγί); again we have seen that this is how Galen characterises black bile (see section 4.1 above).⁸⁸ On the other hand, there are examples where Galen seems to be discussing the heating of the pure blood humour. For example, in *On Mixtures*, we find the following: '... just as one who was previously hot and dry has

⁸⁵ *Hipp. Prorrh.* I.4, CMG V 9,2, p. 14,18-22 Diels (XVI 512,11-16 K); *Hipp. Epid.* VI.VI.3, CMG V 10,2,2, p. 328,8-10 Wenkebach (XVIIb 321,18-322,2 K); *Hipp. Aph.* III.22 (XVIIb 622,4-6 K). See Jouanna, 2009: 249.

See Jouanna, 2009: 249.

⁸⁶ *At. Bil.*, 2, CMG V 4,1,1, p. 72,23 De Boer (V 107,4-5 K).

⁸⁷ Jouanna, 2009: 249-250.

⁸⁸ *Hipp. Prog.* III.32, CMG V 9,2, p. 356,4-11 Heeg (XVIIIb 278,4-13 K). See Jouanna, 2009: 249 (note 35).

produced a very great quantity of black bile from the burning of his blood' (...οἷον εἴ τις ἔμπροσθεν ὑπάρχων θερμὸς καὶ ξηρὸς ἐκ συγκαύσεως τοῦ αἵματος πλείστην ἐγέννησε τὴν μέλαιναν χολήν).⁸⁹ There is also the following content in Galen's *On the Causes of Symptoms*, which discusses the ways that black bile might be produced from blood:

οὐ γὰρ ἀποψυχόμενον τὸ αἷμα γεννᾷ τὴν μέλαιναν χολήν, ὥσπερ ἐπὶ τοῦ θρόμβου, ἀλλ' ὑπεροπτόμενον, διὸ καὶ τὴν στιλπνότητα διασωζομένην ἔχει. οὐ γὰρ ὡς ὁ θρόμβος, ἀποψυχθέντος τοῦ αἵματος, οὕτω καὶ ἡ μέλαινα χολή τὴν γένεσιν ἔχει· τούναντίον γὰρ ἅπαν ἐξ ὑπεροπτήσεώς τε καὶ ζέσεως, οἷον τέφρα τις ἡ μέλαινα χολή συνίσταται, ψυχρὰ μὲν, ὅτι γεώδης, θερμότητος δὲ μετέχουσα, καθάπερ ἡ τέφρα τε καὶ τὸ ὄξος.

For blood that has been cooled does not generate black bile, as in the case of a clot, but when overheated has, on this account also, a preserved brightness. For black bile also has a genesis in this way, not like a clot, which is blood that has been cooled. On the contrary, black bile like ash arises entirely from overheating and boiling. It is cold in that it is earth-like, but partakes of heat as do ash and vinegar.⁹⁰

The part about the clotting of blood is reminiscent of Galen's explanation in *On Black Bile* of the way to identify black blood, which has an ability to congeal that black bile does not (see pages 175-176 below).⁹¹ This passage tells us that blood can be heated to the point that black bile is produced. In addition, the comparison with ash is like Galen's description of the burnt black bile at the end of the passage from *On the Natural Faculties* (see pages 159-160 above), but this time the ashes retain both the qualities of 'cold' and 'hot'. The reference to vinegar provides the altered black bile with the property of acidity that we have seen already in *On the Natural Faculties* and *On Black Bile*.

For Jouanna, all these examples are part of what he considers to be an overall problem of inconsistency in terms of the qualitative properties of black bile. This corresponds to the difference between the 'cold and dry' black bile in the Hippocratic *On the Nature of Man*, and these passages from Galen's treatises

⁸⁹ *Temp.* II.6 (I 643,1-3 K), translation by Singer.

⁹⁰ *Sympt. Caus.* VII.3 (VII 245,17-246,6 K), translation by Johnston. See Jouanna, 2009: 249 (note 35).

⁹¹ *At. Bil.* 3, CMG V 4,1,1, p. 74,16-17 De Boer (V 110,14-66 K).

where black bile is produced in ‘hot and dry’ conditions. Jouanna’s suggestion for a resolution to this apparent inconsistency can be found in Galen’s *Commentary on On the Nature of Man*. He refers specifically to a passage from this text, where Galen makes the following remark:

ἐγένετο δ’ εἰκότως τοιοῦτος διὰ τὸ προκατωπτῆσθαι τοὺς χυμοὺς τῷ θερεῖ. τὸ δ’ ὑπόλειμμα τῶν ὀπτηθέντων, ὅταν δηλονότι σβεσθῇ τὸ θερμόν, αὐτίκα γίνεται ψυχρόν τε καὶ ξηρόν, ψυχρόν μὲν διὰ τὴν τοῦ θερμοῦ σβέσιν, ξηρόν δέ, ὅτι κατὰ τὴν ὀπτησιν ἐξεδαπανήθη πᾶν τὸ ὑγρὸν ἐξ αὐτοῦ.

And this [black bile] arises likewise from the humours being cooked during the summer. And what remains from the cooking, when the heat is clearly extinguished, then becomes cold and dry; cold on account of the heat being extinguished, dry because of all the wetness being driven off during the cooking.⁹²

According to Jouanna, this passage shows an attempt by Galen to resolve the issue of the difference between black bile in terms of the paired qualities ‘cold and dry’ and ‘hot and dry’. This is because Galen shows that in summer (‘hot and dry’ environment) the humours become roasted and produce a residue that is the black bile humour. However, when the heat is gone, the residue becomes colder and so the resulting residue is cooled and becomes ‘cold and dry’. He suggests that this is the place where Galen resolves the missing ‘cold’ quality that is absent in *On Black Bile*.⁹³ His conclusion is that Galen has developed an overall theory of black bile, which incorporates the innate, essential humoral black bile from the Hippocratic *On the Nature of Man*, with a ‘blackened’ and ‘non-innate’ form of black bile, which comes from the influence of another Hippocratic treatise, *Airs, Waters and Places*.⁹⁴ The passage that Jouanna identifies is from the tenth section of this text:

Ἦν δὲ βόρειόν τε ἢ καὶ ἄνυδρον, καὶ μήτε ὑπὸ κύνα ἔπομβρον, μήτε ἐπὶ τῷ ἀρκτούρω, τοῖσι μὲν φλεγματῆσι φύσει ξυμφέρει μάλιστα, καὶ τοῖσιν ὑγροῖσι τὰς φύσιας, καὶ τῆσι γυναιξίν· τοῖσι δὲ χολώδεσι τοῦτο

⁹² *HNH*, I.34, CMG V 9,1, p. 45,26-28 Mewaldt (XV 86,9-12 K), translation by Lewis.

⁹³ Jouanna also brings in the content of *On the Causes of Symptoms*, which I quoted earlier, see page 170 above. He also points to the content of *Hipp. Prog.* (II.46, CMG V 9.2, p 297,4-5 (XVIIIb 175,16-176,2 K)) and *PHP* (VIII.4.21, CMG V 4,2,1, p. 502,22 De Lacy (V 676,15 K)) as similar examples where the traditional cold and earthy qualities are applied to black bile in this context. See Jouanna, 2009: 253-254.

⁹⁴ Jouanna, 2009: 254.

πολεμιώτατον γίγνεται· λίην γὰρ ἀναξηραίνονται, καὶ ὀφθαλμίαι αὐτέοισιν ἐπιγίγνονται ξηραὶ, καὶ πυρετοὶ ὀξέες καὶ πολυχρόνιοι, ἐνίοισι δὲ καὶ μελαγχολία. Τῆς γὰρ χολῆς τὸ μὲν ὑγρότατον καὶ ὑδαρέστατον ἀναλοῦται, τὸ δὲ παχύτατον καὶ δριμύτατον λείπεται, καὶ τοῦ αἵματος κατὰ τὸν αὐτὸν λόγον.

For if the weather be northerly and dry, with no rain either during the Dog Star or at Arcturus, it is very beneficial to those who have a phlegmatic or humid constitution, and to women, but it is very harmful to the bilious. For these dry up overmuch, and are attacked by dry ophthalmia and by acute, protracted fevers, in some cases too by melancholies. For the most humid and watery part of the bile is dried up and is spent, while the thickest and most acrid part is left, and similarly with blood.⁹⁵

We find that this passage is quoted by Galen in his *Commentary on Aphorisms*, where he uses this content to discuss the way that Hippocrates describes the cause of some illnesses, such as ophthalmia, acute fevers and certain melancholic related diseases.⁹⁶ We can see the reason for Jouanna's reference to this content from *Airs, Waters and Places*, as the hot weather causes a heating and drying of bile and blood. However, there is no reference to the type of extreme heating or 'roasting' that Galen uses in his explanation that we have seen above. In addition, *Airs, Waters and Places*, although considered to be authentic by Galen, does not contain any explicit reference to the black bile humour itself.⁹⁷ In fact, we only have this single instance of the term 'melancholies', which in Galen's medical theory is related to the presence of the black bile humour in the body. Further to this, Jouanna has identified another possible influence on Galen's development of black bile that is produced from the combustion of other substances. This time we go beyond the Hippocratic Corpus, to the work of Rufus of Ephesus. As Jouanna points out, Galen does refer to Rufus as one of the prominent physicians writing about black bile at the start of *On Black Bile*. Jouanna associates this material from the work of Rufus on melancholy with what Galen says in his *Commentary on On the Nature of Man* (see pages 170-171 above) because of the similarity of the language used for the roasting and cooling of yellow bile.⁹⁸ Jouanna refers to a passage

⁹⁵ *Aer.* X (II 50,6-14 L), translation by Jones. See Jouanna, 2009: 254 (note 44).

⁹⁶ Anastassiou and Irmer, 1997, volume II.1, pp. 42-43.

⁹⁷ For Galen's opinion of the authenticity of *Airs, Waters and Places*, see chapter 3 'Galen's opinion on the authenticity of the individual treatises in the Hippocratic Corpus', section 3.2.6 above.

⁹⁸ *At. Bil.* 1, CMG V 4,1,1, p. 71,12-14 De Boer (V 105,3-4 K). See Jouanna, 2009: 254-255.

attributed to Rufus, which reports that there are two types of melancholy, the second of which is caused by the excessive roasting of yellow bile, which is then described as being cooled after the extreme heating.⁹⁹ We shall see in my analysis of Galen's explanation of the melancholy illness in relation to the black bile humour that there are many such similarities to Rufus' writing on the cause of melancholy.¹⁰⁰ From this information, Jouanna attempts to resolve the apparent inconsistency between black bile as a 'cold and dry' substance in *On the Natural Faculties* and the production of black bile from a 'hot and dry' environment in *On Black Bile*. He argues that the distinction between the ideal form of humoral black bile and other types of black bile is not clearly defined in Galen's *On Black Bile* and so this is a mistake on Galen's part that he then had to put right. The result is that Galen achieved this correction in his *Commentary on On the Nature of Man*, which Jouanna regards as being consistent with the content on black bile in the Hippocratic *On the Nature of Man*. But then Galen emphasises the restoration of the 'cold' quality to black bile by a cooling process, which occurs after the initial heating process that produced the harmful type of black bile. This provides the pathological black bile with the quality of 'cold', which Jouanna believes Galen had to reinstate because it is missing from his description in *On Black Bile*.¹⁰¹

In terms of this analysis by Jouanna, I agree that Galen had developed a theoretical model of black bile that incorporates the existence of a number of distinct versions of black bile. Galen needed to distinguish between different types of black bile in order to account for cases where black bile functions as a humour that promotes health and also when black bile is harmful to the body and causes disease. We can see that one particular form of black bile is produced when the humours, natural black bile, yellow bile or blood become extremely heated in the body. I agree also with the idea that Galen is attempting to bring together material relating to both of these types of black bile from a wide variety of sources, such as *On the Nature of Man, Airs, Waters and*

⁹⁹ Rufus of Ephesus, F11[22-24] (Pormann) = Aëtius, *Medical Books*, vi. 9 (frg. 70 (Daremburg)). See Jouanna, 2009: 255 (note 45). Aëtius of Amida (fl. c. 500-550 CE) composed the *Medical Books*, which contains a large amount of 'quotes' from Rufus' *On Melancholy*. See Pormann, 2008: 13.

¹⁰⁰ For more on Galen's view of the association between black bile and the melancholy illness, see chapter 6 'The diseases caused by black bile', section 6.1 below.

¹⁰¹ Jouanna, 2009: 255-256.

Places, and other material such as the cause of melancholy attributed to Rufus of Ephesus. However, I disagree with Jouanna's conclusion relating to the superiority of the content on the characterisation of black bile in the *Commentary on On the Nature of Man* and *On the Natural Faculties* in comparison with that of *On Black Bile*. In my opinion, this puts too much emphasis on the Hippocratic *On the Nature of Man*, as the most important basis for Galen's development of his theory of the black bile humour. I do not think that it is necessary to try to resolve this apparent inconsistency in terms of 'cold and dry' and 'hot and dry' in Galen's writing about black bile. In my opinion, it is more likely that Galen is responding to different arguments in the different treatises that we have discussed so far. Therefore, in both *On the Natural Faculties* and *On Black Bile*, Galen is creating a polemical argument against what he considers as the incorrect views of rivals, such as Erasistratus and his followers, on the subject of black bile. The difference between these two treatises is that Galen emphasises the description of black bile as a 'cold and dry' humour in *On the Natural Faculties* because it is useful to his argument against Erasistratus. In contrast, Galen does not need to mention that black bile has the quality of 'cold' in *On Black Bile* because it is not necessary for his argument in this treatise. In the case of Galen's commentaries on texts from the Hippocratic Corpus, we find that he is offering explanations and interpretations of what he considers to be Hippocrates' opinion on black bile. Therefore, when he is discussing the content of *On the Nature of Man*, he is engaging with what is actually in this text and he writes about the combustion of the other humours to produce black bile, as if this is what Hippocrates meant when he wrote the section on the predominance of the humours in different seasons. In the other commentaries, Galen takes the opportunity to explain the content of the texts in terms of his view of the production of the altered form of black bile from the combustion of natural black bile, yellow bile or blood. Again, Galen's strategy is to interpret the content, as if this is what Hippocrates originally meant to say. The pairing of qualities are retained by Galen throughout, as the natural black bile is 'cold and dry' and the altered form of black bile is changed in its form and faculty to become acidic and hot. In some circumstances Galen explains that the natural form of black bile, which is 'cold and dry', can be created, or that the 'cold and dry' qualities are restored to the altered form of black bile. The latter can occur in the situations where the extreme heat is removed, and there is a

cooling process. However, on this final point Galen is not so consistent or precise, which is the result of his flexibility of using slightly different characterisations of black bile in various types of arguments. However, I do not believe that Galen was concerned too much about this issue of apparent inconsistency between different types of black bile in regards to the qualities. Instead, I believe that Galen's main focus for writing about black bile in this way is within the context of providing physicians with the information necessary to identify and treat medical conditions that involve the presence of large amounts of black bile in the body. For Galen, this was particularly important when the altered form of black bile is present in the body.

4.4 Galen's explanation of why black bile can be so harmful to the body

In this section I am going to focus on Galen's characterisation of the altered form of black bile. This type of black bile is very important in Galen's biological theory of the cause of disease because it has specific harmful properties, which we have already seen in a passage from *On the Natural Faculties* quoted above (see pages 159-160). Here we found that Galen described altered black bile in terms of its acidity (ξύστικόν) and corrosive effects (ὀξύωδη), along with fermentation and bubbling (ζύμωσίν τε καὶ ζέσιν). This is in contrast to natural black bile, which does not produce the seething and fermentation on the ground (ζέσιν τε καὶ ζύμωσιν τῆς γῆς). The reason why this information is so important for Galen is that it can be used to tell the difference between substances found in evacuated material, such as vomit and faeces. For example in this passage from *On Black Bile* about the difference between black bile and other black substances:

Ὅτι μὲν οὖν οὐ πῆγνυται, διώριστα μὲν ἀπὸ τοῦ μέλανος αἵματος, οὐ μὴν ἤδη γε καὶ ἀπὸ τῶν μελάνων ἰδίως ὀνομαζομένων. ἐμείται τε γὰρ καὶ διαχωρεῖται πολλάκις τοιαῦτα πάμπολυ διαφέροντα τῆς μελαίνης χολῆς οὐ τῇ δυνάμει μόνον, ἀλλὰ καὶ ταῖς αἰσθηταῖς

ποιότησιν. οὔτε γὰρ στρουφνότητος οὔτε ὀξύτητος μετέχει σαφῶς ταῦτα τῆς μελαίνης χολῆς κατὰ τε τὴν γεῦσιν ἐμφαινούσης τοῖς ἐμοῦσιν αὐτὴν καὶ κατὰ τὴν ὄσφρησιν οὐκ ἐκείνοις μόνον, ἀλλὰ καὶ τοῖς ἄλλοις. οὐ μὴν οὐδὲ ζυμοῖ τὴν γῆν, ὡς ἐκείνη.

Therefore, because [black bile] cannot be congealed, it can be distinguished from the black blood, but not from anything particularly named black. For such a thing often is vomited and is excreted through the bowels and is very much different from black bile, not only in its capacity, but in its perceptible qualities. For clearly such a thing shares neither of the sourness nor acidity of black bile, which exhibits [these properties], by way of the taste for those who vomit and by way of smell, not only for that person, but for all those [around him]. Nor does it cause effervescence with the ground, as black bile does.¹⁰²

The issue raised by Galen here is how it is possible to distinguish between substances coming out of the body that all appear to be black. The first comparison that Galen makes is between black blood and altered black bile. Now black blood will be liquid at first and then will congeal in the way that it can be seen to do naturally. However, Galen remarks that altered black bile can be distinguished from this blood, as it does not congeal in this way. This is supported by a similar argument that Galen makes when he provides information on the way to distinguish black blood from altered black bile in his *Commentary on Aphorisms*. Just as in the previous example, black blood is distinct, as it pours forth (κεχύσθαι) and is congealed (πεπηγέναι). In contrast, altered black bile when poured, solidifies apart (χωρὶς πεπηχθαι), which is different from the way that blood congeals. The resultant altered black bile has a shiny black appearance (τῷ στίλβον ἔχειν τὸ μέλαν), is pungent like vinegar (δακνώδες εἶναι καθάπερ ὄξος) and importantly reacts with the earth to form bubbles (ζυμοῦν τὴν γῆν).¹⁰³ We have seen that *Aphorisms* was considered by Galen to be one of the best examples (alongside *Prognostic* and *Epidemics I* and *III*) of Hippocrates' writing.¹⁰⁴ Therefore, Galen is describing altered black

¹⁰² *At. Bil.* 3, CMG V 4,1,1, p. 74,16-23 De Boer (V 110,14-111,6 K), adapted from a translation by Grant.

¹⁰³ *Hipp. Aph.* IV.23 (XVIIb 687,1-688,4 K). At this point Galen is referring to the parts of the Hippocratic *Aphorisms* (IV.21-23 (IV 508,5-510,7 L)) that have observations of evacuated matter during illnesses, which can be described as being black; sometimes they seem like black blood, black bile, or simply black matter. Galen stresses the importance for the physician to be able to accurately tell the difference, as this affects diagnosis and prognosis of the illness.

¹⁰⁴ See chapter 3 'Galen's opinion on the authenticity of the individual treatises in the Hippocratic Corpus', sections 3.2.2-3.2.4 above.

bile when he is interpreting the content of a passage from *Aphorisms*. It is important that Galen is able to draw the reader towards the conclusion that Hippocrates is in agreement with the existence of this altered black bile, which Galen wants to use in his biological theory. However, there are no other comparisons between black blood and black bile in terms of the ability to be congealed (πήγνυται) in any of the other extant Galenic treatises, or in the extant Hippocratic Corpus. So it appears from what we have on his work that Galen has only raised this issue of the difference of coagulation between black bile and black blood in *On Black Bile* and in his commentary on a passage from the Hippocratic *Aphorisms*. It seems that other properties of the altered black bile are more important in Galen's writing for its correct identification.

The inability to congeal also applies to the other black non-blood substances in vomit and faeces. So, as we see in the passage quoted above from *On Black Bile*, the way to tell whether the black substances are black bile or not can be determined from their effect on the body and from their odour. So Galen says that the black matter can be distinguished from what is actually altered black bile, because it does not have the same 'bite' (δῆξις) or produce the unpleasant smell (ὄσμην δυσώδη) that is associated with altered black bile.¹⁰⁵ In addition, altered black bile has a distinct sourness (στρυφνότητος) and acidity (ὀξύτητος), which can be detected by taste and smell. Galen is particularly concerned about the possibility of a similarity between vinegar and altered black bile, which could lead to a misidentification of altered black bile and so he provides advice on how to tell the difference between them in *On Black Bile*:

ἀλλ' εἰ καὶ κατὰ τοῦτο ἔοικεν ὄξει δριμυτάτῳ, τῷ παχυμερεῖ τῆς οὐσίας ἐναντιώτατα διάκειται καὶ διὰ τοῦτο, οἷς ἂν ὁμίληση τοῦ σώματος μέρεσιν ἄκρατος, ἔλκοι πάντως αὐτὰ διαβιβρώσκουσα. τὸ μὲν γὰρ ὄξος, ἅτε λεπτομερὲς ὄν, διεξέρχεται, τὸ δὲ τῆς μελαίνης χολῆς πάχος ἔδραν μόνιμον αὐτῇ παρέχον αἴτιον τῆς ἀναβρώσεως γίνεται.

But if according to this, black bile appears similar to very acidic vinegar, it is constituted with thick particles completely opposite of the substance [of vinegar], when it is neat in contact with parts of the body, it ulcerates and

¹⁰⁵ *At. Bil.* 4, CMG V 4,1,1, pp. 76,29-77,1 De Boer (V 115,10-14 K).

corrodes the body in all ways. For the vinegar, seeing that it is composed of fine particles, it passes through [the body], but the thickness of the black bile provides lasting resting places for it which becomes the cause of the corrosion.¹⁰⁶

So, altered black bile may be similar to very sharp vinegar in terms of acidity, but very different in its structure. For his description of altered black bile, Galen uses the term *παχυμερής*, which means the substance of altered black bile consists of thick parts. This is the opposite of the description of vinegar, where Galen uses the term *λεπτομερής*, which means consisting of small parts. Elsewhere, we find that Galen asserts that substances consisting of thick parts are not able to react as much as those with small parts. One example, from *On Uneven Distemper*, compares yellow bile to black bile; the former is made of small parts and is easily changed by things it comes into contact with, while the latter, made of thicker parts is not so easily changed.¹⁰⁷ This type of language that refers to large and small parts is not found in the Hippocratic Corpus, but the notion of the difference in viscosity of the four humours implies that the density of the fluids affects their ability to flow freely through the body. We also can find some comparable examples in the pseudo-Aristotelian *Problemata*. There is a passage in this text, which tells us that headaches in the morning are worse when wine is mixed, as unmixed wine contains thick parts, which cannot travel as far as mixed wine.¹⁰⁸ This is a similar context to the way that Galen defines black bile as containing thick parts. The comparison between these two texts is further strengthened by the use of the same term *ἄκρατος*, which Galen uses to describe the pure black bile and the author of the passage from the *Problemata* uses for unmixed wine. We also find the use of the term *λεπτομερής* in another section in the *Problemata*, where there is an explanation of substances that can sting the outside of the body and others the inside. This describes olive oil as having the smallest particles (*λεπτομερέστατον*), but in the next sentence names vinegar as the medicine of

¹⁰⁶ *At. Bil.* 3, CMG V 4,1,1, pp. 74,23-75,1 De Boer (V 111,6-12 K), adapted from a translation by Grant.

¹⁰⁷ *Inaeq. Int.* III (VII 741,4-10 K), see also *Symp. Caus.* VI.4 (VII 119,5-16 K).

¹⁰⁸ Pseudo-Aristotle, *Pr.* III.14, 873a5-8. Thomas' analysis suggests that a large amount of material in the *Problemata* is drawn from the Hippocratic Corpus, particularly from *Airs, Waters and Places*, *On Regimen II* and *Epidemics VI*. There are also some influences from *On the Sacred Disease*, *On Breaths*, *On Diseases I, II and III*, *Aphorisms* (section 6) and *On Affections*. See Thomas, 2015: 95-96.

the flesh. By implication, vinegar too must contain small particles, which can pass through the loose texture of the flesh inside the body.¹⁰⁹ I cannot say that Galen is directly influenced by the content of some of the passages from *Problemata* for his characterisation of the altered black bile in terms of particles and in relation to his comparison with vinegar. What I can say is that this type of language is not used by the authors of the Hippocratic Corpus, but it is used by later writers, such as the author of *Problemata* in the early Hellenistic period. This is an important part of Galen's characterisation of altered black bile, as it provides a mechanism to differentiate this state of the humour from similar acidic substances, such as vinegar.

We have seen from the two passages quoted from *On Black Bile* (see pages 175-176 and 177-178) above that some of the most important characteristics of altered black bile are its sourness (στρουφνότητος), acidity (ὀξύτητος) and its ability to produce effervescence (ζυμοῖ). In fact, we have seen a similar description of altered black bile by Galen in the long section from *On the Natural Faculties* that I quoted above (see pages 159-160). The particular part that is important is '...because it also becomes acidic like vinegar and corrodes the animal's body, and the ground, if it be poured out upon it, and it produces a kind of fermentation and seething, accompanied by bubbles, ...' (... ὅτι καὶ δριμύς ὁμοίως ὄξει γίγνεται καὶ ξύει γε τὸ σῶμα τοῦ ζώου καὶ τὴν γῆν, εἰ κατ' αὐτῆς ἐκχυθείη, καὶ τινα μετὰ πομφολύγων οἶον ζύμωσίν τε καὶ ζέσιν ἐργάζεται ...).¹¹⁰ Starting with the description of altered black bile in terms of the property of acidity, there are references to this humour being acidic (ὀξύ) in Galen's *Commentary on On the Nature of Man* and *On the Utility of the Parts*. However, in both of these texts there is no reference to the effervescent effect of altered black bile when in contact with earth.¹¹¹ But we do find this characteristic of effervescence elsewhere in Galen's writing. For example, we can find references to the 'bubbling' effect of altered black bile in some of Galen's other works, such as *On the Therapeutic Method*, *Commentary on On*

¹⁰⁹ Psuedo-Aristotle, *Pr.* XXXI.21, 959b5-14.

¹¹⁰ *Nat. Fac.* II.9 (II 135,20-136,4 K), adapted from a translation by Brock.

¹¹¹ *HNH*, I.32, CMG V 9,1, p. 42,21-23 Mewaldt (XV 80,8-10 K). There is another example of this description in Galen's *UP* (V.4 (III 361,13-14 K)), where black bile is described as being sour (στρουφνή) and sharp (ὀξεῖα).

Regimen in Acute Diseases and Commentary on Aphorisms.¹¹² This is not the type of black bile that is described in the Hippocratic *On the Nature of Man*, but we do find that there are some comparable examples in other Hippocratic treatises.

The Hippocratic Corpus does not contain many references to substances having the properties of an acid in a similar way to how Galen describes altered black bile. However, we can find a couple of passages where there are some examples of these properties being exhibited by certain types of substance. For example, in the Hippocratic *On Regimen in Acute Diseases*, there is the following comparison between black bile and yellow (bitter) bile:

Ἐν κεφαλαίῳ δὲ εἰρησθαι, αἱ ἀπὸ ὄξεος ὀξύτητες πικροχόλοισι μᾶλλον ἢ μελαγχολικοῖσι συμφέρουσι· τὰ μὲν γὰρ πικρὰ διαλύεται καὶ ἐκφλεγματοῦται ὑπ' αὐτοῦ οὐ μετεωρίζόμενα· τὰ δὲ μέλανα ζυμοῦται καὶ μετεωρίζεται καὶ πολλαπλασιοῦται· ἀναγωγὸν γὰρ μελάνων ὄξος· γυναιξὶ δὲ τὸ ἐπίπαν πολεμιώτερον ἢ ἀνδράσιν ὄξος· ὑστεραλγὲς γὰρ ἐστίν.

It is said in summary, the acids from vinegar benefit those who suffer from bitter bile more than those who suffer from black bile. For the bitter humours are dissolved and turned into phlegm by it, not being brought up; but the black humours are fermented, brought up and multiplied, vinegar being apt to raise black humours. Vinegar on the whole is more harmful to women than men, for it is a cause of pain in the womb.¹¹³

In this passage, the effects of vinegar are being described as acting on two types of people, those suffering from 'bitter bile' (πικροχόλος) and those 'black bile' (μελαγχολικός) related conditions. After the initial sentence, we have the substances denoted as 'bitter' (πικρὰ) and 'black' (μέλας) without the use of the term for 'bile' (χολή).¹¹⁴ We have in this passage an association between black bile and fermentation (ζυμοῦται). There is also the effect of vinegar

¹¹² See *MM*, XIV.9 (X 974,11-14 K); *HVA*, III.38, CMG 9,1, p. 251.11-16 Helmreich (XV 693,6-12 K); *Hipp. Aph.* IV.24 (XVIIb 688,5-14 K).

¹¹³ *Acut.*, LXI (16L) (II 356,8-358,6 L), adapted from a translation by Jones.

¹¹⁴ It is typical of this treatise to use this terminology for yellow bile and black bile and in fact there is no reference to 'black bile' as μέλαινα χολή, instead we find just 'black' (μέλας) or 'melancholic' (μελαγχολικός). However, Galen believed that *On Regimen in Acute Diseases* was a genuine work by Hippocrates and so would have accepted that these terms relate to the black bile humour. See chapter 3 'Galen's opinion on the authenticity of the individual treatises in the Hippocratic Corpus', section 3.2.5 above.

(ὄξις) on black bile, where they both share the property of acidity. This is similar to Galen's description of altered black bile in both *On Black Bile* and *On the Natural Faculties*. However, Galen does not quote or reference this Hippocratic passage from *On Regimen in Acute Diseases* in either *On Black Bile* or *On the Natural Faculties*. But he does refer to it in *On the Powers of Simple Drugs*, where he attributes this statement about the beneficial and harmful effects to people suffering from yellow bile and black bile respectively. In addition to this, there is a brief reference to this passage in Galen's *Commentary on On Regimen in Acute Diseases*. But this only mentions those suffering from black bile and does not include any further detail about the importance of fermentation or vinegar for our understanding of altered black bile.¹¹⁵ This means that this passage from *On Regimen in Acute Diseases* has been acknowledged by Galen as being important for the overall understanding of how two humours, such as yellow bile and altered black bile, can act differently in the body. This is significant, as we find that this Hippocratic text is distinctly characterising black bile in terms of acidity and effervescence, which Galen emphasises as the particular properties of altered black bile in *On Black Bile* or *On the Natural Faculties*. This shows that Galen is characterising altered black bile in a way that is consistent with what we find in this passage from *On Regimen in Acute Diseases*. This is a way that Galen can bring together information on black bile from two different texts in the Hippocratic Corpus, such as *On the Nature of Man* and *On Regimen in Acute Diseases*, which seem to be about two completely separate substances. However, for Galen, the two texts contain information that he can use for the two different states of black bile. So we find what Galen defines as the properties of ideal natural black bile in *On the Nature of Man*, and what he considers to be the properties of altered black bile in *On Regimen in Acute Diseases*.

Another text from the Hippocratic Corpus, which contains some material relating to the types of black substance that have properties of acidity and effervescence, is *On Diseases II*. For example, the following passage contains this description of evacuated waste substances from the body:

¹¹⁵ *SMT*, I.33 (XI 438,12-14 K); *HVA*, III.61 CMG V 9,1 pp. 269,22-270,7 Helmreich (XV 730,17-731,16 K)). See Anastassiou and Irmer, 1997, volume II.1, pp. 3-4.

Μέλαινα· μέλαν ἐμέει οἶον τρύγα, τοτὲ δὲ αἱματῶδες, τοτὲ δὲ δοριμὸν οἶον ὄξος, τοτὲ δὲ σίαλον καὶ λάππην, τοτὲ δὲ χολὴν χλωρὴν. καὶ ὅταν μὲν μέλαν καὶ τὸ αἱματῶδες ἐμέη, δοκέει οἶον φόνου ὄζειν, καὶ ἡ φάρυγξ καὶ τὸ στόμα καίεται ὑπὸ τοῦ ἐμέσματος, καὶ τοὺς ὀδόντας αἰμωδιᾷ, καὶ τὸ ἔμεσμα τὴν γῆν αἴρει.

Black disease: he vomits up black material that is like the lees of wine, sometimes blood-like, sometimes acidic like vinegar, sometimes saliva and scum, sometimes yellow-green bile. When he vomits up black blood-like material, it seems to smell of gore, his throat and mouth are burned by the vomitus, his teeth are set on edge, and the vomit raises the ground.¹¹⁶

This is the type of situation that Galen was concerned about, where we need to identify harmful substances like altered black bile from a mixture of waste matter. The first thing to note here is that this Hippocratic writer of *On Diseases II* does not refer to black bile explicitly in this passage. In fact, black bile (μέλαινα χολή) is only directly referred to once in this whole treatise.¹¹⁷ However, there is a reference by Galen to this passage from *On Diseases II*, in his *Glossary of Hippocratic Terms*, where he makes an association between this ‘black disease’ and black bile:

μέλαινα· λέγεται καὶ νόσος οὕτως ἀπὸ μελαίνης χολῆς συνισταμένη.

Black disease: the disease itself is said to be produced by black bile.¹¹⁸

This suggests that these vomited substances, produced when a person is suffering from the ‘black disease’, can be considered to share the most important characteristics with Galen’s altered black bile. For example, we have some part of the evacuated substances being described as being acidic like vinegar (δοριμὸν οἶον ὄξος), which we have seen in Galen’s characterisation of altered black bile in treatises such as *On Black Bile* and *On the Natural Faculties*. Alongside this, we have the phrase ‘the vomit raises the ground’ (τὸ ἔμεσμα τὴν γῆν αἴρει), which Potter interprets as being the same meaning as ‘causing the earth to froth and bubble’.¹¹⁹ Combining these two properties of

¹¹⁶ *Morb. II*, LXXIII (VII 110,14-19 L), adapted from a translation by Potter.

¹¹⁷ *Morb. II*, VI (VII 14,11 L).

¹¹⁸ *Gloss. XIX* 120,11-12 K.

¹¹⁹ Potter, 1988a: 329 (note 1).

acidity of vinegar and causing the ground to ‘bubble’ means that this description of part of the substance described in *On Diseases II* matches closely with Galen’s characterisation of altered black bile. However, as I have discussed earlier, Galen may have rejected the Hippocratic authenticity of *On Diseases II*. There is no complete certainty that Galen doubted that this treatise was Hippocratic, but the evidence suggests that he would not look very favourably on it.¹²⁰ On the other hand, Galen’s glossing of the ‘black disease’ that comes from this passage indicates that he acknowledged its content and gives a more positive view of this short section from *On Diseases II*. There is a similarity between the content of this passage and Galen’s own characterisation of altered black bile.

If we look at the content of other works from the Hippocratic Corpus, we can find that acidity is commonly used to explain the way that substances can cause great harm to the body. For example, in *Ancient Medicine* there is a passage relating to the effects of acid in the body:

καὶ ὅσοισι δὲ ὀξύτητες προσίστανται δριμεῖαί τε καὶ ἰώδεις, οἷαι λύσσαι καὶ δῆξιες σπλάγχνων καὶ θώρηκος καὶ ἀπορίη· οὐ παύεται τι τούτου πρότερον, πρὶν ἢ ἀποκαθαρθῆ τε καὶ καταστορεσθῆ καὶ μιχθῆ τοῖσιν ἄλλοισιν·

And those who are attacked by pungent and acrid acids suffer greatly from frenzy, from gnawings of the bowels and chest, and from restlessness. No relief from these symptoms is secured until the acidity is purged away, or calmed down and mixed with the other humours.¹²¹

The reference here to pungent (δριμύς) and acrid (ιώδης) acids (ὀξύτης) is similar to what we found in *On Regimen in Acute Diseases*, *On Diseases II* and Galen’s *On the Natural Faculties* and *On Black Bile*, which are related to the harmful effects of altered black bile. In addition, the use of the phrase ‘gnaw at the bowels’ (δῆξιες σπλάγχνων) is also used by Galen when referring to the

¹²⁰ It is interesting that the earlier Hippocratic commentator, Dioscurides, accepted the Hippocratic authenticity of *On Diseases II*, but Galen rejected the authorship of Thessalos (Hippocrates’ son). See chapter 3 ‘Galen’s opinion on the authenticity of the individual treatises in the Hippocratic Corpus’, section 3.4.2 above.

¹²¹ *VM*, XIX (I 618,6-15 L), translation by Jones.

way that altered black bile can affect the body.¹²² This shows that the very harmful affects of acidic substances in the body are important for doctors to understand the cause of severe disease so that they can provide the correct treatment. Galen does not quote or refer to the material in this passage from *Ancient Medicine* and we have seen that he has rejected the Hippocratic authenticity of this treatise.¹²³ However, it does show that the mechanism for the corrosion of the intestines by acidic substances in the body was already part of medical theory at an early stage.

There is another text from the Hippocratic Corpus, *On Breaths*, which also describes the harmful effects of acidic substances:

... τὸ γὰρ φλέγμα δριμέσι χυμοῖσι μεμιγμένον, ὅπη ἂν προσπέσῃ ἐς ἀήθεας τόπους, ἔλκοι· τῇ δὲ φάρυγγι ἀπαλῇ ἐούση ῥεῦμα προσπίπτον τρηχύτητας ἐμποιεῖ· ... δριμὺ δὲ ἐὼν τὸ φλέγμα προσπίπτόν τε τῇ σαρκὶ ἔλκοι καὶ ἀναρρηγνύει τὰς φλέβας.

... for phlegm, mixed with acrid humours produces sores wherever it strikes an unusual spot, and the throat, being soft, is roughened when a flux strikes it. ... Being acrid the phlegm ulcerates the flesh when it strikes it, and bursts open the veins.¹²⁴

Here again we have a description of the harmful effects of acidic substances on the body. This time the emphasis is on phlegm, which the author of *On Breaths* tells us is either mixed with (unnamed) acrid humours (δριμέσι χυμοῖσι μεμιγμένον) and is an acidic (δριμὺ) substance itself. In contrast, to the author of *On Breaths*, Galen has associated this type of ulceration with the harmful effect of altered black bile, not with phlegm.¹²⁵ There is also a type of 'acidic phlegm' described in Plato's *Timaeus*, which is a mixture of blood and acidic bile and has some saline properties.¹²⁶ Therefore, there does seem to be a development of a harmful type of phlegm, which has acidic properties in the early work on medical issues presented in *On Breaths* and possibly in Plato's

¹²² In *At. Bil.* (5, CMG V 4,1,1, p. 80,7-15 De Boer (V 122,2-123,3 K)), we are told that both yellow bile and black bile can eat away (διαβιβρώσκω) at the intestines (ἔντερον).

¹²³ See chapter 3 'Galen's opinion on the authenticity of the individual treatises in the Hippocratic Corpus', section 3.4.5 above.

¹²⁴ *Flat.* VII; VIII; X (VI 100,10-12; 21-22; 106,3-6; 14-15 L), translation by Jones.

¹²⁵ *At. Bil.* 3, CMG V 4,1,1, pp. 74,23-75,1 De Boer (V 111,6-12 K) and Galen, *UP*, V.10 (III 381,6-382,5 K).

¹²⁶ See chapter 1 'Introduction', section 1.3.4 above.

Timaeus. This indicates that there was a tradition in medical writing to explain potentially harmful substances in the body in terms of the acidic properties of humours, such as bile and phlegm. Galen continues this tradition by assigning a particular state of black bile with acidity that is dangerous because it is corrosive to the body. This goes far beyond the black bile described in the Hippocratic *On the Nature of Man*, as Galen, from the point of view of the content of other Hippocratic works and the medical writing of other authorities, needs to include this type of characterisation of black bile in his biological model.

4.5 Summary

The above analysis has shown that Galen developed a biological theory that uses different types of black bile to explain the cause of health and disease in the body. There are three main types, black bile that is one of the four essential humours in the body, and two other types of black bile that are intrinsically or potentially harmful to the body. Each of these types of black bile has its own physical properties. For the first type of black bile, Galen adopts the characterisation of this humour from the Hippocratic *On the Nature of Man*. In this way, Galen is presenting an innate black bile that is essential for the health of the body as a cold, dry and thick humour. It is colder than yellow bile and blood, but not as cold as phlegm. Galen follows the content of *On the Nature of Man* by describing black bile as more viscous than yellow bile, blood and phlegm. Galen uses the term 'thick' (παχύς) to describe the dense structure of this humour, which is not used in the *On the Nature of Man* or any other Hippocratic text. However, he is following the characterisation of black bile as the stickiest of the four humours that is found in this Hippocratic treatise.

Galen's choice of the term 'thick' (παχύς) may be a better use of language for his second century CE audience and might be more compatible with a wider set of sources than just the Hippocratic Corpus, such as in the works of Plato and Aristotle. This characterisation of black bile, which is presented as one of the four fundamental humours, is found in treatises such as *On the Elements According to Hippocrates*, *Commentary on On the Nature of Man* and *On the Doctrines of Hippocrates and Plato*. It is important for Galen that he can refer to the innate humoral black bile when he is discussing what is necessary for the

health of the body from the context of *On the Nature of Man*. But Galen also goes beyond the content of *On the Nature of Man* when he associates black bile with the elemental 'earth'. This allows him to show in *On the Doctrines of Hippocrates and Plato* that Hippocrates and Plato are in agreement in terms of this association, as in *On the Nature of Man* black bile is 'cold and dry' and in Plato's *Timaeus* 'earth' is also 'cold and dry'. This is also the case with his use of the 'humours and the colour of the tongue' passage in the Hippocratic *Epidemics VI*, which Galen quotes in *On the Doctrines of Hippocrates and Plato*. This is an example of where Galen uses another text from the Hippocratic Corpus to support the four-humour system of *On the Nature of Man*. However, there is no explicit evidence that the author of *Epidemics VI* was the same person who wrote *On the Nature of Man*, or that he was following the four-humour system. However, Galen wants his readers to accept that the content of *Epidemics VI* is in agreement with the Hippocratic doctrine found in *On the Nature of Man*.

When it comes to the second type of black bile, we find that Galen has introduced more properties to characterise black bile in order for it to be correctly identified amongst the different dark substances found in the waste matter evacuated from the body during illness. There are three main kinds of this type of black bile characterised by Galen: sediment, mud or lees of blood. We find the description of black bile as a type of sediment in blood in *On Mixtures*. If we investigate the content of the Hippocratic Corpus, 'sediment' is used in *Epidemics I* and *III*, and *Koan Prognoses* to describe black matter in evacuated waste, but there is not direct association with black bile in these texts. There is a more relevant example in the Pseudo-Aristotle *Problemata* where the increase in sediment in the body is compared to the presence of black bile in people suffering from quartan fevers. We shall see in my analysis of diseases that Galen associates both melancholy and the quartan fevers with this type of black bile.¹²⁷ Next, we found that Galen characterises black bile as 'mud-like' not only in *On Mixtures*, but also in *On the Therapeutic Method*, *On the Power of Cleansing Drugs* and *On the Composition of Drugs According to Places*. However, there is no similar description of black bile as being described as mud in the extant Hippocratic Corpus. But, if we look again at Aristotelian

¹²⁷ See chapter 6 'The diseases caused by black bile', sections 6.1 and 6.2 below.

works, we find that in Aristotle's *Parts of Animals* the 'muddy' substance found in some dark wines is compared to the residue discharges from the stomach. I believe that if we combine this material with other passages from Aristotelian sources, such as the content of the Pseudo-Aristotle *Problemata*, then it is possible to construct an overall Aristotelian view of black bile that is associated with dark wine and also with the description of 'mud-like'. This might have influenced Galen's own characterisation of black bile. However, in the absence of any quote or reference by Galen to these Aristotelian passages, there is no way to say that is a direct influence, but it does show that similar types of characterisations, associated with black bile, were present in Aristotelian works. Lastly, we have the description of black bile as the 'lees of blood' in texts such as *On Black Bile*, *On Crises* and *Commentary on Aphorisms*. In the Hippocratic Corpus, the terms 'lees' is used to refer to black substances in the vomit or faeces of patients in *Epidemics V* and *VII* and *On Diseases II*. However, there is no direct reference to black bile being characterised as 'lees' in these treatises and they are also not regarded by Galen as authentic Hippocratic works. There is no strong case to say that he is using these sources for an argument for Hippocratic support from these two books of the *Epidemics*. But when it comes to *On Diseases II*, Galen has glossed the specific passage that contains the characterisation of a substance compared to 'lees' in his *Glossary of Hippocratic Terms*. Therefore, although Galen did not recognise the status of *On Diseases II* as a Hippocratic treatise, it seems that he can ignore his attitude to the authenticity of some texts from the Hippocratic Corpus when he wants to use their content to support his views on black bile.

The third main type of black bile is an acidic form of this humour that is produced from extreme heating of black bile and yellow bile. We have found that Galen describes this type of black bile as having very acidic properties and tells us that it effervesces when it comes into contact with the ground. It is very important for Galen that altered black bile can be correctly and consistently identified in the waste material evacuated from the body, in order for doctors to be able to make good diagnoses and prognoses. Both *On Regimen in Acute Diseases* and *On Diseases II* contain information that describes the properties that Galen attributes to black bile. In *On Regimen in Acute Diseases*, we find that black bile is explicitly referred to in relation to acidic properties of vinegar.

This is a treatise that Galen considered to be Hippocratic and so it is a good source for him to show that Hippocrates is in agreement on the existence of this altered form of black bile. However, in *On Diseases II*, we have the characterisation of a substance that is acidic and even reacts with the ground in a similar way to Galen's description of altered black bile. When Galen glosses this passage in his *Glossary of Hippocratic Terms*, he associates its content with black bile. This further supports the idea that Galen acknowledged the content of this passage from *On Diseases II* as being consistent with Hippocratic doctrine and so he is able to draw upon it in terms of his own characterisation of black bile, as if it were part of one of the texts that he considers to be Hippocratic.

We have seen that Galen has differentiated between three main types of black bile, but in order to understand how he uses them in his writing on health and disease in the body, it is important to investigate the way that he differentiates between them by name. We have found that Galen can be more or less strict about the proper naming of these three types of black bile. He is clear in *On Affected Places*, when he names the innate form black bile (μέλαινα χολή) and the sediment, lees-like or mud-like black bile 'melancholic humour' (μελαγχολικὸς χυμός) or 'melancholic blood' (μελαγχολικὸν αἷμα). We shall see when I discuss the issues involved in his writing on the topic of the melancholy illness, Galen needs to make a clear distinction between the innate 'beneficial' humoral black bile and the harmful 'melancholic humour' that is the cause of melancholy.¹²⁸ However, he also calls the acidic form of black bile melancholic humour. Galen claims that, although some people use the term melancholic humour for both, he can use the same name as he understands the important distinctions between these two types of black bile. There is an added complexity, as Galen also refers to the sediment, mud-like, lees-like and acidic forms as 'black bile' (μέλαινα χολή) in treatises such as *On Mixtures* and *On the Therapeutic Method*. This is because in the earlier medical and philosophical sources that Galen draws upon, such as the Hippocratic Corpus and the writing of Plato and the Aristotelians, the term μέλαινα χολή is far more common than μελαγχολικὸς χυμός. Galen's application of what he calls 'loose

¹²⁸ See section 6.1 below.

language' is his preferred stance, as it is more flexible for him to incorporate and discuss many different sources for his writing on black bile. Therefore, it is more useful for Galen in terms of his strategy to incorporate a wide range of sources and show that there is agreement between them. We also found that Galen classified the different types of black bile in terms of the terms 'according to nature' (κατὰ φύσιν) and 'contrary to nature' (παρὰ φύσιν). Both the innate black bile and the sediment, mud-like or lees-like black bile come under the category of 'according to nature' (κατὰ φύσιν), as they all are defined in terms of the pairing of 'cold and dry' qualities. However, the difference between them is that the innate black bile represents the ideal natural form (κατὰ φύσιν), as it has the perfect blend of cold and dry, along with other important qualities such as its thickness and colour. The sediment, mud-like and lees-like forms are non-ideal states of natural black bile, as their qualities deviate from the perfect balance of the ideal black bile. Therefore, in order to distinguish between them myself in this thesis, I refer to the innate form as 'ideal natural black bile' and the sediment, mud-like and lees-like forms collectively as 'non-ideal natural black bile'. The acidic forms of black bile, which are produced from the combustion of the humours, that we find in Galen's treatises, such as *On the Natural Faculties* and *On Black Bile*, are classified as 'contrary to nature' (παρὰ φύσιν) because their qualities are altered from what is found in the natural state of black bile. Therefore, I will refer to the different types of black bile that are produced from the extreme heating of the humours collectively as 'altered black bile'.

Finally, we have seen that Jouanna has raised an issue with what he believes is inconsistent in the way that Galen writes about black bile that is related to its qualitative properties. Jouanna has compared passages between *On the Natural Faculties* and *On Black Bile*, which appear to conflict, as the former contains references to black bile as 'cold and dry', and the latter does not mention the cold quality, but claims that black bile is produced under 'hot and dry' conditions. Jouanna's solution to this potential inconsistency is to show that Galen made a mistake in *On Black Bile* and attempted to rectify it in his *Commentary on On the Nature of Man*. His analysis is based on the importance of the qualitative description in the Hippocratic *On the Nature of Man* that he

believes is the foundation of Galen's writing on black bile. However, I propose that the characterisation of black bile in *On the Nature of Man*, although essential for Galen's writing on the innate black bile that is generally beneficial to the body, is not so important for his characterisation of the non-ideal and altered forms of black bile. In the case of the altered black bile, we can see that its properties are based on the fact that it has undergone extreme heating, making it a 'hot' substance. Therefore, this type of black bile that is the primary subject of Galen's *On Black Bile* is produced under conditions that are 'hot and dry'. In contrast, in *On the Natural Faculties*, Galen is focused on the qualitative properties of different types of black bile. This is why we find references to the 'cold and dry', as this is important for his writing on the different types of natural black bile. Therefore, if we want to understand why Galen is presenting black bile in a particular way, then we need to know the context of the treatise, rather than trying to fit his characterisation of black bile into some theoretical system that somehow has to be consistent in terms of the content of different Galenic treatises and the Hippocratic *On the Nature of Man*. This is an analysis that takes into account the different content of Galen's works, along with the context of the argument he is making and explains the apparent inconsistency between the qualitative properties of black bile that we find in treatises such *On the Natural Faculties* and *On Black Bile*.

5 The cleansing of harmful black bile from the body

5.1 The importance of the liver for the origin of black bile in the body

The liver has been identified as the organ that is important for the generation of yellow bile and black bile.¹ The evidence for the production of yellow bile in the liver can be found in Galen's *On the Utility of the Parts*, as there is a mechanism that allows for the separation of yellow bile from blood by vessels in the liver that connect to the gallbladder.² However, when it comes to black bile, the situation is more complex because we have to identify which type of black bile is being referred to. For example, in *On the Utility of the Parts*, Galen tells us that the spleen removes the 'muddy, thick, melancholic humours formed in the liver' (τῶν ἐν ἥπατι γεννωμένων ἰλυωδῶν καὶ παχέων καὶ μελαγχολικῶν χυμῶν), which is the type that I have named non-ideal natural black bile, as opposed to the ideal natural or altered types of black bile.³ It is interesting that Galen uses the plural term 'melancholic humours' (μελαγχολικοὶ χυμοί) in this passage, as he tends to use the singular for this term more often in his writing.⁴ This suggests that he wants to emphasise the production of different types of non-ideal natural black bile in the liver under these conditions. We have seen in the previous chapter that Galen also uses the term 'melancholic humour' to refer to different types of altered black bile.⁵ However, I think that it is likely that only forms of non-ideal natural black bile are produced in the liver in this way, as altered black bile is produced by the extreme heating of natural black bile, yellow bile or blood. This can occur anywhere in the body where there is the action of extreme heat on these humours. We can find more evidence for the association between the liver and black bile from a passage in *On the Affected Parts*, where we are told that: 'blood draws the melancholic [humour] from the

¹ Arikha, 2007: 26-27.

² *UP*, IV.13 (III 306,11-13 K).

³ *UP*, IV.15 (III 316,13-17 K), translation by Tallmadge-May.

⁴ There are a few other examples when he uses the plural: for example in *At. Bil.* (8, CMG V 4,1,1, p. 91,22-24 De Boer (V 143,15-144,2 K)), Galen uses this plural form once in a statement about how some people are confused by distinctions between melancholic humours. I will be discussing the association of black bile with specific diseases in more detail later, see chapter 6 'The diseases caused by black bile', sections 6.1-6.3 below.

⁵ See chapter 4 'Galen's characterisation and physical description of the black bile humour', section 4.2 above.

liver to itself, for it was shown that it receives its nourishment by this humour' (τὸ μελαγχολικὸν ἐκ τοῦ ἥπατος ἔλκειν αἷμα εἰς ἑαυτὸν, τούτῳ γὰρ ἐδείχθη τρεφόμενος).⁶ Again we see that Galen uses the term 'melancholic', which refers to a type of non-ideal natural black bile that is drawn out of the liver by the blood. This is part of the process in the body that ensures that the blood has the correct balance of the qualities and only requires a small amount of black bile to thicken the blood and add the paired quantities of 'cold and dry' to the overall humoral mixture in the blood. Galen has chosen to refer to the non-ideal natural black bile as 'melancholic' perhaps indicating that the blood draws out the 'thick, cold and dry' substances from the liver, rather than the actual ideal natural black bile, which is the innate humour. This is supported by a brief statement in *On Affected Parts* where we are told that the ideal natural black bile is generated in the blood vessels from certain foodstuffs.⁷

The process of adding small quantities of the natural forms of black bile is finely balanced, as excess amounts of natural black bile can cause harm in the body. This is shown in the following passage from *On the Natural Faculties*:

τῶν δ' εἰρημένων χυμῶν ἐστὶ τις χρεῖα τῇ φύσει καὶ τοῦ παχέος καὶ τοῦ λεπτοῦ καὶ καθαίρεται πρὸς τε τοῦ σπληνὸς καὶ τῆς ἐπὶ τῷ ἥπατι κύστεως τὸ αἷμα καὶ ἀποτίθεται τοσοῦτόν τε καὶ τοιοῦτον ἑκατέρου μέρος, ὅσον καὶ οἶον, εἶπεο εἰς ὅλον ἠνέχθη τοῦ ζώου τὸ σῶμα, βλάβην ἂν τιν' εἰργάσατο. τὸ γὰρ ἰκανῶς παχὺ καὶ γεῶδες καὶ τελέως διαπεφευγὸς τὴν ἐν τῷ ἥπατι μεταβολὴν ὁ σπλήν εἰς ἑαυτὸν ἔλκει· τὸ δ' ἄλλο τὸ μετρίως παχὺ σὺν τῷ κατειργάσθαι πάντη φέρεται. δεῖται γὰρ ἐν πολλοῖς τοῦ ζώου μορίοις παχύτητός τινος τὸ αἷμα καθάπερ οἶμαι καὶ τῶν ἐμφερομένων ἰνῶν.

There is, however, a natural use for the humours first mentioned, both thick and thin; the blood is purified both by the spleen and by the bladder beside the liver, and a part of each of the two humours is put away, of such quantity and quality that, if it were carried all over the body of the animal, it would do a certain amount of harm. For that which is sufficiently thick and earth-like, and has entirely escaped alteration in the liver, the spleen draws into itself; the other part, which is moderately thick, having been pressed hard alongside the other, is carried all over

⁶ *Loc. Aff.* VI.1 (VIII 377,10-378,2 K), adapted from a translation by van der Eijk.

⁷ *Loc. Aff.* III.9 (VIII 177,9-12 K), see chapter 4 'Galen's characterisation and physical description of the black bile humour', section 4.2 above.

the body. For the blood in many parts of the animal needs, I believe a certain amount of thickening, as does the fibrin carried within it.⁸

The 'humours' at the beginning of this passage are the different types of bile, which include the various forms of black bile, both natural and altered. However, Galen makes particular reference to the bile that is 'thick' (παχύς) and 'earth-like' (γεώδης) that we have seen used to characterise natural black bile.⁹ Galen is pointing out that the body requires a mechanism to purify the blood; otherwise the proper balance of the qualities in the humoral mixture cannot be maintained. In this case it is not clear whether Galen is referring to ideal or non-ideal natural black bile, as either would be a problem if they become excessive in blood. We can see that the spleen has the specific function of attracting the natural black bile and removing it from the blood. From what we have seen from Galen's writing, he makes a distinction between locations in the body for the production of different types of black bile. Certain kinds of food can generate ideal natural black bile in the blood vessels. However, if this foodstuff remains unchanged then it is a thick, cold and dry substance that has the potential to become natural black bile or even to produce the altered form depending on the conditions in the body. The liver appears to be a point in the body where this thick, cold and dry substance either is drawn into the blood for nourishment, or is taken up by the spleen so that it can be removed from the body. Galen is not clear on exactly what type of black bile he means here as black bile can be both potentially useful and harmful to the body. Galen's use of the terms 'black bile' (μέλαινα χολή) and 'melancholic humour' (μελαγχολικός χυμός) interchangeably makes it difficult to ascertain the specific state of black bile at various points in the body, such as its movement between the blood vessels, liver and spleen. All we can say is that ideal natural black bile is produced in the blood vessels from foodstuffs that are thick, cold and dry. Whereas, the origin of the melancholic humours seems to be located in the liver from unconcocted, thick, cold and dry substances, which are able to be removed from the blood by the spleen. However, it is possible that these melancholic humours have the potential to become ideal natural black bile or altered black bile if they remain in the body. In both cases there is the potential for harm to be caused to the body

⁸ *Nat. Fac.* II.9 (II 138,7-139,1 K), adapted from a translation by Brock.

⁹ See chapter 4 'Galen's characterisation and physical description of the black bile humour', section 4.1 above.

either by the production of an excess of ideal natural black bile or through the corrosive properties of the altered black bile. I cannot find any references to this type of information on the generation of black bile in the body in the Hippocratic Corpus, or the writing of the other physicians such as Diocles and Rufus of Ephesus. But in Aristotle's *Parts of Animals*, we are told that the earthy (γεώδης) fibrin causes the blood to congeal when the more fluid part is evaporated. In Plato's *Timaeus* the fibrin is described as viscid (γλίσχος) and oily (λιπαρός).¹⁰ Therefore, we can see that in Galen's system black bile is able to nourish the thick fibrin in the blood as it has the required qualities. However, there are not many references to this process, even in Galen's writing, which might indicate that he did not consider this a topic requiring detailed explanation in his writing about black bile.

5.2 The relationship between the structure of the spleen and its function

We have seen above that for Galen the spleen is the organ that is most strongly associated with the overall management and removal of black bile in the body. Galen provides information about the structure and function of the spleen in *On the Utility of the Parts*:

ἀλλὰ νῦν γε τὰ ὑπόλοιπα τῆς κατασκευῆς τοῦ σπληνὸς ἐπισκεψώμεθα καὶ πρῶτον τὸ ἴδιον αὐτοῦ σῶμα τὸ καλούμενον ὑπότινων παρεγγύμα. τοῦτ' οὖν ἐστὶν αὐτό, καθ' ὃ τοὺς μελαγχολικοὺς ἔλκειν εἰς ἑαυτὸν ὁ σπλήν δύνανται ἔχει χυμούς, ἀραιὸν ἰκανῶς καὶ χαῦνον ὑπάρχον ὥσπερ τις σπογγία πρὸς τὸ ῥαδίως ἔλκειν τε καὶ παραδέχεσθαι τὸ πάχος αὐτῶν.

But now let us inspect the remaining features in the construction of the spleen and first of all its particular feature, which some call the parenchyma. This is what gives the spleen the faculty of attracting the melancholic humours; it is extremely loose textured and porous like a sponge to enable it easily to attract and receive the thickness of these humours.¹¹

This passage tells us that the spleen's structure is important, as it is designed to attract and accommodate the thick humours. We can see that Galen draws our

¹⁰ Aristotle, *PA*, II.4, 650b15-19; Plato, *Tim.* 82c-d. See LSJ, 836.

¹¹ *UP*, IV.15 (III 318,1-7 K), adapted from a translation by Tallmadge-May.

attention to the importance of the ‘parenchyma’ (παρέγχυμα), which in *On Mixtures* he attributes to the Erasistrateans, who explained the structure of organs, such as the lungs, liver, kidneys and spleen, which ‘appear to be poured beside’ (παρέγχυμα) the veins that are attached to them.¹² This substance gives the spleen the properties of being ‘extremely loose textured’ (ἀραιὸν ἰκανῶς) and porous (χαῦνον), in this way the spleen is said to be ‘like a sponge’ (ὥσπερ τις σπογγία).¹³ However, there is a slightly different description of the spleen in *On Mixtures*, which characterises the spleen as less wet than fat, but wetter than skin. However, this is just a passing reference to the spleen and is part of an overall comparison of the physical appearance of different organs of the body. There is no content about the function of the spleen in attracting the waste material of ‘black bile’ to purify the blood in *On Mixtures*.¹⁴ This is an example of where the context of a particular treatise impacts on Galen’s writing on a particular topic. In *On the Utility of the Parts*, Galen needs to show that the spleen has a purpose, related to its structural design, which shows how it functions in the attraction and retention of non-ideal natural black bile. But, in *On Mixtures*, Galen is not writing about the function of the spleen in relation to black bile, instead the references to the spleen are in comparison to other parts of the body in terms of the four qualities, hot, cold, dry and wet. Therefore, it is not part of Galen’s discussion here to include the function of the spleen, as it is in *On the Utility of the Parts*.

The passage from *On the Utility of the Parts* above also provides information on the type of substance that the spleen attracts from the blood. The reference to thick melancholic humours indicates that these are the non-ideal forms of natural black bile. Just before this passage, Galen tells us that there are arteries that transport different types of non-ideal natural black bile from the liver to the spleen, which have continuous motion (τῷ διηνεκεῖ τῆς κινήσεως) and strength of innate heat (τῆ τῆς ἐμφύτου θερμασίας ἰσχύι), which comes from the heart. This allows non-ideal natural black bile to be prepared for use (κατεργάζομαι),

¹² For example, see Gal. *Temp.* II.3 (II 599,16-600,4 K); AA, VI.11; VII.5 (II 576,12-19; 603,5-7); cf. Pseudo-Galen, *Int.*, IX (XIV 697,8-698,1 K). See LS&J page 1332; Leith, 2015c: 253-255.

¹³ However, Galen’s use of the term parenchyma is different from the Erasistratean concept of this type of substance, as they believed that it served as structural material supporting the *Triplokia* of arteries, veins and nerves. See Leith, 2015c: 251-262.

¹⁴ *Temp.* II.3 (I 571,1-2 and 601,3-5 K).

broken up (καταθραύω) and changed (μεταβάλλω).¹⁵ This could indicate that the non-ideal natural black bile is being prepared for its useful role as part of the humoral mixture, essential for the health of the body. Alternatively, any excess and unwanted non-ideal natural black bile can be either broken up for removal from the body or possibly be changed into something else, although Galen does not elaborate on this process of transformation. Another example, this time from *On Black Bile*, tells us more about the substance that is drawn to the spleen:

διὰ τούτων μὲν οὖν ὑπαχθέντες οἱ ἄριστοι τῶν παλαιῶν ἰατρῶν τε καὶ φιλοσόφων ἀπεφάνησαντο καθαίρεσθαι τὸ ἥπαρ ὑπὸ τοῦ σπληνός, ἔλκοντος εἰς ἑαυτὸν ὅσον ἰλυῶδες ἐν αἵματι. τοιοῦτον δὲ τοῦτό ἐστιν, ὡς ἔφην, ὅποῖον ἐν οἴνῳ μὲν ἢ τρύξι, ἐν ἐλαίῳ δὲ ἀμόργη.

Swayed, therefore, by these things, the best of the doctors and philosophers of the past spoke out that the liver is cleansed by the spleen, which drew into itself what is muddy in the blood. Such things are, as I was saying, like the lees in wine or the watery part of olive oil.¹⁶

In this passage we find a substance that is characterised by the terms ‘muddy’ (ἰλυῶδες) and ‘lees in wine’ (ἐν οἴνῳ μὲν ἢ τρύξι), which we have seen are associated with non-ideal natural black bile.¹⁷ In *On the Therapeutic Method*, we are told that the spleen removes much of the material that is mud-like (ἰλυῶδες), which is related to the melancholic humour (μελαγχολικός χυμός), from the liver and again this is a familiar description of non-ideal natural black bile.¹⁸ Galen makes a similar statement in *On the Causes of Symptoms*, where we are told that the blood is purified of yellow bile and serum by the gallbladder and kidneys respectively, and the spleen purifies the blood of the melancholic humour (ἐκκαθαίρει τὸ μελαγχολικὸν ὁ σπλήν).¹⁹ Galen sometimes uses more descriptive language, as we find in *On the Formation of the Foetus*, where he refers to some types of non-ideal natural black bile as the ‘muddy residues’

¹⁵ *UP*, IV.15 (III 316,17-317,11 K).

¹⁶ *At. Bil.* 6, CMG V 4,1,1, p. 83,11-14 De Boer (V 127,12-17 K), adapted from a translation by Grant.

¹⁷ Galen also brings in another characterisation, saying that the substance is similar to the ‘watery part of olive oil’. This comparison to olive oil is not a common description used by Galen, but it is found in *MM* (XIV.9 (X 975,1-6 K)) as well to describe black bile. See also chapter 4 ‘Galen’s characterisation and physical description of the black bile humour’, sections 4.1 and 4.2 above.

¹⁸ *MM*, XIII.17 (X 920,7-10 K).

¹⁹ *Symp. Caus.* III.2 (VII 222,10-14 K).

(ἰλυώδη περιπτώματα), which are cleansed by the spleen.²⁰ In *On Black Bile*, there are two passages where Galen refers to the ‘melancholic humour’ (μελαγχολικὸς χυμὸς) being attracted to the spleen from the blood. But in one case, Galen uses the term ‘black bile’ (μέλαινα χολή), rather than ‘melancholic humour’ in association with the spleen.²¹ There is also a passage in *Commentary on Epidemics* where Galen uses the term ‘black bile’ (μέλαινα χολή) in relation to the spleen.²² We can also find references to a thick and melancholic humour and the spleen in Galen’s *Commentary on Epidemics* and *Commentary on Aphorisms*.²³ Therefore, when Galen is describing the substance that is removed from the blood by the spleen he often uses the term melancholic humour (μελαγχολικὸς χυμὸς). This implies that the function of the spleen is to attract and remove the non-ideal natural black bile, which is the thicker, colder, or dryer types of black bile such as the sediment, muddy or lees-like substances that characterise this form of black bile. In these cases where Galen talks about the function of the spleen he does not refer to the other types of black bile. The reason for this may be that the ideal form of natural black bile is used by Galen when referring to the normal, healthy state of the body and so does not need to be removed from the humoral mixture with the other humours in the composite blood. If ideal natural black bile becomes excessive and has to be removed, then it is possible that Galen would classify it as a ‘melancholic humour’, as it might be observed by its thickening the blood and could form a precipitate that is associated with his description of the non-ideal forms of natural black bile.

Further to this, we can find information on the function of the spleen in *On the Natural Faculties*. Here we find Galen discussing the situation when the spleen is not functioning properly:

καθόλου γάρ, ὅταν ἐνδεέστερον ἢ προσῆκεν εἰς ἑαυτὸν ἔλκη τὸν μελαγχολικὸν χυμὸν, ἀκάθαρτον μὲν τὸ αἷμα, κακόχρουν δὲ τὸ πᾶν

²⁰ *Foet. Form.* V (IV 686,2-3 K).

²¹ *At. Bil.* 7-9, CMG V 4,1,1, pp. 87,15-16; 89,15-18; 93,16-19 De Boer (V 136,1-3; 139,17-140,2; 147,3-7 K).

²² *Hipp. Epid.* VI.V.14 CMG V 10,2,2, p. 286,17-18 Wenkebach (XVIIb 274,7-8 K).

²³ *Hipp. Epid.* VI.II.66, CMG V 10,2,2, p. 115,10-12 Wenkebach (XVIIa 994,12-14 K); *Hipp. Aph.* III.22; IV.21 (XVIIb 622,6-9; 682,3-5 K); VI.43 (XVIIIa 67,7-9 K).

γίγνεται σῶμα. πότε δ' ἐνδεέστερον ἔλκει; ἢ δῆλον ὅτι κακῶς διακεείμενος. ὥσπερ οὖν τοῖς νεφροῖς ἐνεργείας οὔσης ἔλκειν τὰ οὔρα κακῶς ἔλκειν ὑπάρχει κακοπραγοῦσιν, οὕτω καὶ τῷ σπληνὶ ποιότητος μελαγχολικῆς ἐλκτικὴν ἐν ἑαυτῷ δύναμιν ἔχοντι σύμφυτον ἀρρωστήσαντί ποτε ταύτην ἀναγκαῖον ἔλκειν κακῶς καὶ τῷδε παχύτερον ἤδη καὶ μελάντερον γίγνεσθαι τὸ αἷμα.

For in general, whenever [the spleen] is drawing the melancholic humour into itself to a much lesser amount than is fitting, the blood is unpurged, the whole body takes on a bad colour. When does [the spleen] draw in to a much lesser amount? Clearly because it is in a bad condition. Then, just as the kidneys, whose function it is to attract the urine, do this badly when they are out of order, so with the spleen, having the capacity in itself of attracting the melancholic quality, when this natural attraction develops a weakness, it must attract badly and in the process the blood must become immediately thicker and blacker.²⁴

In this passage Galen uses 'melancholic humour', which is the only place in this treatise when he refers to this specific term when he refers to types of non-ideal natural black bile. This supports the view that Galen explains the function of the spleen as being designed to remove non-ideal natural black bile from the blood. However, if the spleen is not working properly, then the blood becomes thicker and darker, indicating that too much of the non-ideal natural black bile is present in it. There is more evidence for this in another passage, from *On Black Bile*, where Galen tells us that the body can be observed to be discoloured, if the spleen becomes impaired in some way, and in this text he actually gives specific causes of its reduction in performance due to inflammation (φλεγμονή), induration (σκίρρος, a hardened swelling) or enervation (ἀτονία, a slackening).²⁵ So the spleen is designed to remove potentially harmful non-ideal black bile from the blood, but what about the even more dangerous altered black bile? We have seen in *On the Natural Faculties* and *On Black Bile* that Galen has believed the altered form of black bile to have changed its innate qualities to become hot in potential and acidic in its corrosive effects on other substances. I think that Galen had postulated that the spleen fulfils a natural process in the body that is equivalent to the purgation of potentially harmful non-ideal natural black bile by a drug, such as hellebore, which draws out this humour. Therefore, the spleen was not designed to attract or cope with the

²⁴ *Nat. Fac.* II.9 (II 133,8-17 K), adapted from a translation by Brock.

²⁵ *At. Bil.* 6, CMG V 4,1,1, p. 83,1-3 De Boer (V 126,18-127,3 K). I will be discussing diseases of the spleen in more detail later, see section 5.4 below.

altered form of black bile with its acidic and corrosive properties. This is why altered black bile is so dangerous, as the natural process of removal by the spleen is not designed to manage this substance. This is why Galen provides advice on how to make a correct identification of the symptoms and observational evidence for the presence of altered black bile in the body and intervention that might remove this harmful substance from the body as quickly as possible.

We can compare Galen's description of the structure and function of the spleen with earlier sources, such as the following passage from Plato's *Timaeus*:

διὸ δὴ καὶ ὅταν τινὲς ἀκαθαρσίαι γίνωνται διὰ νόσους σώματος περὶ τὸ ἥπαρ, πάντα ἢ σπληνὸς καθαίρουσα αὐτὰ δέχεται μανότης, ἅτε κοίλου καὶ ἀναίμου ὑφανθέντος· ὅθεν πληρούμενος τῶν ἀποκαθαιρομένων μέγας καὶ ὕπουλος ἀξάνεται, καὶ πάλιν, ὅταν καθαρθῇ τὸ σῶμα, ταπεινούμενος εἰς ταῦτόν ξυνίζει.

On which account, whenever certain impurities, on account of bodily diseases, are produced around the liver, the loose texture of the spleen receives all these impurities and cleanses them, seeing that it is constructed of hollow and bloodless [material]. Whence being full of the waste matter, it grows large and festered by sores, and in contrast, whenever the body is cleansed, [the spleen] decreases in size, collapsing down into itself.²⁶

If we start with Plato's description of the structure of the spleen, we find that he has characterised this organ as having a 'loose texture' (μανότης) and is hollow (κοῖλος) and bloodless (ἀναίμος). The structure explains the way that the spleen attracts and cleanses certain impurities in the body. This is similar to Galen's explanation of the way that the spleen attracts the non-ideal natural black bile in the passage from *On the Utility of the Parts* that I quoted earlier (see page 194 above). However, when it comes to the actual substance that is said to be drawn in and purged by the spleen, we find from the passage in Plato's *Timaeus* quoted above that he only refers to 'certain impurities' (τινὲς ἀκαθαρσίαι) produced by disease in the body. This explains the cleansing power of the spleen expressed in terms of anything pathogenic produced

²⁶ Plato, *Tim.* 72c-d, adapted from a translation by Bury.

around the liver that needs removing from the body.²⁷ In *On the Doctrines of Hippocrates and Plato*, Galen lists the spleen as an ‘organ that cleanses the residues’ (ὄργανα καθαρτικὰ τῶν περιττωμάτων).²⁸ This indicates that in this treatise Galen is following the description of the spleen that he finds in Plato’s *Timaeus*, which presents the spleen as a purifier of general waste material in the body and is not just specific to attracting non-ideal natural black bile from the blood. If we investigate the content of the Hippocratic Corpus, it is more difficult to find this type of description of the structure of the spleen. One possible source is *Ancient Medicine*, which refers to the spongy (σπογγοειδέα) and porous (ἀραιά) structure of the spleen that allows it to easily draw in fluids. The author of *Ancient Medicine* is writing in a similar way to Galen to explain the function of an organ from its structural properties.²⁹ However, Galen was generally unimpressed with the content of *Ancient Medicine* and did not regard it as a genuine Hippocratic work and he does not make any reference to this material on the spleen in *Ancient Medicine*.³⁰ In another text from the Hippocratic Corpus, *On Fleshes*, we find a description of the structure of the spleen in terms of two fundamental substances, the fatty (λιπαρός) and the gluey (κολλώδης). These two substances form in just the right way from the action of heat to form the soft (μαλακός) and fibrous (ινώδες) structure of the spleen.³¹ However, there are no equivalent fundamental entities in Galen’s writing to these fatty and gluey substances when Galen describes the fundamental structure of the parts of the body.³² Therefore, we can see that there is similarity between Galen’s structure of the spleen in Plato’s *Timaeus* and *Ancient Medicine* from the Hippocratic Corpus. But, we do not find any explicit reference to either of these passages in any of Galen’s extant works. However, the closeness to Plato’s description of the structure of the spleen

²⁷ In addition to this passage in Plato’s *Timaeus*, Aristotle (*PA*, III.7, 670b4-8) tells us that the spleen attracts excessive moisture (ικμάδας περιττενούσας) from the stomach.

²⁸ *PHP*, VI.4.13, CMG V 4,1,2, p. 386,12-16 De Lacy (V 536,6-11 K).

²⁹ *VM*, XXII (I 628,9-12 L). See Jouanna, 2001: 315.

³⁰ See chapter 3 ‘Galen’s opinion on the authenticity of the individual treatises in the Hippocratic Corpus’, section 3.4.5 above.

³¹ *Carn.* III (VIII 584,19-588,13 L). See Jouanna, 2001: 279 and Nutton, 2004: 75.

³² In *PHP* (VIII.6.55, CMG V 4,1,2, p. 522,32-33 De Lacy (V 701,16-702,1 K)), Galen describes a waste product from the body as being similar to yellow bile, which is fatty. The term gluey is used throughout *On the Powers of Foodstuffs*, for example in one case (I.6, CMG V 4,2, p. 226,9-10 Helmreich (VI 497,8-9 K)), when describing the preparation of groats, which quickly thickens and congeals (κολλώδης).

provides Galen with useful material to claim that Plato is in agreement with his own view of the structure of the spleen. This is necessary for his discussion in *On the Doctrines of Hippocrates and Plato*, as Galen wants to show agreement between Plato and Hippocrates on many physiological points in this text. But there is a discrepancy, as in other treatises such as *On the Utility of the Parts* and *On the Natural Faculties*, Galen specifically refers to the function of the spleen in terms of its management of non-ideal natural black bile in the body. But, as we shall see, Galen has certain polemical reasons to emphasise the function of the spleen for the specific attraction of black bile.

5.3 Galen's attack on Asclepiades and Erasistratus on the function of the spleen to cleanse the body of black bile

There are specific reasons why Galen wanted to emphasise the function of the spleen in terms of its role in the management of black bile. As we shall see, Galen reacts to what he perceives to be some consensus that black bile and the spleen are not important in medicine. In order to refute this opinion, Galen presents a number of arguments to defend his own view that knowledge of black bile and the spleen and the relationship between them, is of paramount importance for the best medical practice. I will start with Galen's criticism of Asclepiades in *On the Natural Faculties*:

ληρεῖ δ' οὐδὲν ἦττον καὶ περὶ τῆς μελαίνης χολῆς καὶ τοῦ σπληνός
οὔτε τί ποθ' ὑφ' Ἴπποκράτους εἴρηται συνιεῖς ἀντιλέγειν τ' ἐπιχειρῶν
οἷς οὐκ οἶδεν ἐμπλήκτω τινὶ καὶ μανικῶ στόματι.

He (Asclepiades) also talks no less nonsense about black bile and the spleen, not understanding what was said by Hippocrates; and he attempts in stupid – I might say insane – language, to contradict what he knows nothing about.³³

Firstly, we have already seen that Galen had a generally low opinion of Asclepiades' theory of medicine.³⁴ The context of the passage quoted above is Galen's general criticism of Asclepiades' corpuscular theory of elements, which he considers as inferior to his own theory of qualities, elements and humours.

³³ *Nat. Fac.* I.13 (II 40,8-12 K), translation by Brock.

³⁴ See chapter 1 'Introduction', section 1.3.5 above.

He also rejects what he presents as Asclepiades' theory of the generation of yellow bile in the bile-ducts and the idea that a person suffering from the disease jaundice, can be full of yellow bile, but will not evacuate it. This seems to be in the same context as his criticism of Asclepiades' opinion on black bile and the spleen.³⁵ Galen does not tell us exactly what Asclepiades said, but we can infer that Galen is accusing him of rejecting the notion that the spleen will attract black bile from the blood and remove it from the body. We know that Galen himself regarded the spleen as the organ that regulates the non-ideal natural black bile in the body, and in this passage he suggests that Hippocrates has this same opinion of the function of the spleen. One thing to note here is that Galen uses the term 'black bile' (μέλαινα χολή), rather than the 'melancholic humour' (μελαγχολικός χυμός). This is an example of the interchangeability of these two terms. The reason that Galen chooses the term 'black bile' here might be that it is a more general statement about Asclepiades' theory, and so Galen would want to refer to the more recognised term for 'black bile' as one of the four humours of the body. However, when he is providing detail about the physiology of black bile and the function of the humour, it might seem more correct to Galen to use the term 'melancholic humour'. This is a situation where Galen is merging the different types of natural black bile, both the ideal and non-ideal forms, as it is more convenient for him to make a general statement about 'black bile' and the spleen when he is criticising a rival theory in this way. This is why it is important for Galen not to apply a restrictive system of nomenclature, as it would force him to use specific terms such as 'melancholic humour' (μελαγχολικός χυμός) when he would prefer to use 'black bile' (μέλαινα χολή) or vice-versa. We have seen that Galen justifies this 'looseness of language' as he claims that he has the proper knowledge of the different forms of black bile.

In another part of *On the Natural Faculties*, Galen makes a similar complaint against Erasistratus, and again refers to Hippocrates as an authority on the spleen and black bile:

³⁵ *Nat. Fac.* I.13 (II 39,4-40,8 K).

ἄρ' οὖν οὔτε τῶν ἄλλων ἀνέγνω τι τῶν τοῦ Ἱπποκράτους γραμμάτων
ὁ Ἐρασίστρατος οὐδὲν οὔτε τὸ περὶ φύσεως ἀνθρώπου βιβλίον, ἴν'
οὕτως ἀργῶς παρέλθοι τὴν περὶ τῶν χυμῶν ἐπίσκεψιν, ἢ γιγνώσκει
μέν, ἐκῶν δὲ παραλείπει καλλίστην τῆς τέχνης θεωρίαν; ἐχρῆν οὖν
αὐτὸν μηδὲ περὶ τοῦ σπληνὸς εἰρηκέναι τι μηδ' ἀσχημονεῖν ὑπὸ τῆς
τεχνικῆς φύσεως ὄργανον τηλικούτον μάτην ἡγούμενον
κατεσκευάσθαι. καὶ μὴν οὐχ Ἱπποκράτης μόνον σκευάσθαι. καὶ μὴν
οὐχ Ἱπποκράτης μόνον ἢ Πλάτων, οὐδὲν τι χείρους Ἐρασιστράτου
περὶ φύσιν ἀνδρες, ἐν τι τῶν καθαιρόντων τὸ αἷμα καὶ τοῦτ' εἶναι
φασὶ τὸ σπλάγχχνον, ἀλλὰ καὶ μυρίοι σὺν αὐτοῖς ἄλλοι τῶν παλαιῶν
ιατρῶν τε καὶ φιλοσόφων.

Then, has Erasistratus either not read the book *On the Nature of Man*, nor any of the other writings of Hippocrates, in order that he so lazily passes over the investigation of the humours, or having done this, purposely leaves on one side the most beautiful theories of the 'art' [of medicine]? Thus he ought not to have said anything about the spleen, nor have stultified himself by holding that an artistic Nature would have prepared so large an organ for no purpose. Hippocrates not only provided [this explanation]. Not only Hippocrates and Plato, men no worse than Erasistratus concerning Nature, say that this organ is one of those which cleanse the blood, but also thousands of others, both ancient physicians and philosophers, who are in agreement.³⁶

From these two passages from *On the Natural Faculties*, we can see that Galen accuses both Asclepiades and Erasistratus of not following Hippocrates' theory of the humours. Specifically, Galen emphasises their ignorance of what Hippocrates has said about the spleen and black bile. In the passage above, Galen also brings in Plato as an authority on the function of the spleen, along with many other ancient physicians and philosophers. We can see that Galen explicitly refers to *On the Nature of Man* in relation to the humours. But Galen also names Hippocrates as having said that the spleen is the organ that cleanses the blood. Galen's emphasis on the content of *On the Nature of Man* indicates that this text should contain important material on the spleen. However, there are only a couple of passages in this treatise that refer to this organ:

... ὑπὸ τὸν μαζὸν καὶ ἐς τὸν σπλῆνα καὶ ἐς τὸν νεφρόν, ... καὶ ἐκ τῶν
πλευρῶν ἀνωθεν ἢ μὲν ἐς τὸν σπλῆνα ἀφικνεῖται. ἢ δὲ ἐς τὸ ἥπαρ,
...

³⁶ *Nat. Fac.* II .9 (II 132,4-17 K), adapted from a translation by Brock.

... under the breast both to the spleen and to the kidneys, ... and from the ribs above one [vein] reaches to the spleen and the other to the liver,
...³⁷

This is the part of *On the Nature of Man* that presents the author's anatomical knowledge of how the various blood vessels connect to the major organs in the body. The spleen is part of these overall interconnections and therefore is able to receive blood and other fluids as they pass through the vessels. However, there is no mention of the function of the spleen to cleanse the blood of waste material, let alone a specific mechanism to attract and remove black bile. But even this minor reference to the spleen in this treatise is in jeopardy, as we find that Galen regarded this part of *On the Nature of Man* as inauthentic.³⁸

Therefore, Galen's emphasis on the content of *On the Nature of Man* in *On the Natural Faculties* is misleading, as there is no such material relating to the function of the spleen. However, he does also refer to other, unnamed, Hippocratic treatises to support his statement relating to Hippocrates' opinion on the function of the spleen. It is possible in the passage from *On the Natural Faculties* quoted earlier (see page 203 above), that Galen might be suggesting that the content on humours in *On the Nature of Man* should be read in conjunction with material on the spleen in other Hippocratic texts in order to obtain a better understanding of Hippocrates' view of the function of the spleen to cleanse the blood of black bile. We can find several other references to the anatomical position of the spleen in relation to other organs and the connecting blood vessels in the Hippocratic Corpus. For example, two passages in *On Diseases I* provide some information about the location of the spleen and the associated splenic vessel.³⁹ But, it is likely that Galen does not consider *On Diseases I* to be a genuine Hippocratic treatise, and we do not find any reference by Galen to this passage.⁴⁰ There is a large amount of material on the

³⁷ *Nat. Hom.* 11, CMG I 1,3, pp. 194,13 and 196,3-4 Jouanna (VI 58,18 and 60,7-8 L), translation by Jones.

³⁸ *PHP*, VI.3.27-31 CMG V 4,1,2 pp. 378,36-380,24 De Lacy (V 527,17-529,13 K); *HNH*, I.26, CMG V 9,1, pp. 71,4-7; 72,10-16 Mewaldt (XV 138,5-9 and 140,11-18 K). See also *Hipp. Epid.* II, CMG V 10,1 p. 311,15-22 Pfaff (from the Arabic): "Finden wir ja doch, dass die Angaben über die Anatomie der Venen, welche er in der Schrift Über die Natur des Menschen ... nicht richtig sind." "We find that the information about the anatomy of the veins, which is in the book *On the Nature of Man* (11, CMG I 1,3, pp. 192,15-196,15 Jouanna (VI 58,1-60,19 L)) [is] not correct." See Anastassiou and Irmer, 1997, volume II.1, p. 368. See also chapter 3 'Galen's opinion on the authenticity of the individual treatises in the Hippocratic Corpus', section 3.2.1 above.

³⁹ *Morb. I*, XXVI and XXVIII (VI 194,6-12 and 196.9-22 L).

⁴⁰ See chapter 3 'Galen's opinion on the authenticity of the individual treatises in the Hippocratic Corpus', section 3.4.2 above.

position and blood vessel connections of the spleen in both *On Places in Man* and *On the Nature of Bones*.⁴¹ However, in his *Commentary on Epidemics II*, Galen discusses the anatomical information on the spleen in *On Places in Man* and *On the Nature of Bones* and associates them with the material on the spleen found in *On the Nature of Man*.⁴² When it comes to the content of *On the Nature of Bones*, we find that Galen considered most of the content of this treatise as authentic. If we investigate Galen's opinion of *On Places in Man*, we can find evidence that he believed this text was inauthentic. However, there are also examples of Galen quoting from this text and associating some parts of it with the work of Hippocrates.⁴³

Therefore, we can see that, in general, Galen was not impressed by some of these early attempts at presenting the anatomy of the body, including the location of the spleen and its connections to other organs by certain blood vessels. We have seen earlier that Galen had explained all of what he considered to be the correct anatomical and physiological information about the spleen in detail in his *On the Utility of the Parts* (see page 194 above). However, there is another treatise in the Hippocratic Corpus, which does provide physiological detail about the role of the spleen, as an organ that cleanses harmful substances in the body. We find in *On Diseases IV* a theory of four 'moistures' in the body, blood, phlegm, bile and the watery fluid, the last of which is associated with the spleen that is its 'spring'.⁴⁴ This 'spring' is described as being hollow, like the head, and has an attractive power that specifically draws in this watery fluid. This Hippocratic author uses the term 'attract' (ἐλκω) for the way that the spleen can bring the watery fluid to itself, which is similar to the way that Galen describes the action of the spleen on black bile in *On the Utility of the Parts* (see page 194 above). Also like the case of the spleen and black bile, the excess watery fluid that is brought to the spleen

⁴¹ *Loc. Hom.* III (VI 282,16-25 L); *Oss.* II; VIII; IX-X and XVIII (IX 168,17-170,2; 174,4-12; IX 174,13-180,23 L; 192,17-194,20 L).

⁴² *Hipp. Epid.* II, CMG V 10,1 p. 311,15-22 Pfaff (footnote 38 above). See Anastassiou and Irmer, 1997, volume II.1, p. 368. Galen doubted the authenticity of *On Places in Man* anyway, but he did consider *On the Nature of Bones* to be a genuine work by Hippocrates. However, like parts of *On the Nature of Man*, Galen would not believe that Hippocrates wrote this passage about the blood vessels and the spleen in *On the Nature of Bones*.

⁴³ See chapter 3 'Galen's opinion on the authenticity of the individual treatises in the Hippocratic Corpus', sections 3.2.12 and 3.4.4 above.

⁴⁴ See chapter 3 'Galen's opinion on the authenticity of the individual treatises in the Hippocratic Corpus', section 3.4.3 above.

must then go to the bladder to be passed out of the body. Failure to do this will result in pain and ultimately disease in the spleen.⁴⁵ However, Galen did not acknowledge the Hippocratic authenticity of *On Diseases IV* and he does not mention this text at all in any of his extant treatises. We would expect Galen to reject this theory on the basis that it refers to the watery fluid, rather than black bile, as in *On the Utility of the Parts* Galen explains that the larger vessels leading to the spleen are specifically designed to transport a thicker liquid, such as non-ideal natural black bile, and so he would deny that the body had been designed in this way for this thin watery fluid presented in *On Diseases IV*.⁴⁶ Therefore, analysis of the content of *On the Nature of Man* and other treatises from the extant Hippocratic Corpus shows that there is no justification for Galen's statements that both Asclepiades and Erasistratus could have obtained information on Hippocrates' theory of the function of the spleen to cleanse the blood of black bile. This means that Galen is manipulating the actual content of Hippocratic texts when he attacks both Asclepiades and Erasistratus on their inability to follow Hippocrates' views about the relationship between black bile and spleen.

In his challenge to Erasistratus on the correct theory regarding the function of the spleen and black bile for the health of the body, Galen also names Plato as an authoritative source for this topic. As we have already seen (see page 199 above), Plato did regard the spleen as an organ that purifies the blood, as in the *Timaeus* the spleen is said to cleanse (καθαίρουσα) the impurities (ἀκαθαρσίαι) that are produced in the body during illness (νόσους), which we encountered earlier (see page 199 above). However, Plato does not specifically mention the black bile humour, and so his theory of the function of the spleen applies to a wider range of harmful substances in the blood. In fact, we find that Galen acknowledges this more general function of the spleen presented by Plato in *On the Doctrines of Hippocrates and Plato*. But in this treatise, Galen is quoting a large amount of text from the *Timaeus* and therefore has to stay close

⁴⁵ *Morb. IV*, II (33 L); VI (37L); IX (40 L); XXVI (57 L), (VII 542,18-544,21; 552,20-554,15; 560,7-562,5; 610,1-614,4 L).

⁴⁶ *UP*, IV.15 (III 316,17-317,11 K). We have seen in *On Black Bile* that Galen describes a type of non-ideal natural black bile drawn into the spleen from the blood as similar to the watery part of olive oil (see page 196 above). But this would still be much thicker than the watery fluid of *On Diseases IV*.

to what Plato is actually saying about the spleen. Further to this, in *On the Doctrines of Hippocrates and Plato* Galen is not constructing an argument in defence of black bile and the role of the spleen specifically to attract this humour. In contrast, in *On the Natural Faculties* (and also in *On Black Bile*), when he does want to emphasise the function of the spleen specifically to attract black bile, he chooses not to quote from Plato's *Timaeus*. His strategy here is just to inform his readers that Plato is in agreement with Galen's view that the spleen has a function of attracting black bile, rather than all harmful substances. In the passage from *On the Natural Faculties* quoted earlier (see page 203 above), Galen extends the authorities on the relationship between the spleen and black bile to other physicians and doctors. This may include physicians such as Diocles and Rufus of Ephesus, but unfortunately we do not have any passages that come directly from their works on the spleen and black bile.⁴⁷

There is another interesting remark that Galen makes in the passage from *On the Natural Faculties*, which I quoted above (page 203). When Galen chastises Erasistratus for not following Hippocrates' views of the spleen, Galen says that Erasistratus has 'stultified himself by holding that an artistic Nature would have prepared so large an organ for no purpose' (ἀσχημονεῖν ὑπὸ τῆς τεχνικῆς φύσεως ὄργανον τηλικούτον μάτην ἡγούμενον κατεσκευάσθαι). We can find a similar statement in another passage from *On the Natural Faculties*:

Ἡὺξάμην οὖν κἀνταῦθ' ἐρωτῆσαι δύνασθαι τὸν Ἐρασίστρατον, εἰ μηδὲν ὄργανον ἢ τεχνικὴ φύσις ἐδημιούργησε καθαρτικὸν τοῦ τοιούτου χυμοῦ, ἀλλὰ τῶν μὲν οὖρων ἄρα τῆς διακρίσεώς ἐστιν ὄργανα δύο καὶ τῆς ξανθῆς χολῆς ἕτερον οὐ μικρόν, ὁ δὲ τούτων κακοηθέστερος χυμὸς ἀλάτται διὰ παντὸς ἐν ταῖς φλεψὶν ἀναμεμιγμένος τῷ αἵματι.

At this point, also, I would gladly have been able to ask Erasistratus whether his "artistic" Nature has not constructed any organ for clearing

⁴⁷ We find that van der Eijk includes this passage from *On the Natural Faculties* as part of fragment 27 that refers to the work of Diocles of Carystus. F27[11] (van der Eijk) = Gal. *Nat. Fac.* II.9 (II 132,12-134,16 K). There are a few fragments that refer to the spleen in what we have on the work of Rufus of Ephesus, but these are only about the issues with disease of the spleen and how to treat it and not about its function in purifying the blood of black bile: F21[9] (Pormann) = ar Rāzī, *Comprehensive Book*; F66[14] and [20] = Ibn Sarābiyūn ibn Ibrāhīm, *Important Chapters on the Medicine of the Masters*, ch. 9, Rufus, *Case Notes* 1.

away a humour [black bile] such as this. For whilst there are two organs for the excretion of urine, and another of considerable size for that of yellow bile, does the humour which is more pernicious than these wander about persistently in the veins mingled with the blood?⁴⁸

Galen's conception of the reason why the body and the different organs function in a certain way is part of his overall comprehensive teleological theory of the universe and all the things within it.⁴⁹ Here Galen is pointing out that Nature has constructed the spleen for a purpose, which is to cleanse the body of non-ideal natural black bile. We find a similar statement in *On Black Bile*, where we are told that the theory of purgation of the humours that we find in *On the Nature of Man* proves that the body must be designed to have an organ to manage non-ideal natural black bile in the body, which Galen identifies as the spleen.⁵⁰ In this way, Galen is using both the appeal to teleology and a comparison between the potentially dangerous non-ideal natural black bile with other substances, such as yellow bile and urine. This combines information from a theoretical position with that of observational evidence. Therefore, Galen has a logical argument, supported by empirical evidence, to refute Erasistratus' position regarding the useful function of the spleen in the body. We have seen earlier that Galen had criticised Erasistratus' denial of a teleological explanation for the presence of bile in the body, but ignored a similar argument by Aristotle on the status of bile.⁵¹ We have a similar situation for the spleen, as Galen again has left out any reference to Aristotle's *Parts of Animals*, where the status of the spleen is discussed in relation to that of the liver:

Διὰ δὲ τὸ τὴν θέσιν ἔχειν τὸ ἥπαρ ἐν τοῖς δεξιῶις μᾶλλον ἢ τοῦ σπληνὸς γέγονε φύσις, ὥστ' ἀναγκαῖον μὲν πῶς, μὴ λίαν δ' εἶναι πᾶσι τοῖς ζώοις.

The spleen owes its existence to the liver being placed somewhat over to the right-hand side of the body: this makes the spleen a necessity in a way, though not an urgent one, for all animals.⁵²

⁴⁸ *Nat. Fac.* II.9 (II 131,11-17 K), translation by Brock.

⁴⁹ For example, Galen provides the reason for the structure of all the organs in the human body from a teleological perspective throughout his *On the Utility of the Parts*. See chapter 2 'Galen's strategy for his portrayal of Hippocrates as a philosopher', section 2.5 above.

⁵⁰ *At. Bil.* 7, CMG V 4,1,1, p. 87,3-15 De Boer (V 135,4-136,1 K).

⁵¹ See chapter 2 'Galen's strategy for his portrayal of Hippocrates as a philosopher', section 2.5.2 above.

⁵² Aristotle, *PA*, III.7 670a1-3, translation by Forster.

Aristotle's explanation is that the spleen is only a 'necessity' for some animals and even in the case with the highest forms of life such as human beings; the spleen's function is related to that of the liver for the concoction of food, where the liver is the dominant part of this combined organ and the presence of the spleen is explained more in terms of anatomical symmetry than by its actual function.⁵³ However, Galen's claim is that Erasistratus acknowledges the existence of such parts of the body as bile and the spleen, but does not assign a function or use to them. Galen is drawing upon his more comprehensive teleology, according to which almost all parts of the body must have an end-directed purpose.⁵⁴ But why does Galen focus on Erasistratus' view of bile and the spleen and ignore similar material in Aristotle's writing? Galen's stance here is related firstly to his polemic in *On the Natural Faculties*, where he is arguing against Erasistratus and the Erasistrateans and so they will be the focus for the evidence that he uses against them. In this argument Galen will not want to criticise Aristotle in the same context as his criticism of Erasistratus because Galen wants to keep Aristotle as an authority to support his work and does not want to associate him with the Erasistrateans.⁵⁵

But, there is also the case that Aristotle had given the spleen a secondary cause in the body. This is similar to Galen's concept of the role of the jejunum, which he says does not have an actual 'use' (χρησία) for the organism, but it follows by necessity on parts which do have a purpose.⁵⁶ However, Galen would not agree with Aristotle in terms of a secondary role for the spleen, as he regards this organ as being specifically designed for its purpose of managing non-ideal natural black bile in the body. However, this identification of a secondary purpose for the spleen would not be completely incompatible with Galen's teleological framework and could be part of what he considers as the incomplete or inferior explanation by Aristotle, which we find in Galen's remarks in *On the Usefulness of the Parts*. So, Galen did not consider Aristotle's teleology within the sphere of biology as complete, as in *On the Utility of the Parts*, he tells us that he is writing a more complete version of the 'usefulness'

⁵³ Aristotle, *PA*, III.7, 669b13-670b23 and III.4, 666a26-28. See Hankinson, 1994: 1757-1774; von Staden, 1997: 193-197.

⁵⁴ *UP*, V.3; V.16; XI.14 (III 346,4-16; 406,11-15 and 908,13-909,13 K).

⁵⁵ Von Staden, 1997b: 204-206.

⁵⁶ *UP*, V.3; V.16; XI.14 (III 346,4-16; 406,11-15 and 908,13-909,13 K). See Schiefsky, 2007: 392 (note 48).

of all the parts of the body, which Aristotle was unable to do.⁵⁷ On top of all of this, it would not benefit Galen's argument to raise the issue that Aristotle had also rejected the purpose of the spleen. In fact, this might harm his argument, as in treatises such as *On the Natural Faculties*, Galen uses Aristotle to support his arguments against Erasistratus and Asclepiades, as he wants to include Aristotle as one of the authorities for his presentation of a biological theory, which is based on the qualities, elements and humours.⁵⁸ Another related issue with Galen's presentation of his teleological argument for the explanation of the design of all the organs and important substances in the body, is that he regards Hippocrates as being in agreement with this comprehensive teleological view. However, we find that Galen cannot point to any of the Hippocratic treatises to support this assertion about Hippocrates' teleology.⁵⁹ Therefore, this is another example of Galen manipulating the content of the treatises in the Hippocratic Corpus, and other sources such as Aristotle, to make it appear that there is a clear development of a biological theory of the body, which includes the purposeful design of the spleen to attract non-ideal natural black bile, which begins with the work of Hippocrates and is continued by certain physicians and philosophers and is then fully developed by Galen himself.

5.4 Diseases of the spleen in relation to the harmful nature of black bile

We have seen that Galen regarded the spleen as a very important organ for the maintenance of our health. Therefore, in his biological theory, any damage to the spleen would cause serious harm to the body. This is shown from a passage relating to the problem of the spleen becoming diseased in *On the Natural Faculties*:

ὡν ἀπάντων προσποιησάμενος ὑπερφρονεῖν ὁ γενναῖος
Ἐρασίστρατος οὐτ' ἀντεῖπεν οὐθ' ὅλως τῆς δόξης αὐτῶν

⁵⁷ *UP*, I.8; VIII.3 (III 16,7-21,16; 620,4-621,8 K). See Tallmadge-May, 1968: 10; Hankinson, 1992: 3510; Flemming, 2009: 76-77; Gill, 2010: 31-33; van der Eijk, 2012: 266.

⁵⁸ For example, *Nat. Fac.* I.2; I.3 (II 4,13-5,11; 7,15-9,6 K). Von staden puts forward other reasons for Galen's reluctance to draw Aristotle into this sort of argument against Erasistratus' teleological view of the body, such as Galen's need to dissociate Erasistratus' views from Aristotelianism. See chapter 2 'Galen's strategy for his portrayal of Hippocrates as a philosopher', section 2.5.2 above.

⁵⁹ See section 2.5.3 above.

ἐμνημόνευσε. καὶ μὴν ὅσοις γε τὸ σῶμα θάλλει, τούτοις ὁ σπλὴν φθίνει, φησὶν Ἱπποκράτης, καὶ οἱ ἀπὸ τῆς ἐμπειρίας ὁρμώμενοι πάντες ὁμολογοῦσιν ἰατροί. καὶ ὅσοις γ' αὖ μέγας καὶ ὕπουλος ἀξάνεται, τούτοις καταφθείρει τε καὶ κακόχυμα τὰ σώματα τίθησιν, ὡς καὶ τοῦτο πάλιν οὐχ Ἱπποκράτης μόνον ἀλλὰ καὶ Πλάτων ἄλλοι τε πολλοὶ καὶ οἱ ἀπὸ τῆς ἐμπειρίας ὁμολογοῦσιν ἰατροί.

Now, all of these the high and mighty Erasistratus affected to despise, and he neither contradicted them nor even so much as mentioned their opinion. Hippocrates, indeed, says that the spleen wastes in those where the body swells to a large size, and all those physicians also who base themselves on experience agree with this. Again, in those cases in which the spleen is large and is increasing from internal suppuration, it destroys the body and fills it with evil humours; this again is agreed on, not only by Hippocrates, but also by Plato and many others, including the Empiric physicians.⁶⁰

We can see that Galen names Plato here as an authority on information relating to the harm that may be caused to the spleen. In fact, we can find a reference to this issue in Plato's *Timaeus*, where we are informed that the spleen can 'grow large and festered' (μέγας καὶ ὕπουλος ἀξάνεται), which is found in the passage I quoted earlier (see page 199 above). But the focus of this passage is on Galen's observation that Hippocrates has described cases where the spleen 'wastes' (φθίνει) and the body 'swells' (θάλλει), indicating a close connection between the spleen and the body as a whole. When the body is seen to swell up during an illness, then the spleen is thought to be in a bad state and is wasting away. If we look at the Hippocratic Corpus, we can find a similar passage in *On Places in Man*:

Ὑδωρ ἐς τὸ ἐπίπλοον· ἐπὴν ὁ σπλὴν ὑπὸ πυρετοῦ μέγας γένηται, γίνεται δὲ ὅταν τὸ σῶμα λεπυνθῆ, τοῖσι γὰρ αὐτοῖσιν ὃ τε σπλὴν θάλλει καὶ τὸ σῶμα φθίνει· ὅταν δὲ τὸ σῶμα λεπτὸν ᾗ καὶ ὁ σπλὴν θάλλῃ καὶ τὸ ἐπίπλοον ἅμα τῷ σώματι λεπυνθῆ, ἢ πιμελὴ ἢ ἐν τῷ ἐπιπλόῳ ἐστὶ, τήκεται·

Water entering the omentum: When the spleen is enlarged as the result of fever—this happens simultaneously with the body becoming lean, since the same process makes both the spleen swell and the body waste—when the body is lean and the spleen swells and the omentum wastes along with the body, then the fat that is in the omentum melts.⁶¹

⁶⁰ *Nat. Fac.* II.9 (II 132,4-133,6 K), adapted from a translation by Brock.

⁶¹ *Loc. Hom.* XXIV, (VI 314,19-316,10 L), adapted from a translation by Potter.

This is the only place in the extant Hippocratic Corpus where ‘swell’ (θάλλει) and ‘waste’ (φθίνει) are used to describe the spleen and the body, and even though Galen has mixed up the nouns and verbs, this is likely to be the passage ‘by Hippocrates’ to which he is referring.⁶² I say ‘by Hippocrates’ in this way because Galen does not generally acknowledge the authenticity of *On Places in Man*, as a Hippocratic work.⁶³ Therefore Galen has conveniently ignored the fact that he does not believe that Hippocrates wrote this text. The reason is that he wants to use it as evidence from the authority of Hippocrates in his argument against the Erasistrateans. This passage from *On Places in Man* is also important to support his claim that there is agreement between Hippocrates and Plato on the way that the spleen wastes during illness.

Galen does use other Hippocratic treatises when he discusses cases of illness from an enlarged spleen. For example, in *On the Doctrines of Hippocrates and Plato*, he cites one of the passages from the *Aphorisms* and tells us he will use Hippocrates’ exact words and the quote he uses contains information that enlarged spleens are more common in the autumn.⁶⁴ However, Galen does not provide any analysis or comment about the presence of ‘enlarged spleen’ in this list of autumnal diseases, but this does provide an indirect connection between the spleen and black bile, as in *On the Nature of Man* the black bile humour is said to be more abundant in the autumn because it shares the qualities of cold and dry with this season.⁶⁵ We find generally that the Hippocratic physicians take note of the state of the spleen in many cases, using different terms that essentially say the same thing, which is that this organ has increased in size above the normal. For example, in *On Regimen in Acute Diseases*, the spleen is said to become grown (αὐξητικός).⁶⁶ In *Epidemics III* there is a reference to a

⁶² Anastassiou and Irmer, 1997, II.2, p. 250.

⁶³ See chapter 3 ‘Galen’s opinion on the authenticity of the individual treatises in the Hippocratic Corpus’, section 3.4.4 above.

⁶⁴ Hippocratic Corpus, *Aph.* III.22, (IV 496,4-8 L); Gal. *PHP*, VIII.6.16-36, CMG V 4,1,2 pp. 516,7-520,1 De Lacy (V 692,12-697,2 K); *Hipp. Aph.* III.5 (XVIIb 570,7-571,6 K). See Anastassiou and Irmer, 1997, volume II.1, p. 103 and II.2 p. 86.

⁶⁵ See chapter 4 ‘Galen’s characterisation and physical description of the black bile humour’, section 4.1 above.

⁶⁶ *Acut.* LXII (17 L), (II 358,15-360,4 L).

patient's spleen being enlarged (σπλήν ἐπήρθη).⁶⁷ Alternatively, we find in *Epidemics II* that the spleen is described simply as being large (μέγας).⁶⁸ However, Galen tends not to reference or quote many of the different observations and case studies in the Hippocratic Corpus on disease and abnormal growth of the spleen. In one particular case, in *On Affections*, the Hippocratic author goes into great detail about the problems that arise when a patient has a large spleen. The cause of disease is identified by either fever, or by incorrect therapy, and both phlegm and bile can become deposited in the spleen itself.⁶⁹ All of these texts are considered by Galen to be Hippocratic, but he remains silent about this material in relation to his own advice about treating disorders of the spleen. But it is certainly not the case that Galen completely ignores the content of the Hippocratic Corpus with respect to the spleen. The enlargement of the spleen seems to be a symptom of some illnesses in which Galen identifies difficulties in the respiratory system and he quotes and makes reference to four different case studies in *Epidemics I, IV and VI*, but again he does not focus on any specific details about the function of the spleen and its purification of non-ideal natural black bile from the blood.⁷⁰

On Humours, one of the treatises that Galen regarded as Hippocratic, also contains some useful information on the spleen. In this work there are some references to more general cases of the spleen, such as the case where the spleen can become diseased from drinking water or in summer from an excess of bile.⁷¹ However, this material does not identify black bile as being the problem, which is not surprising as this treatise does not contain any material on the black bile humour itself.⁷² Galen does not provide any comment on this particular passage, but we can see from this that the spleen was considered an

⁶⁷ *Epid. III*, case III (fourth day), (III 40,10 L). There are many other terms used such as ὑπόσπληνος (*Epid. II*, II.6, (V 86,10-11 L)), ἐπισπλήνωι (*Epid. IV*, I.35, (V 178,13-16 L)), ἔπαρσις (*Epid. VI*, II.5, (V 278,12-14 L)), σπληνώδης (*Epid. VII*, I.105, (V 456,1-5 L)), or ὄγκηρός (*Liqu. VI* (VI 130,3-11 L)).

⁶⁸ *Epid. II*, II.7; 22 (V 86,16; 94,1-2 L).

⁶⁹ *Aff. XX* (VI 228,20-230,22 L).

⁷⁰ Hippocratic Corpus, *Epid. I*, case 1 (end); case III (fifth day, eighth day and end), (II 684,8-9; 688,13-14; 690,1-2; 690,6 L); *Epid. IV*, I.25; 27, (V 164,15-166,3; V 172,1-5 L); *Epid. VI*, III.2 (V 292,14-294,2 L); *Gal. Diff. Resp.*, II.10-11; III.12-13 (VII 871,4-880,13; 951,4-959,17 K). See Anastassiou and Irmer, 1997, volume II.2, pp. 145-146, 201 and 211.

⁷¹ In *Hum.* (XII; XIII (V 492,7-16; 494,3-6 L)) both σπληνώδης and ὑπόσπληνος are used for 'disease of the spleen'.

⁷² See chapter 3 'Galen's opinion on the authenticity of the individual treatises in the Hippocratic Corpus', section 3.2.8 above.

important organ in the Hippocratic Corpus. Another passage, this time from *On Internal Affections*, provides more detail about the conditions that bring on a disease in the spleen:

Σπληνός ἡ πρώτη· γίνεται δὲ διὰ θερμασίην τοῦ ἡλίου, χολῆς κινήσεως, ὅταν ἐλκύσῃ ὁ σπλήν ἐφ' ἑωυτόν χολήν. ... Ἄλλη σπληνός· γίνεται μὲν τοῦ ἔτεος θέρεος ὥρη μάλιστα· ἡ δὲ νοῦσος γίνεται ἀπὸ αἵματος, ὅταν ὁ σπλήν ἐμπλησθῇ αἵματος, ἐκρήγνυται ἐς τὴν κοιλίην. ... Ἄλλη σπληνός· προσπίπτει ἡ νοῦσος μάλιστα ἤρος· ὅταν φλέγμα ἀναλάβῃ ὁ σπλήν ἐς ἑωυτόν, μέγας παραχρῆμα γίνεται καὶ σκληρός· εἶτα αὐτὸς καθίσταται. ... Ἄλλη σπληνός· γίνεται μὲν μετοπώρου μάλιστα ἀπὸ χολῆς μελαίνης· γίνεται δὲ ἀπὸ λαχανοφαγίης τρωξίμων πολλῶν καὶ ἀπὸ ὑδροπωσίης.

The first disease of the spleen: it is produced by the heat of the sun, when bile is set in motion and the spleen draws bile to itself. ... Another disease of the spleen: it is produced mostly in the season of the summer; the disease is produced by blood, when the spleen becomes filled with blood, it breaks out into the cavity of the body. ... Another disease of the spleen: the disease mostly occurs suddenly in spring; when the spleen takes up phlegm into itself, it immediately becomes large and hard; then it is restored to its normal state. ... Another disease of the spleen: it is produced by black bile mostly in late autumn; it is produced from eating many raw vegetables and from drinking water.⁷³

This is an example of all the four humours that are defined in the Hippocratic *On the Nature of Man* being used together to explain the different diseases of the spleen in *On Internal Affections*.⁷⁴ It appears that Galen acknowledged the Hippocratic authenticity of *On Internal Affections*, but believed it to be by a later Hippocratean than Hippocrates himself.⁷⁵ However, the content of these passages from *On Internal Affections* are not in agreement with Galen's view that the spleen only targets 'black bile' to be drawn out of the blood, as the other humours are described as being drawn to the spleen under the different environmental conditions of the seasons. But, the content of this passage from *On Internal Affections* is consistent with the more general view that we find in Plato's writing on the spleen and what Galen says in *On the Doctrines of Hippocrates and Plato*. Here we find that the spleen purifies the blood of

⁷³ *Int.* XXX; XXXII; XXXIII; XXXIV (VII 244,6-8; 248,14-16, 250,15-18; 252,6-8 L), adapted from a translation by Potter.

⁷⁴ Cf. *Nat. Hom.* 4, CMG I 1,3, p. 174,2-3 Jouanna (VI 40,4-6 L).

⁷⁵ See chapter 3 'Galen's opinion on the authenticity of the individual treatises in the Hippocratic Corpus', section 3.3.2 above.

general unwanted waste material, rather than specifically attracting black bile. This also shows that Galen would have some difficulty in drawing together all the information from the treatises of the Hippocratic Corpus, which he identifies as being Hippocratic, to show that Hippocrates had a particular theory regarding the function of the spleen and which substances it draws in to purify the blood. Instead, Galen is very selective with his sources and only provides quotations when he wants to draw the reader to a particular point he wants to make. This was the case that we saw earlier (see pages 211-212 above), when he used the material on the spleen from *On Places in Man* to demonstrate Hippocrates' view on this topic, as he does not provide a quote from the text and does not even refer to it by name because we would know that he was referring to a treatise that he had considered to be not Hippocratic.

However, there is another example where Galen refers to a Hippocratic text to discuss the issues concerned with the diseases that can affect the spleen. Again, it is found in *On the Natural Faculties*, but this time Galen actually quotes his Hippocratic source:

καίτοι “Δυσεντερίη,” φησί που Ἴπποκράτης, “ἦν ἀπὸ χολῆς μελαίνης ἄρξεται, θανάσιμον,” οὐ μὴν ἢ γ’ ἀπὸ τῆς ξανθῆς χολῆς ἀρχομένη πάντως ὀλέθριος, ἀλλ’ οἱ πλείους ἐξ αὐτῆς διασώζονται. τοσοῦτα κακοηθεστέρα τε καὶ δριμυτέρα τὴν δύναμιν ἢ μέλαινα χολὴ τῆς ξανθῆς ἐστίν.

Indeed, somewhere Hippocrates says, “Dysentery, if it starts from black bile, is fatal”, while that proceeding from yellow bile is not completely deadly, but most people recover from it. This proves how much more pernicious and acrid in its potentialities is black bile than yellow bile.⁷⁶

The quote in the passage above, which Galen tells us comes from somewhere in Hippocrates' works, is actually from the Hippocratic *Aphorisms* (IV.24). It is a single line statement about the fatal impact of dysentery by black bile.⁷⁷ Just before this passage, Galen emphasises that it is clear that Erasistratus was wrong in his view that the spleen has no function because Nature would have created an organ to remove surplus black bile from the body. Therefore, this is a connection between the function of the spleen and the avoidance of dysentery

⁷⁶ *Nat. Fac.* II.9 (II 131,17-132,3 K), adapted from a translation by Brock.

⁷⁷ *Aph.* IV.24, (IV 510,9-10 L). See Anastassiou and Irmer, 1997, volume II.2, pp. 90.

that is caused by the presence of too much black bile. We can see here that Galen uses the term ‘black bile’ (μέλαινα χολή), rather than ‘melancholic humour’ (μελαγχολικὸς χυμός), as μέλαινα χολή is used in the original Hippocratic source. However, the type of black bile appears to be the altered black bile, as it is described as having dangerous and acidic properties. Galen could also have used melancholic humour to refer to the altered black bile, as he does in other texts such as *On Black Bile*, but it is more important for Galen to use the same terms as the sources that he is referring to, as this will reduce any confusion and allow him to align the content of these Hippocratic texts with his own work and with other non-Hippocratic sources.

Galen also quotes this aphorism in *On Black Bile* and *On the Utility of the Parts*, which I will be discussing a little later.⁷⁸ But at this point, I want to bring the discussion back to the spleen, which in Galenic texts such as *On the Natural Faculties* and *On Black Bile*, is the organ that regulates non-ideal natural black bile in the body. In terms of the Hippocratic Corpus, there is a strong association between the spleen and the suffering of diseases related to dysentery. For example in another passage from the Hippocratic *Aphorisms*:

Ὅκοσοι σπληνώδεες ὑπὸ δυσεντερίης ἀλίσκονται, τούτοισιν, ἐπιγενομένης μακροῆς τῆς δυσεντερίης, ὕδρωψ ἐπιγίνεται ἢ λειεντερίη, καὶ ἀπόλλυνται.

When persons with enlarged spleens are attacked by dysentery, if the dysentery that supervenes is prolonged, dropsy or lientery supervenes with fatal results.⁷⁹

This is *Aph.* (VI.43), and describes a type of dysentery. Therefore, this is important for the diagnosis and prognosis of these diseases based on the condition of the spleen. However, there is another aphorism (*Aph.* VI.48), which tells us the following:

Τοῖσι σπληνώδεσι δυσεντερίη ἐπιγενομένη, ἀγαθόν.

In cases of enlarged spleen, dysentery supervening is a good thing.⁸⁰

⁷⁸ See chapter 6 ‘The diseases caused by black bile’, section 6.3 below.

⁷⁹ *Aph.* VI.43, (IV 574,2-4 L), translation by Jones.

⁸⁰ *Aph.* VI.48, (IV 576,1 L), translation by Jones.

So here we have the same type of reference to an enlarged spleen, but this time dysentery is beneficial for the patient. The difference between the two aphorisms is that in *Aph.* (VI.43) the dysentery is prolonged, which gives time for other diseases, such as dropsy and lientery, to occur. In contrast, the situation in *Aph.* (VI.48) is that dysentery has occurred and has flushed out harmful substances in order to alleviate the condition, and this is beneficial as long as the dysentery does not occur for a long time. However, Galen believes that there is a contradiction between these two aphorisms. He argues that *Aph.* (VI.48) is merely an oversight in this text and that Hippocrates himself prefers *Aph.* (VI.43), which asserts that the combination of prolonged dysentery with an enlarged spleen is an indication of a terminal case. He tells us that we should forget about *Aph.* (VI.48), as there is no need for it to be acknowledged as part of what should be remembered for medical practice.⁸¹ Here Galen is criticising what he sees as an inconsistency between two aphorisms that are in fact telling us two different things. But, Galen wants to reinforce the notion that Hippocrates also postulated that a severe illness occurs if altered black bile is present in the body and at the same time the spleen is either damaged or unable to function properly. We have seen that if the spleen cannot remove the non-ideal natural black bile from the blood there is the potential for it to transform into altered black bile. For Galen, the content of *Aph.* (VI.48) seems to challenge this idea and so he rejects it in favour of *Aph.* (VI.43), on the basis of his analysis that does not appear to be correct given the actual content of *Aph.* (VI.43) and (VI.48). Therefore, Galen is selective in terms of the content of the Hippocratic *Aphorisms*, as he wants to show that Hippocrates is in complete agreement with Galen's own biological theory and its teleological framework.

5.5 Summary

The analysis of Galen's writing on the origin and management of black bile in the body emphasises the importance of understanding the way he differentiates between different types of black bile. For example, in the case of the origin of

⁸¹ For Galen's argument for Hippocrates' preference for Aphorism VI.43, see *Hipp. Aph.* VI.43 (XVIIIa 67,1-4 K). For Galen's rejection of Aphorism VI.48, see *Hipp. Aph.* VI.48 (XVIIIa 81,15-82,4 K). See also Anastassiou and Irmer, 1997, volume II.1, pp. 137-138.

black bile, Galen's view is that ideal natural black bile is produced from certain types of foodstuff in the blood vessels. However, we found that the non-ideal natural black bile, which he sometimes names 'melancholic humour' (μελαγχολικὸς χυμὸς), but at other times simply 'black bile' (μέλαινα χολή), has its origin in the liver and is associated with the unconcocted, thick, cold and dry, foodstuff that has the potential to transform into the ideal form of natural black bile or altered black bile depending on the conditions within the body. When it comes to the location of the generation of altered black bile, this type of substance can be produced anywhere in the body where extreme heat acts upon the humours. Understanding of the distinction between these three types of black bile in terms of their production in the body is hindered by Galen's often 'looseness of language', as, although he only uses μέλαινα χολή for ideal natural black bile in treatises such as *On the Elements According to Hippocrates* and *On the Doctrines of Hippocrates and Plato*, he uses μελαγχολικὸς χυμὸς and μέλαινα χολή interchangeably for non-ideal natural black bile and altered black bile in other treatises such as *On the Natural Faculties*, *On the Utility of the Parts* and *On Black Bile*. Galen's naming of the different forms of black bile is also important for our understanding of his view on the function of the spleen. In the majority of cases Galen is more descriptive and refers to the physical properties of the black bile that is attracted to the spleen such as the sediment, mud-like or lees-like substances. These are the characterisations associated with the non-ideal natural black bile that is more precisely named by Galen as 'melancholic humour' or 'melancholic blood' in *On Affected Parts*. However, when he names the type of black bile that is drawn into the spleen he uses μελαγχολικὸς χυμὸς and μέλαινα χολή interchangeably in *On the Natural Faculties* and *On the Utility of the Parts*. Galen cannot be so precise with his terminology of black bile in these treatises as there are situations when he needs to use μέλαινα χολή in his polemical arguments against his rivals, such as Erasistratus and Asclepiades, or in cases where he is quoting a source, such as a Hippocratic text, which itself uses the term μέλαινα χολή such as the Hippocratic *Aphorisms*. This is part of Galen's strategy to use language in the best way for his specific argument in a particular treatise, without having a systematic framework of nomenclature that could hinder his use of different sources for his refutation of the theories of his rivals.

Galen's theory of the function of the spleen provides information on the way that he is able to present the role of an organ in the body in slightly different ways depending on the context of the argument in a particular treatise. For example, in *On the Doctrines of Hippocrates and Plato*, Galen follows the characterisation of the spleen in Plato's *Timaeus* and refers to its function more broadly as removing 'certain impurities' from the body. In this treatise Galen does not explicitly associate the function of the spleen with black bile, but Plato's reference to 'certain impurities' does not rule out the removal of black bile. Galen does not intervene with a statement about black bile here because he does not have to argue for a specific function of the spleen in this treatise. Further to this, in *On the Natural Faculties*, Galen quotes a passage from *On Places in Man* to claim that Hippocrates had written about the association between the swelling of the body and an enlarged spleen. Here Galen has only named Hippocrates as the source for this information and has not given the title of the work it has come from. When the actual source is tracked down, we find that Galen has paraphrased a passage from *On Places in Man*. This is an example where Galen could not find any other plausible material from his preferred Hippocratic works, such as *On the Nature of Man*, *Aphorisms* or *Prognostic*. This quote from a 'Hippocratic' source is also in agreement with Plato's description of the spleen in the *Timaeus*, which provides Galen with more evidence for agreement between Hippocrates and Plato. This shows that Galen will ignore his views on the authenticity of some works within the Hippocratic Corpus, if it suits his argument, and in this case he has avoided naming the title of the work.

Galen presents the spleen with its more specific function of attracting non-ideal natural black bile in *On the Utility of the Parts*, *On the Natural Faculties* and *On Black Bile*. Galen's purpose in these treatises is to refute the work of Erasistratus, and so presents the function of the spleen in terms of its attraction and removal of natural black bile from the blood, which fits in well with his argument here. But this is different from Galen's aim in *On the Doctrines of Hippocrates and Plato*, where he is quoting a large amount of material from Plato and so has to work more closely with the content of the *Timaeus*, which does not specify black bile as the substance targeted for removal by the spleen.

Instead, Galen's aim in this treatise is to present agreement between Hippocrates and Plato in terms of the theories that he has selected in this work. In this case, he is not defending the status of black bile against the views of Asclepiades and Erasistratus, as he is in other works such as *On the Natural Faculties* and *On Black Bile*. What we find in *On the Natural Faculties* is that Galen makes some direct statements against his rivals, which claim that they have either misunderstood or ignored Hippocrates' view of black bile and the spleen. One example of this is from the passage in *On the Natural Faculties*, where Galen names the Hippocratic *On the Nature of Man*, out of a number of Hippocratic works, which Erasistratus should have consulted as a good source on black bile and the spleen. However, although this treatise does contain substantial information about black bile, it is very limited in content on the spleen and even these references to the spleen are from sections that Galen considered spurious. What we find is that Galen does not quote any passage from *On the Nature of Man* or any other Hippocratic text here to support his argument. Another important factor in Galen's criticism of Erasistratus on the topic of the spleen and black bile is in terms of the teleological framework for the function of this organ and humour in the body. He accuses Erasistratus of being wrong in saying that the spleen has no purpose in the body, as Nature has designed all parts of the body with a specific function. In this argument, Galen ignores the fact that Aristotle had said something similar about the spleen, but it suits Galen's strategy to have Aristotle on his side and not to be grouped with the Erasistrateans. Galen also wants Hippocrates to be viewed as being in agreement with him in terms of the teleological framework for the physiology of the organs in the body. There is no evidence that this type of teleological system, in terms of the design and function of the parts of the body, exists within the Hippocratic Corpus in the way that Galen describes it.

Another example of Galen's manipulation of his sources is found when he wants to show that Hippocrates is in agreement with the notion that the presence of altered black bile in the body can be fatal. We can see this when Galen quotes a passage from the Hippocratic *Aphorisms* and uses it to reject the authenticity of another similar aphorism in this treatise. In this way, Galen is selecting material from a work that he generally considers to be genuinely by Hippocrates, but can reject certain passages with which he does not agree. In

this case he felt that there was a contradiction in terms of the terminal prognosis of a disease relating to dysentery and black bile. But in fact, although the two aphorisms appear to contradict each other, there is a difference because one discusses prolonged dysentery and the other is a case where dysentery occurs over a shorter period. In fact there is no reference to the distinction between two forms of black bile in *Aphorisms*. There is not even the reference to black bile being acidic or corrosive here. But Galen will use this information on black bile being referred to as deadly, as evidence that Hippocrates is in agreement on the distinction between two forms of black bile, one that is innate and essential to the body's health, and the other, from this information in *Aphorisms*, which is pathogenic and deadly.

6 The diseases caused by black bile

6.1 Melancholy, the black bile disease

The illness known as ‘melancholy’ is a mental disorder causing conditions such as madness and despondency, which in Galen’s system has a physiological basis and is associated with the black bile humour.¹ In *On Affected Places* Galen distinguishes three different types of melancholy. Firstly, there is the condition related to the hypochondriac, which begins in the region of the stomach. Secondly, there is the condition arising from an affection of the brain. Lastly, there is a more general case of melancholy when black bile affects the whole body. Galen provides details of all three types, where he initially describes them separately and then discusses all three as part of a development of the melancholic illness.² The first stage begins in the stomach:

ἐὰν μὲν οὖν ἄρξηται γε πρῶτα τὰ κατὰ τὴν γαστέρα συμπτώματα, καὶ μείζουσιν αὐτοῖς γινομένοις ἀκολουθήσῃ τὰ μελαγχολικὰ πάθη, κουφίζηται τε ταῖς διαχωρήσεσιν καὶ τοῖς ἐμέτοις καὶ ταῖς κάτω φύσιν καὶ ταῖς ἐρυγαῖς ὁ ἄνθρωπος, ὑποχονδριακὸν μὲν ὀνομάσομεν οὕτως γε καὶ φυσῶδες τὸ νόσημα, συμπτώματα δὲ εἶναι φήσομεν αὐτοῦ, τὴν τε δυσθυμίαν καὶ τὸν φόβον· ... νῦν ἐπὶ τὸν ἐγκέφαλον ἀναφερομένης τῆς μελαγχολικῆς ἀναθυμιάσεως, οἷον αἰθαλώδους τινός, ἢ καπνώδους ἀναθυμιάσεως, τὰ μελαγχολικὰ γενήσεται περὶ τὴν διάνοιαν συμπτώματα.

If, then, the first symptoms start in the stomach and if, once they have become stronger, they are accompanied by melancholic affections, and if the patient derives relief from these by laxatives, emetics, breaking wind, and belching, we call this disease hypochondriac and flatulent. We will say that its symptoms are despondency and fear. ... when a melancholic

¹ For a general overview of how ancient physicians and philosophers perceived mental illness and madness, which includes conditions such as epilepsy and melancholy, see Harris, 2013: 1-23. For more detail on how the concept of melancholy as a disease was developed by physicians such as Rufus of Ephesus, see Pormann, 2013: 223-244. For a study of melancholy as a form of depression, rather than madness, in Greek philosophy and medical texts, see Kanantzidis, 2013: 245-264. For an overview of Galen’s development of theories and treatments for different types of mental conditions, see Nutton, 2013: 119-128.

² F5[9] (Pormann) = Ishāq ibn ‘Imrān, *On Melancholy*. This statement is the basis for the modern view that Galen used Rufus as a source for his writing on all three types of melancholy in *On Affected Places*. See Flashar, 1966: 105 and 107; Pormann, 2008: 5-6.

evaporation rises upwards to the brain, like some kind of sooty or smoky vapour, the melancholic symptoms affect the thinking faculty.³

In this passage Galen explains that a type of melancholy has occurred due to inflammation in the stomach, with the blood in the inflamed part containing a large amount of non-ideal natural black bile that makes the blood very thick. He then provides the mechanism that causes a problem in the stomach to be manifest in the brain. The hypochondriac melancholy is found also in the writing of various authors who refer to Rufus of Ephesus' discussions on melancholy. It appears that this was the subject of Rufus' *On Melancholy*, where the origin of this melancholy is in the place below the rib-cartilage (the hypochondriac) and near to an opening to the stomach.⁴ However, in *On Affected Places*, Galen does not quote or refer to the work of Rufus, but instead discusses Diocles' theory on hypochondriac melancholy. Galen quotes long sections from Diocles' *Affection, Cause, Treatment* and criticises him for not including what he considers to be the most important symptoms of this type of melancholy, which are fear and despondency.⁵ When it comes to analysing what Diocles has said about the hypochondriac melancholy, Galen believes that Diocles was unable to account properly for psychological disorders associated with this illness. There is also the fact that, as van der Eijk points out, Diocles favoured the cardio-centric location of the ruling part of the soul that was in conflict with Galen's own view. Another point of interest is that Galen does refer to the presence of phlegm, but not to the absence of black bile, in the explanation of the cause of hypochondriac melancholy in Diocles' writing on this topic.⁶ In addition to the material by Diocles, Galen also references passages from the Hippocratic Corpus. For example, he quotes from the Hippocratic *Aphorisms*, as evidence that these symptoms are essential for a correct diagnosis of hypochondriac melancholy.⁷ However, there is another Hippocratic text, *Koan Prognoses*, which Galen identifies as containing genuine Hippocratic doctrine, that has

³ *Loc. Aff.* III.10 (VIII 192,1-5; 189,7-11 K), translation by van der Eijk.

⁴ F5[7-9] (Pormann) = Ishāq ibn 'Imrān, *On Melancholy*; F6[1-7] (Pormann) = Ya'qūb al-Kaskarī, *Compendium on Medicine*; F7[1-2] (Pormann) = Ibn Sīnā, *Canon of Medicine*. See Pormann, 2008: 5.

⁵ F109 (van der Eijk) = Gal. *Loc. Aff.* III.10 (VIII 185,14-189,2 K). It has been pointed out by van der Eijk that the term 'melancholy' (μελαγχολία) does not actual occur in the passages from Diocles that Galen quotes. See van der Eijk, 2001: 217; 2008: 168.

⁶ See van der Eijk, 2001: 216-224; 2008: 167-169.

⁷ Hippocratic Corpus, *Aph.* VI.23 (IV 568,11-12 L); Gal. *Loc. Aff.* III.10 (VIII 188,3-7 K). This aphorism is also quoted by Galen in *On Causes of Symptoms* (II.VII.2 (VII 202,18-203,8 K)). See Anastassiou and Irmer, 1997, volume II.2, pp. 101-102; Jouanna, 2012b: 234-235.

information on patients that have become ‘deranged in a melancholic manner’ (τῶν ἐξισταμένων μελαγχολικῶς).⁸ We find that these passages from *Koan Prognoses* do not specifically mention the black bile humour as the cause of this condition, but then the same is true for the passage from *Aphorisms*. It seems that Galen prefers to quote and reference material from *Aphorisms* in relation to similar material from another Hippocratic text such as *Koan Prognoses*. This shows that Galen relies upon the content of one of his ‘core’ genuine Hippocratic texts to provide the critical material to prove his point. Galen does this even though there is no reference to hypochondriac melancholy in *Aphorisms* or in any other extant Hippocratic work, while there is a large amount of information on the hypochondriac melancholy in the material associated with Rufus of Ephesus (see page 223 above).

The next stage of melancholy is acquired if the patient experiences prolonged and intense symptoms of fear and despondency:

ὅταν δὲ τὰ μὲν τῆς μελαγχολίας ἴδια συμπτώματα φαίνεται μεγάλα, κατὰ δὲ τὴν κοιλίαν ἦτοι μηδὲν, ἢ σμικρὰ, τὸν ἐγκέφαλον ἡγητέον ἐπὶ τούτων πρωτοπαθεῖν, ἠθροισμένης ἐν αὐτῷ μελαίνης χολῆς. ... ὅτ’ ἂν δ’ ἐν αὐτῷ πλεονάσῃ τῷ τοῦ ἐγκεφάλου σώματι, μελαγχολίαν ἐργάζεται, καθάπερ ὁ ἕτερος χυμὸς τῆς μελαίνης χολῆς, ὁ κατωπτημένης τῆς ξανθῆς χολῆς γενόμενος, τὰς θηριώδεις παραφροσύνας ἀποτελεῖ χωρὶς πυρετοῦ τε καὶ σὺν πυρετῷ, πλεονάζων ἐν τῷ σώματι τοῦ ἐγκεφάλου.

Yet when the symptoms characteristic of melancholy manifest themselves to a great extent, whilst there is little or no suffering in the stomach, one must assume that the brain is primarily affected, since black bile has gathered there. ... But when it [this thick melancholic humour] is present in excess in the very body of the brain, it causes melancholy, just as the other kind of humour of black bile, the one that has arisen as a result of the burning of yellow bile, results in bestial hallucinations, both without fever and with fever when it fills the brain excessively.⁹

When it comes to the effect of black bile on the brain, Galen makes a distinction between the two types of this humour. It is important for Galen to be clear about

⁸ *Coac.* 87; 92; 93; 128 (V 602,11-12; 602,17-18; 602,18-20; 610,1-3 L).

⁹ *Loc. Aff.* III.10; III.9 (VIII 192,8-11; 177,15-178,3 K), translation by van der Eijk. See also Flashar, 1966: 107.

this, as the thick, non-ideal natural black bile can affect the brain without causing severe ulceration and corrosion of the organic matter. This means that it can be treated by a therapy, such as a specific type of diet. In the case of the altered black bile causing bestial hallucinations, Galen does not supply any further information, but we would assume that given the harmful nature of this type of black bile the patient would also suffer from the corrosive effects of the acidic black bile on the body, which could indicate a terminal prognosis (see section 6.3 below). However, earlier, when I discussed Galen's use of altered forms of black bile which are produced by the burning of black bile, yellow bile or blood, there were some references to the heating of the humours in the material that has been attributed to Rufus of Ephesus.¹⁰ The hypochondriac melancholy attributed to Rufus can be considered in terms of two different conditions in the body: either it is caused by a natural mixture or it comes from some acquired state, such as from a bad diet. In the second case we find that a person can become at first angry then sad and afraid. This is explained by the cooking of yellow bile producing rage, which when fully burnt up, cools to create the fear and sadness. This could be a potential source for Galen's view of melancholy in *On Affected Places*, as there are similarities between the two accounts. Both Galen and Rufus refer to the burning of yellow bile that causes different symptoms to melancholy. Galen's burnt yellow bile is a form of altered black bile and causes 'bestial hallucinations' (see page 224 above). Rufus' theory is similar, with the cooking of yellow bile causing a person to be bolder (θρασύτερος) and quick to anger (ὀργιλώτερος) and he implies that this can occur during the melancholy illness, lasting as long as the yellow bile is burning. The subsequent cooling process allows the melancholic symptoms to return. The material we have from Aëtius that discusses Rufus' theory of melancholy does not refer to this burnt yellow bile as an altered form of black bile, but an earlier passage does say that the humours become black through excessive heat and drying out.¹¹ One point that could support Rufus' account of melancholy as a possible source for Galen is the fact that in the material we have on the cause of mental illness by burnt yellow bile there is no reference to the corrosive properties of this type of substance, which is also omitted from

¹⁰ See chapter 4 'Galen's characterisation and physical description of the black bile humour', section 4.3 above.

¹¹ F11[21-24] (Pormann) = Aëtius, *Medical Books*, vi. 9 (frg. 70 (Daremburg)).

Galen's reference to burnt yellow bile in *On Affected Places*. This is different from his characterisation of altered black bile that is produced when yellow bile is excessively heated in his other works, such as *On Black Bile*.

We find also in *On Affected Places* that epilepsy can be associated with black bile:

ὡσπερ δ' ὁ παχὺς χυμὸς τοῦ φλέγματος, οὕτω καὶ οὗτος παχὺς χυμὸς ὁ μελαγχολικὸς ἐπιληψίας ποτ' ἐργάζεται κατὰ τὰς ἐκροὰς τῶν ἐν ἐγκεφάλῳ κοιλιῶν ἰσχύμενος, ἥτοι τῆς μέσης, ἢ τῆς ὀπισθεν·

Just like the thick phlegmatic humour, this thick melancholic humour likewise sometimes causes instances of epilepsy, because it is contained in the places where the cavities of the brain, whether the middle or the posterior cavity, have their exit channels.¹²

Galen explains a little later in the text that when thick humours, like phlegm and non-ideal natural black bile, are present in large amounts in the brain, they can cause damage to it either as a 'organic' (ὀργανικός) or as a 'homogeneous' (ὁμοιομέρεια) system.¹³ This means that Galen is describing the brain in two ways, which explain the cause of different types of disease. The 'organic' system is the collection of different parts of the brain, such as the various types of vessels that allow the brain to function. The thick humours affect this 'organic' system when they obstruct the blood vessels. The 'homogeneous' system describes the brain as a uniform structure of matter. It is affected when its overall qualitative mixture is altered by the presence of the thick humours. Galen supports his explanation with a quote from *Epidemics VI*, which claims that people with a melancholic condition can become epileptic and vice-versa. Transition from one illness to the other is said to be dependent on whether the illness (ἀρρώστημα) affects the body (σῶμα), which causes epilepsy, or the mind (διάνοια), which produces melancholy. Galen interprets this Hippocratic text as showing that there are cases where epilepsy can be produced by non-ideal natural black bile, as well as by the thick phlegmatic humour. But there is a difference, as epilepsy that has been caused by non-ideal natural black bile can

¹² *Loc. Aff.* III.9 (VIII 177,12-15 K), translation by van der Eijk.

¹³ For more information on Galen's theory about the importance in understanding the different levels of matter in the body, see *Morb. Diff.* III.1-IV.5 (VI 841,1-848,3 K).

transform into melancholy, which is not the case when it is produced by the thick phlegmatic humour. Further to this, Galen uses this passage from *Epidemics VI* to show that Hippocrates also viewed the condition of the soul (ψυχή) as dependent on the mixture of the qualities. Galen believes that this confirms that there are two mechanisms for bile to affect the brain, one that can hinder the function of this organ, and the other that can alter the homoeomerous substance of the brain. However, all that the passage from *Epidemics VI* tells us is that there are two related diseases, epilepsy and melancholy, with the possibility of change from one to the other, which is based on some unspecified affection of either the body or the mind. In this passage there is no mention of any humours, phlegm, bile or black bile, and it does not even refer to the qualities.¹⁴ Another point of interest is that Galen could have drawn upon the content of the Hippocratic *On the Sacred Disease* for information on the cause of epilepsy from phlegm and rage from bile.¹⁵ But, just as when he attempts to show agreement between Hippocrates and Plato on the tripartite division of the soul, he does not use the content of *On the Sacred Disease*, even though there is plenty of important material on the brain in this treatise.¹⁶

Towards the end of his discussion of melancholy in *On Affected Places*, Galen emphasises the importance of understanding the way that the humours can cause mental illness:

ὅτι γὰρ οἱ τε χυμοὶ καὶ ὅλως ἢ τοῦ σώματος κράσις ἀλλοιοῖ τὰς ἐνεργείας τῆς ψυχῆς, ὡμολόγηται τοῖς ἀρίστοις ἰατροῖς τε καὶ φιλοσόφοις, ἐμοὶ τε δι' ἑνὸς ὑπομνήματος ἀποδέδεικται, καθ' ὃ ταῖς τοῦ σώματος κράσεσιν ἀκολουθούσας ἀπέδειξα τὰς τῆς ψυχῆς δυνάμεις· ὅθεν οὐδὲ γράψαι τι περὶ μελαγχολίας ἐτόλμησαν οἱ τῆν τῶν χυμῶν δύνάμιν ἀγνοήσαντες, ἐξ ὧν εἰσι καὶ οἱ περὶ τὸν Ἑρασίστρατον.

For the best doctors and philosophers are agreed that the humours and in general the mixture of the body cause alteration to the activities of the soul. I myself demonstrated this in one treatise, in which I showed *That the Faculties of the Soul Follow the Mixtures of the Body*. This is why

¹⁴ Hippocratic Corpus, *Epid VI*, VIII.31 (V 354,19-356,3 L); Gal. *Loc. Aff.* III.10 (VIII 180,1-181,7 K). See Anastassiou and Irmer, 1997, volume II.2 p. 223.

¹⁵ For example, *Morb. Sacr.* VIII-X (5-7) (VI 368,10-374,20 L).

¹⁶ See chapter 2 'Galen's strategy for his portrayal of Hippocrates as a philosopher', section 2.3 above.

those who do not know the power of the humours do not dare to write on melancholy, among whom are the followers of Erasistratus.¹⁷

We see that Galen advertises his work on the way that the mixtures of the qualities (hot, cold, dry and wet) can affect the 'activities of the soul'. If we investigate the content of *The Faculties of the Soul Follow the Mixtures of the Body*, there are three places where melancholy is discussed. Firstly, Galen confesses that he does not know the underlying mechanism that causes certain types of mental illness in the brain:

... ὥσπερ γ' οὐδὲ διὰ τί χολῆς μὲν ξανθῆς ἐν ἐγκεφάλῳ πλεοναζούσης εἰς παραφροσύνην ἐλκόμεθα, διὰ τί δὲ τῆς μελαίνης εἰς μελαγχολίαν, ...

... nor (have I discovered) why when there is a build-up of yellow bile in the brain we are brought into a state of derangement; or when there is a build-up of black bile, into melancholy; ...¹⁸

One point to note is that in this passage Galen uses the term 'black bile' (μέλαινα χολή), rather than 'melancholic humour' (μελαγχολικὸς χυμὸς) as the substance that causes melancholy. This is an example of Galen using 'loose' language, as he has stated in *On Affected Parts* that the non-ideal natural black bile should be properly called 'melancholic humour', rather than 'black bile'.¹⁹ The second reference to melancholy in *The Faculties of the Soul Follow the Mixtures of the Body* provides a description of the effects of this illness on the soul, such as it causing distress, and a lack in resolve and spirit. Lastly, melancholy is given as an example, along with phrenitis and madness, of the effect of disease in the body on the soul.²⁰ Galen does not say very much in *On Affected Parts* about the third stage of melancholy, which occurs when non-ideal natural black bile has become dominant in all parts of the body. What he does say is within the context of advice to doctors on the importance of correct diagnosis for the correct treatment to be applied. Therefore, it is important to be able to know whether there is a large amount of non-ideal natural black bile in just the brain, or in the whole body, as in the latter

¹⁷ *Loc. Aff.* III.10 (VIII 191,8-14 K), translation by van der Eijk.

¹⁸ *QAM*, III (IV 776,19-777,3 K), translation by Singer.

¹⁹ See chapter 4 'Galen's characterisation and physical description of the black bile humour', section 4.2 above.

²⁰ *QAM*, III; V (IV 779,13-21; 788,11-13 K).

therapeutic treatments do not work, and instead phlebotomy must be used.²¹ Finally, we find that in his *Commentary on On the Nature of Man*, Galen refers to physical theory that associates each of the humours with a particular character of the soul, where a ‘melancholic constitution’ (μελαγχολικός), which occurs when there is a predominance of the black bile humour in the body, causes a person to be ‘steady’ (ἔδραϊος) and ‘firm’ (βέβαιος).²² Galen does not provide any more information on this theory here or in any other of his extant treatises. This is also the only place in *Commentary on On the Nature of Man* where Galen uses the term ‘melancholic humour’ and it could be a similar reference to the affect of the non-ideal natural black bile on the brain, as we find in *On Affected Parts*.

6.2 Quartan fever, the black bile fever

There are many different types of fever discussed in ancient medicine. Some fevers are differentiated by the length of time between bouts of illness, such as the continuous, quotidian, tertian and quartan types of fever. Out of these fevers, we find that Galen considers black bile to be the cause of quartan fevers and he is very critical of anyone who either denies this is the case, or postulates any alternative causes for this type of periodic fever. For example, in *On the Doctrines of Hippocrates and Plato*, Galen criticises Plato for presenting a theory of the cause of the different fevers based on the cosmic elements, which he felt was inferior to the cause of fevers from the individual humours he claims was developed by Hippocrates:

ἀμελῶς οὖν ἔσχε περί τε τήν τῶν αὐτῶν τούτων ἐξέτασιν ἔτι τε μάλλον ὧν ἔγραψεν ὁ Ἱπποκράτης περί τῶν πλεοναζόντων νοσημάτων ἐν ἐκάστη τῶν ἡλικιῶν τε καὶ ὠρῶν, ὡς εἶ γε προσεσχέκει τὸν νοῦν αὐτοῖς, οὐκ ἂν ἐγεγράφει ταῦτα· “τὸ μὲν οὖν ἐκ πυρὸς ὑπερβολῆς μάλιστα νοσήσαν σῶμα συνεχῆ καύματα καὶ πυρετοὺς ἀπεργάζεται, τὸ δὲ ἐξ ἀέρος ἀφημερινούς, τριταίους δὲ ὕδατος διὰ τὸ νωθέστερον ἀέρος καὶ πυρὸς αὐτὸ εἶναι, τὸ δὲ γῆς τέταρτον ὄν νωθέστατον τούτων ἐν τετραπλασίαις περιόδους χρόνου καθαιρόμενον τεταρταίους πυρετοὺς ποιῆσαν ἀπαλλάττεται μόλις.”

²¹ *Loc. Aff.* III.10 (VIII 182,6-12; 192,11-193,1 K). See Flashar, 1966: 107.

²² *HNH*, I.40, CMG V 9,1, p. 51,13-16 Mewaldt (XV 97,10-13 K).

ἐν τούτῳ τῷ λόγῳ πρῶτον μὲν ἡμάρτηκε κατὰ τὰ κοινὰ στοιχεῖα ἀπάντων σωμάτων, οὐ κατὰ τὰ τῶν ἐναίμων ζώων ποιησάμενος τὴν αἰτιολογίαν τῶν περιοδικῶν πυρετῶν· ἄμεινον γὰρ ἦν ἅ καὶ δεῖξαι δυνάμεθα κατὰ τὸ σῶμα πλεονάζοντα, ταῦτ' αἰτιᾶσθαι· δεύτερον δ' ὅτι τῶν ἀφημερινῶν καὶ τριταίων πυρετῶν οὐδ' ἐγγὺς ἦκε τῆς ἀληθοῦς αἰτίας. φαίνεται γὰρ ἐναργῶς ἐπὶ μὲν τῶν ἀφημερινῶν ὁ φλεγματώδης πλεονάζων χυμὸς, ὑγρὸς καὶ ψυχρὸς ὢν, ἐπὶ δὲ τῶν τριταίων ὁ τῆς ξανθῆς χολῆς, πάλιν αὖ καὶ οὗτος ἄκρως θερμὸς καὶ ξηρὸς· ὥστ' ἐπὶ τούτου μὲν ἐχρῆν εἰρησθαι πλεονάζειν τὸ τοῦ πυρὸς στοιχεῖον, ἐπ' ἀμφημερινοῦ δὲ τὸ τοῦ ὕδατος, ὥσπερ ἐν τοῖς τεταρταίοις χυμὸν μὲν τὴν μέλαιναν χολήν, στοιχεῖον δὲ τὴν γῆν. ὅστις δ' ἐκάστου τῶν εἰρημένων ἀκριβῶς ἐκμαθεῖν βούλεται τὴν φύσιν, ἔν τε τοῖς περὶ κρίσεων ὑπομνήμασι κὰν τοῖς περὶ τῆς διαφορᾶς τῶν πυρετῶν ἐξεργασμένον τὸν λόγον ἔχει. ἐγὼ δ' οὐκ εἴωθα πολλάκις ὑπὲρ τῶν αὐτῶν τὰ αὐτὰ γράφειν, ἀλλ' ἅπαξ ἢ καὶ δις ἐνίοτε τὴν ἀπόδειξιν εἰπὼν ἐν τοῖς ἄλλοις βιβλίοις τῷ συμπεράσματι τῆς ἀποδείξεως χρῶμαι·

Therefore (Plato) neglected to examine these same things, and even more, the things that Hippocrates wrote about the diseases that predominate at each age and in each season. If he had paid attention to them he would not have written these words: "Now the body that has fallen sick chiefly from an excess of fire produces continuous heats and fevers; that from air, quotidian fevers; that from water, tertian fevers, because water is more sluggish than air and fire; and that from earth, in the fourth place, is the most sluggish of all; being purged in fourfold periods of time and producing quartan fevers, it barely manages to escape." (Plato's) first error in this account was to explain the causes of periodic fevers in terms of the elements common to all bodies rather than the elements of blooded animals. It would have been better to make the causes those things whose excess in the body we can actually point out. His second error was that he did not even come close to the true cause of quotidian and tertian fevers. In quotidian fevers an excess of phlegm-like humour, which is wet and cold, is clearly evident; and in tertian fevers there is clearly an excess of yellow bile, this latter humour being, in its turn, extremely hot and dry. Therefore in the latter case the statement should have been that there is an excess of the element fire, and in quotidian fevers an excess of water; just as in quartan fevers the statement would be that the humour is black bile and the element is earth. Anyone who wished to learn in detail the nature of these fevers will find a full account in the treatises *On Crises* and *On the Different Kinds of Fevers*. It is not my habit to write the same things over and over about the same subjects; when I have given the scientific proof once or sometimes even twice, I then use the conclusion of the proof in my other books.²³

²³ *PHP*, VIII.6.38-43, CMG 4,2,1, p. 520,3-26 De Lacy (V 697,5-698,16 K), translation by De Lacy.

We can see from this passage that Galen is criticising Plato for ignoring what Hippocrates has said about the causes of the different types of periodic fever. He sets up the argument against Plato by pointing out two significant errors in Plato's theory of the cause of the fevers. The first mistake relates to Plato's use of the four cosmic elements, rather than the four humours, to explain the cause of the different fevers in the body.²⁴ The second error is that Plato has incorrectly assigned the qualities to the quotidian and tertian fevers. We find that Galen begins his criticism of Plato with reference to the writing of Hippocrates, but he ends the passage by citing his own works, *On Crises* and *On the Differences of Fevers*, for the best sources to understand the cause of the different types of fever. Thus Galen has cleverly included Hippocrates as the authority on this subject, but if anyone wants to learn about this topic they need to consult Galen's works, rather than the content of the Hippocratic Corpus. It is true that Galen is clear about the association between black bile and quartan fever in the treatises that he cites. In *On Crises*, black bile (μέλαινα χολή) is in excess (πλεονάζειν) in the body when a person is suffering from quartan fever.²⁵ In this text, Galen also emphasises the importance of the uneven mix of the qualities 'cold and dry' with the characteristics of the autumn season. This is discussed in relation to his view that this fever will be more likely to be produced in those suffering from a melancholic condition, having a diet that promotes black bile in the body and where the quartan fever has become an epidemic.²⁶ We find in *On the Differences of Fevers* that quartan fever is more prevalent in those who are naturally more melancholic (μελαγχολικώτερα), which comes from the effect of the cold and dry (ξηρὰ καὶ ψυχρά) qualities, such as for those who are past the prime age of life and the conditions of autumn. Again, we find that Galen emphasises that it is black bile that is responsible for this type of fever.²⁷ We also find that Galen refers to the quartan fevers in *On the Properties of Foodstuffs*. In this text, he calls the quartan fever a disease of those suffering from the conditions related to the 'melancholic humours' (μελαγχολικοὶ χυμοί),

²⁴ In *PHP* (VIII.4.4-7, CMG 4,2,1, p. 506,12-24 De Lacy (V 680,9-681,8 K)), Galen criticised Plato for not acknowledging the importance of the four humours for explanations of health and disease in the body. See Lloyd, 2008: 43.

²⁵ *Cris.* II.3 (IX 652,12-14 K).

²⁶ *Cris.* II.4 (IX 659,6-15 K). See Anastassiou and Irmer, 1997, volume II.2 p. 87.

²⁷ *Diff. Feb.* II.1; II.5 (VII 335,10-15; 343,10-14 K).

which includes diseases of the skin, such as cancer, elephantiasis, scabies and leprosy. Galen is warning against the intake of too much beef that is thick by anyone who has a melancholic constitution.²⁸ In his commentary on a passage from *Epidemics I*, Galen tells us that the production of the quartan fever cannot be explained simply by a particular condition (κατάστασις), but is because there is an increase in black bile in those who have a melancholic nature (μελαγχολική φύσις), where the black bile has not been sufficiently evacuated.²⁹ So far, the implication from Galen's writing is that an excess of forms of the natural black bile, rather than the altered type, are the cause of the quartan fevers. There are also similar direct statements about the cause of quartan fever from natural black bile in Galen's *Commentary on Aphorisms, On Tremor, Palpitation, Spasm and Rigor, and Prognosis by Pulses*.³⁰ In all of these cases, we see that Galen uses black bile (μέλαινα χολή) and melancholic humour (μελαγχολικός χυμός) interchangeably in respect to the physical substance that causes quartan fever. We have seen this many times before, when Galen has used both of these terms to refer to different forms of black bile.

We see from the passage from *On the Doctrines of Hippocrates and Plato I* quoted earlier (see pages 229-230 above), that Galen accuses Plato of failing to read material on Hippocrates' view on this subject. The question is which Hippocratic texts should Plato have consulted in this case? Galen does not name them and only refers to his own books when he recommends how the proper understanding of quartan fevers should be obtained. However, Plato, who lived many centuries before Galen, would clearly not have been able to read Galen's books and so, would only have access to certain medical texts, such as those written by the Hippocratic physicians. If we take Galen's first statement from *On the Doctrines of Hippocrates and Plato*, quoted above (see

²⁸ *Alim. Fac.* III.1, CMG V 4,2, p. 333,1-7 Helmreich (VI 661,12-662,2 K).

²⁹ *Epid. I*, VI (II 620,10-622,2 L). Jones suggests that the Hippocratic physician was mistaken in thinking that there was an actual change of one type of fever to the quartan fever. He explains that in cases of malaria, there are many different illnesses mixed together and after time the quartan is left because it lasts a long time, this gives the impression that it has been produced from the illnesses occurring earlier on, Jones, 1923a: 157 (note 1). Galen provides his interpretation of this passage in his *Hipp. Epid.* (I.II.21, CMG V 10,1, p. 59,22-29 Wenkebach (XVIIa 114,14-115,6 K)).

³⁰ *Hipp. Aph.* VII.40 (XVIIIa 143,5-14 K); *Trem. Palp.* 7 (VII 633,11-14 K); *Praes. Puls.* I.4 (IX 247,18-248,2 K).

pages 229-230), he says that Plato should have consulted Hippocrates' writing about the diseases that are produced in a particular time of life (ήλικιῶν) or season (ώρῶν). The Hippocratic *On the Nature of Man*, although not named explicitly here, is an important work that Galen frequently refers to, which does contain a section on quartan fevers and black bile:

γνώση δὲ τῶδε, ὅτι οἱ τετραταῖοι πυρετοὶ μετέχουσι τοῦ
μελαγχολικοῦ· φθινοπώρου μάλιστα οἱ ἄνθρωποι ἀλίσκονται ὑπὸ
τῶν τετραταίων καὶ ἐν τῇ ἡλικίῃ τῇ ἀπὸ πέντε καὶ εἴκοσιν ἐτέων ἐς τὰ
πέντε καὶ τεσσαράκοντα, ἢ δὲ ἡλικίῃ αὕτη ὑπὸ μελαίνης χολῆς
κατέχεται μάλιστα πασέων τῶν ἡλικιῶν, ἢ τε φθινοπωρινῇ ὥρῃ
μάλιστα πασέων τῶν ὥρέων.

Therefore, you will know that the quartan fevers share in [the qualities] of black bile; of autumn mostly that the men are seized by the quartan fevers, between the ages of twenty-five and forty-five, this age is the most likely of all the ages, and autumn is the most likely of all the seasons, when a man is mastered by black bile.³¹

This passage provides all of the material that Galen needs to make his points about showing that Hippocrates had already identified black bile as being the basis of the cause of quartan fevers. We have the direct statement that quartan fevers come from black bile, but we also see that black bile is associated with both autumn and the age of life between twenty-five and forty-five. This would therefore be the perfect point of comparison that Galen could use to provide the evidence that Hippocrates is actually talking about black bile when he refers to the occurrence of quartan fevers in autumn and in people over a certain age in other treatises of the Hippocratic Corpus. However, there is a problem, as we find that Galen has rejected this whole section of *On the Nature of Man* because he does not believe it was written by Hippocrates. In his *Commentary on On the Nature of Man*, when Galen comes to the fifteenth section he objects firstly to the ordering of continuous, quotidian, tertian and quartan, as he says that in this passage the tertian fever comes to crisis after the quotidian fever. But this contradicts the writing of Hippocrates in *Epidemics* and *Aphorisms*, where the tertian fever is said to be the quickest to reach crisis. Another issue raised by Galen is that he is unhappy with the use of σύννοχος for 'continuous',

³¹ *Nat. Hom.* 15, CMG I 1,3, p. 204,14-21 Jouanna (VI 68,8-14 L), adapted from a translation by Jones.

as this is a more recent term and was not used by Hippocrates.³² Galen's position against this passage is so strong that he condemns the writer of this section as a liar:

ὥσθ' ὁ ταῦτα γράψας ἢ τοιοῦτος ἦν σοφιστὴς ἢ πανούργος
ἄνθρωπος, ὡς ἔοικεν, παρεγγράψας τὸ ψεῦδος ἕνεκα τοῦ
προστρίψασθαι ψόγον τῷ παλαιῷ.

So the man who has written these things was either such a sophist, or a quack, as seems likely, having appended this lie so that blame might be inflicted on the ancient author.³³

The absence of any positive commentary or reference to this passage here, or any of Galen's other writing that has survived, does impact on the way that he can support his view that Hippocrates intended black bile to be the cause of quartan fevers. So, instead of *On the Nature of Man*, we find that Galen uses other Hippocratic works to present Hippocrates' view of the cause of quartan fevers.

There is a short passage in *Koan Prognoses* that informs us that quartan fevers are more likely to be produced from fevers that are more irregular in period, especially in the autumn and are more likely to be suffered by people over the age of thirty.³⁴ We know that Galen did acknowledge that some parts of *Koan Prognoses* were of the standard that he expects from a genuine work by Hippocrates, so Galen may be referring to the content of this work.³⁵ However, since Galen does not mention the information regarding the season and time of life, which we find in the passage from *Koan Prognoses*, it is difficult to identify this text as the Hippocratic source to which Galen refers. Another, substantial passage from *On Diseases II* contains a lot of information about the conditions that bring about quartan fevers and the best way to treat this type of illness. In

³² See chapter 3 'Galen's opinion on the authenticity of the individual treatises in the Hippocratic Corpus', section 3.2.1 for more information about Galen's rejection of this part of *On the Nature of Man*.

³³ *HNH*, II.22, CMG V 9,1, p. 88,4-7 Mewaldt (XV 172,11-14 K), adapted from a translation by Lewis.

³⁴ *Coac.* 139 (V 612,16-18 L). There are also other examples of quartan fevers in *Aer.* (VII (II 28,4-8 L)) and *Epid. I* (XXVI (II 680,9-682,2 L)), but these only mention the fever without any detail about its production.

³⁵ See chapter 3 'Galen's opinion on the authenticity of the individual treatises in the Hippocratic Corpus', section 3.2.10 above.

this text we find that quartan fevers are suffered by those ‘in an unclean state from another disease’ (ἐξ ἄλλης νόσου ... ἀκάθαρτον). The recommendation is to cleanse the body ‘downwards’ (κάτω), which could imply that excess bile needs to be removed. The presence of too much bile could also be inferred by the use of ‘white hellebore’ (λευκός ἐλλέβορος), as part of the many different substances recommended as treatments for quartan fever in this passage.³⁶ We have seen earlier that it is possible that Galen has used material from *On Diseases II* in relation to his characterisation of the properties of altered black bile.³⁷ However, in this case there is no such evidence to suggest that he intended the content of *On Diseases II* for material that Plato could have read to understand Hippocrates’ view on quartan fevers.³⁸ In contrast to these two examples, Galen does discuss the content of a passage from the Hippocratic *Aphorisms* (III.22) that contains a reference to the quartan fevers that occur as a summer and autumn disease, alongside a list of diseases, which includes disease of the spleen and melancholia.³⁹ We find the following interpretation of this aphorism in Galen’s *Commentary on Aphorisms*:

καὶ μέντοι καὶ τετραταίους πυρετοὺς ἐν ταύτῃ τῇ ὥρᾳ γίνεσθαι φησιν, ἐπὶ τῇ μελαίνῃ δηλονότι συνισταμένουσ χολῆ, διττὴν ἐχούση τὴν γένεσιν, ἐκ μὲν τῆς ξανθῆς ὑπεροπτηθείσης τὴν ἐτέραν, ἐκ δὲ τοῦ παχέος αἵματος τὴν ἐτέραν.

Moreover, he [Hippocrates] says of quartan fevers that they are produced in this season, obviously being caused by black bile, which has two types of production, one from the over-heating of yellow bile, and the other from the thick blood.⁴⁰

Here we have Galen explaining how Hippocrates can write about the occurrence of quartan fevers in both summer and autumn.⁴¹ In autumn the

³⁶ *Morb. II*, XLIII (VII 60,6-24 L). Hellebore was used as a purgative drug for both types of bile, yellow or black. For example, see *Epid. V*, II; LIII (V 204,8-9; 250,5 L).

³⁷ See chapter 4 ‘Galen’s characterisation and physical description of the black bile humour’, section 4.4 above.

³⁸ See chapter 3 ‘Galen’s opinion on the authenticity of the individual treatises in the Hippocratic Corpus’, section 3.4.2 above.

³⁹ *Aph.* III.22 (IV 496,4-8 L).

⁴⁰ *Hipp. Aph.* III.22 (XVIIb 622,2-6 K). Galen also refers to this passage in an earlier part of this commentary, but does not give any further detail (III.5 (XVIIb 570,7-571,6 K)). See Anastassiou and Irmer, 1997, volume II.1 p. 103.

⁴¹ Galen is presenting his interpretation of a passage from *Aph.* (III.22 (IV 496,4-8 L)), which discusses the types of diseases that occur in autumn and summer.

cause of quartan fevers is easily explained, as in this season the natural black bile humour increases in the body and so there is more susceptibility for people to suffer from illness related to black bile. However, in summer the situation is more complicated, as there is not a large amount of natural black bile in the body in this season. But, we have already discovered the reason why diseases related to black bile can occur in the summer, as the heat causes altered black bile to be produced by the ‘roasting’ of the humours in the body (see section 4.2 above). Therefore, the large amount of yellow bile present in the body in summer can change into altered black bile under the conditions of intense heating. We have seen that he refers to natural forms of black bile as the cause of quartan fevers, with no mention of altered black bile. However, he now needs to explain why there is a passage, in one of his ‘favoured’ Hippocratic texts, which has quartan fevers occurring in summer, the ‘hot and dry’ season. Galen uses his theory on the production of altered black bile in conditions that are ‘hot and dry’ to explain this aphorism. However, he does not say whether there are differences between the quartan fevers produced in summer or autumn and if the acidic properties of the altered black bile cause additional complications for the suffering of the patient.

Galen provides more information on the cause of different fevers in the different seasons in his comments on the following passage from the Hippocratic

Prognostic:

χρηὶ δὲ τὴν μὲν τοιαύτην ἀπόστασιν προσδέχεσθαι συνεχέος ἐόντος τοῦ πυρετοῦ, ἐς δὲ τεταρταῖον καταστήσεσθαι, ἣν διαλείπη τε καὶ ἐπλαμβάνη πεπλανημένον τρόπον καὶ ταῦτα ποιέων τῷ φθινοπώρῳ πελάση. ὥσπερ δὲ τοῖσι νεωτέροισι τριάκοντα ἐτέων αἱ ἀποστάσεις γίνονται, οὕτως οἱ τεταρταῖοι μᾶλλον τοῖσι τριακονταέτεσι καὶ γεραιτέροισι.

If the fever be continuous you must expect the abscession to be of this type, but the disease will resolve into a quartan if it intermit and attack in an irregular fashion, and if autumn approach while it acts in this way. Just as the abscessions occur when the patients are under thirty, so the quartans supervene more often when they are thirty or over.⁴²

⁴² *Prog.* XXIV, II 182,1-7 L, translation by Jones. Galen also quotes this passage as part of a longer section in his *Cris.* (III.11 (IX 753,8-754,10 K)), where he is reporting what Hippocrates has said on the different types of fever. See Anastassiou and Irmer, 1997, volume II.2 pp. 131-135.

In his *Commentary on Prognostic*, Galen starts his interpretation of this passage by reporting that he has discussed the association between the quartan fevers and the melancholic humours (μελαγχολικοί χυμοί) in another of his works called *On the Differences of Fevers*. Galen is repeating what he said in the passage from *On the Doctrines of Hippocrates and Plato*, which I quoted earlier (see pages 229-230 above). This is because he wants to make this association between black bile and the quartan fevers clear, as it does not appear in the passage from *Prognostic*.⁴³ However, in *Commentary on Prognostic*, Galen tells us that there is an extreme heating of the humours in those with continuous fevers in the summer. The body may be able to cope with the increase of black bile in the body, as long as it can be voided as quickly as possible. However, this is more difficult for older people (ἐν ταῖς ἡλικίαις ἢ παρακμῇ and ἄχρι τοῦ γήρως) and in autumn, where the cold inhibits the evacuation of black bile from the body.⁴⁴ Here, there is some ambiguity caused by Galen's tendency not to provide different names for the different types of black bile. The reference to the heating of the humours suggests that the altered black bile is being produced, but the case of the evacuation of black bile in autumn due to the cold indicates the natural form of this humour. However, we can resolve this by taking into account the process that altered black bile can be restored to its natural qualities by a cooling effect that occurs when the heat is removed. Therefore, large amounts of altered black bile are produced from the heating of the humours, but the cooling process means that it changes back to the 'cold and dry' form of natural black bile that is difficult to remove from the body in autumn. In this way, Galen can select passages from *Prognostic* and *Aphorisms*, which he considers to be superior Hippocratic works, to show that Hippocrates is in agreement with this characterisation of the effect of black bile to cause quartan fevers.

Therefore, all that is left for Galen is to base his argument for Hippocrates' agreement with his own theory about black bile causing quartan fevers on the following Hippocratic texts: the combination of a reading of *Prognostic* and the

⁴³ In fact, black bile is not referred to at all in the *Prognostic*, see chapter 3 'Galen's opinion on the authenticity of the individual treatises in the Hippocratic Corpus', section 3.2.2 above.

⁴⁴ *Hipp. Prog.* III.32-33, CMG V 9,2, pp. 355,23-358,8 Heeg (XVIIIb 277,14-283,2 K).

earlier sections of *On the Nature of Man*, along with supporting material from *Aphorisms*. However, despite Galen's rejection of the fifteenth section of *On the Nature of Man*, I think that this is an important source for Galen in *On the Doctrines of Hippocrates and Plato*. However, Galen is unable to quote this part directly, as this would contradict his rejection of it. We have seen already that Galen tells us that in *On the Doctrines of Hippocrates and Plato* he is avoiding quoting from *On the Nature of Man*, as he suggests that he has covered all the material worth noting in *On the Elements According to Hippocrates*. Therefore, Galen uses the type of information found in the fifteenth section of *On the Nature of Man* and paraphrases it so that he does not need to cite it. The problem is that Galen suspects that the content of this part of *On the Nature of Man* is a Hellenistic forgery and so from this basis, it would not have been written until after Plato's death. It is difficult to identify any particular Hippocratic text, apart from the passage in the fifteenth section of *On the Nature of Man*, which Plato could have read to understand the Hippocratic humoral system in terms of the production of quartan fevers from black bile, rather than the cosmic elemental earth. Therefore, it is unclear whether Plato would have been able to draw such conclusions relating to quartan fevers and black bile and even Galen himself recommends his own texts as the best way to understand the relationship between them.

6.3 Cases where the presence of black bile indicates a terminal disease

Moving on from these specific cases of melancholy and the quartan fevers, I now want to discuss the more general diseases that Galen attributes to black bile. In the earlier section about diseases of the spleen, I discussed Galen's quotation of a passage from the Hippocratic *Aphorisms* in his treatise *On the Natural Faculties*.⁴⁵ This is part of Galen's argument for the teleological basis of the design of the spleen to remove a potentially harmful substance from the body. The passage from the Hippocratic *Aphorisms* (IV.24) that Galen uses is important, as he refers to it in some of his other works. For example, in *On the Utility of the Parts*, Galen uses this aphorism when he discusses the situation when black bile must be quickly removed from the body. Here Galen is referring

⁴⁵ See chapter 5 'The cleansing of harmful black bile from the body', section 5.4 above.

to the altered form of black bile, as it causes severe ulceration when it is present in the body, which is not the case for natural forms of black bile. We are told that the sensitivity of the bowels causes an immediate action to remove the altered black bile. The shorter the time that this substance is in the body, the less harm it can do. Unfortunately, the long and winding structure of the intestines allows the altered black bile time to cause severe ulceration.⁴⁶ Galen provides a similar explanation in *On Black Bile*:

ἐφ' ὧν γοῦν οἶόν τέ ἐστι βεβαίως διαγνῶναι τὴν ἐργασαμένην αἰτίαν, ἐναργῶς ἐπὶ τούτων φαίνεται καὶ ξανθὴ καὶ μέλαινα χολὴ διαβιβρώσκουσαι τῶν ἐντέρων ἄλλοτε ἄλλο, καθ' ὅτιπερ ἂν μάλιστα στηριχθῶσιν, καὶ ποτε καὶ τελέως ἀνίατον ἐργαζόμεναι τὴν δυσεντερίαν. καὶ διὰ τοῦτο Ἱπποκράτης ἐν Ἀφορισμοῖς ἔγραψε· “Δυσεντερίη, ἣν ἀπὸ χολῆς μελαίνης ἀρξεται, θανάσιμον.” ἐγὼ δὲ πρόσθεν εἶπον ἀνίατα πάντα εἶναι τὰ διὰ μέλαιναν χολὴν ἐλκωθέντα, πλὴν εἴ τις ἴασιν ἐθέλει καλεῖν, ὅταν ἐκκόψῃ τὸ πεπονθὸς μόνον ὅλον ἐν κύκλῳ περιτεμῶν ἄχρι τῶν ἀπαθῶν.

From the same indications that it is in fact possible to recognise for certain the effective cause, it is clearly evident that both yellow bile and black bile corrode one of the intestines or the other at different times, wherever it is especially established, and after a certain time, they make dysentery incurable. On account of this Hippocrates wrote in *Aphorisms*: “Dysentery, if it begins from black bile, is fatal.” I said before that everything that is ulcerated on account of black bile is incurable, unless you want to term as healing the excision of the whole of the affected part, which is cutting round in a circle up to the parts that are unaffected.⁴⁷

We see in this passage that Galen is referring to the altered black bile, as this type of ulceration comes from its corrosive acidic properties. This is emphasised in Galen's comparison of the two types of dysentery caused by yellow bile and altered black bile. He explains that more severe ulceration occurs because of the special property in altered black bile of being slow moving (it is a thicker substance than yellow bile) and from its acidity. This altered black bile has such an effect on the body that the condition will be incurable compared to the effect of yellow bile. Galen has been able to support his theory of the terminal effect of ulceration by altered black bile with reference to an aphorism, which he attributes to Hippocrates. We saw earlier that Galen attempts to emphasise the

⁴⁶ *UP*, V.10 (III 381,6-382,5 K). See also *Hipp. Aph.* IV.24 (XVIIb 688,8-689,4 K).

⁴⁷ *At. Bil.* 5, CMG V 4,1,1, p. 80,7-15 De Boer (V 122,2-12 K), adapted from a translation by Grant. See Anastassiou and Irmer, 1997, volume II.2 p. 90.

importance of this aphorism in relation to another one, as he believes they are in conflict with each other. However, Galen is mistaken because there is no such contradiction.⁴⁸ But, Galen wants to highlight this aphorism as an example of Hippocrates' agreement with his overall argument for the importance of black bile and the spleen to understand health and disease in the body. In this way Galen wants to use Hippocrates, as the originator of this type of theory, in his polemic against the followers of Erasistratus.

But it is not just dysentery, associated with the presence of the altered black bile, which is considered deadly. What we can see from the passage above in *On Black Bile* (see page 239 above) is that Galen extends this fatal prognosis from dysentery to all ulcerations caused by altered black bile. He tells us that 'everything that is ulcerated because of black bile is incurable' (ἀνίατα πάντα εἶναι τὰ διὰ μέλαιναν χολήν ἐλκωθέντα). This shows that Galen believed that any ulceration of altered black bile would lead to the death of the patient. This statement is made after the quotation from *Aphorisms* and this could imply that Galen considers Hippocrates to have the same opinion regarding the terminal prognosis of altered black bile ulcerating the body in this way. In fact, there is another passage from *Aphorisms* that does imply that the presence of black bile should be taken as a general sign of a terminal case:

Νοσημάτων ὀκόσων ἀρχομένων, ἣν χολὴ μέλαινα ἢ ἄνω ἢ κάτω
ὑπέλθη, θανάσιμον.

Should black bile be evacuated at the beginning of any disease, whether upwards or downwards, it is a mortal symptom.⁴⁹

This is a statement about 'any disease' is more general than the case for a disease of the spleen and dysentery that we saw in *Aph.* (VI.43). Galen provides more detail in his interpretation of this aphorism in his *Commentary on Aphorisms*. He tells us that this condition indicates that the vital organs inside of the body (σπλάγχνον) have been affected by 'black bile' (μέλαινα χολή) to such an extent that death will normally follow. This is part of the importance of observation that Galen recommends to physicians, as the diagnosis of an

⁴⁸ See chapter 5 'The cleansing of harmful black bile from the body', section 5.4 above.

⁴⁹ *Aph.* IV.22 (IV 510,3-4 L), translation by Jones.

illness can be determined by the type of waste matter that is evacuated from the body at certain critical times (καίρως).⁵⁰ In this case, we find that Galen is again using his 'loose' writing and the lack of specific reference to precise naming of the different types of black bile makes it more difficult to determine which form of black bile that he is discussing. However, in this case the terminal illness implies that it is the altered form of black bile that is present. But Galen needs to use the term 'black bile' (μέλαινα χολή), as this is used by the author of the Hippocratic *Aphorisms*.

The reason for Galen's focus on black bile comes from his view that the presence of this humour in evacuated matter can indicate the fatal nature of a disease. The support for this theory is strengthened by yet another passage from the Hippocratic *Aphorisms*:

Ὅκοισιν ἐκ νοσημάτων ὀξέων ἢ πολυχρονίων, ἢ ἐκ τραυμάτων, ἢ ἄλλως λελεπτυσμένοισι χολὴ μέλαινα ἢ ὀκοῖον αἷμα μέλαν ὑπέλθη, τῇ ὑστεραίῃ ἀποθνήσκουσιν.

When patients have become reduced through disease, acute or chronic, or through wounds or through any other cause, a discharge of black bile, or as it were of black blood, means death on the following day.⁵¹

This is the next aphorism, after the one quoted above (see page 240), but this time black blood (αἷμα μέλαν) is identified in addition to 'black bile' (μέλαινα χολή), and we are told death will occur the day after the discharge has occurred. In his commentary on this passage, Galen explains that this aphorism is required as an addition to the previous aphorism, as it is necessary to distinguish between what is truly black bile and what only looks like black bile. This is consistent with Galen's advice in *On Black Bile* that physicians need to be able to distinguish clearly between similar black substances in the evacuated material from the body (see section 6.4 below). In this case, the comparison is between black blood and the altered form of black bile. Therefore, Galen is

⁵⁰ *Hipp. Aph.* IV.21 (XVIIb 683,10-684,14 K). See Anastassiou and Irmer, 1997, volume II.1 p. 112. Galen also quotes this passage in *Cris.* (I.6 (IX 571,15-572,2 K)). See Anastassiou and Irmer, 1997, volume II.2 pp. 155-156. We also find both Hippocratic passages, the reference to fatal black bile dysentery and any disease beginning with black bile, quoted by Galen in *Diff. Resp.* (III.9 (VII 935,1-11 K)). See Anastassiou and Irmer, 1997, volume II.2 pp. 167-171.

⁵¹ *Aph.* IV.23 (IV 510,5-8 L), translation by Jones.

implying that Hippocrates is referring to the altered black bile in this passage from the *Aphorisms*. He goes so far as to say that Hippocrates ‘showed clearly to us that we were right to distinguish black bile from the general black substances’ (ἐδήλωσε δὲ καὶ ὅτι καλῶς ἡμεῖς διωρίσαμεν ἀπὸ τῶν μελάνων τὴν μέλαιναν χολήν).⁵² Therefore, on the basis of a few lines from the Hippocratic *Aphorisms*, Galen has supported his presentation of the altered black bile with the authority of Hippocrates. This is his strategy in *On the Natural Faculties* and *On Black Bile* that he uses to attack and refute the ideas of his rivals such as the followers of Asclepiades and Erasistratus by deploying past authorities, such as Hippocrates, even when the actual evidence cannot be easily found directly in their writing.

6.4 The identification of black bile in urine for correct diagnosis and prognosis

We have seen that Galen viewed different types of black bile as the cause of various types of disease, such as quartan fevers, enlargement of the spleen, cancers and ulceration of parts of the body. Some of these diseases were considered curable by the innate process of the removal of non-ideal natural black bile from the body by the attraction of excess amounts of this humour by the spleen and by removal through the bowels. The altered black bile may be removed quickly by either natural or medically induced evacuation from the body, but if the mechanism of evacuation, such as dysentery, is prolonged too long then the prognosis is death. Sometimes medical intervention is necessary and so it may be possible for natural and altered black bile to be evacuated, for example by purgative drugs. However, as we have seen there are cases where altered black bile has been produced and the slow movement of this substance through the body can create a condition that is incurable. The fact that there are various diseases and different types of black bile indicates why Galen emphasised the importance of being able to correctly and consistently identify black bile in the contents of evacuated material from the body. One example of this is his quotations from Erasistratus’ *On Fever* and the Hippocratic *Prognostic* in *On Black Bile*:

⁵² *Hipp. Aph.* XVIIb 687,1-688,3 K. See Anastassiou and Irmer, 1997, volume II.1 p. 111.

οὐκ ἂν ἔχοι τις εὐλογον εἰπεῖν αἰτίαν τῆς σιωπῆς γράφοντος αὐτοῦ· “συνέβη γάρ ποτε γυναιίου ἐν πυρετῶ ὄντος καὶ δοκοῦντος ἐλαφρῶς τε καὶ ἀκινδύνως ἔχειν μελάνων οὖρων ἔκκρισιν γίνεσθαι, οἷα τὰ φαυλότατα ἐν τοῖς σημείοις ἀναγράφεται.” οὐκοῦν ὅτι μὲν τοῖς ἔμπροσθεν ἰατροῖς ἐν τοῖς φαυλοτάτοις σημείοις ἐγγέγραπτο μέλαν οὖρον, ἐπίστασθαί φησιν, ὡς ἀνεγνωκῶς δηλονότι τὰ περὶ οὖρων αὐτοῖς γεγραμμένα μεγίστην ἔχοντα δύναμιν ἐπὶ τοῖς ὀξέσι πυρετοῖς νοσοῦσιν. ἐχρῆν γοῦν αὐτὸν ἐν τῇ Περὶ πυρετῶν πραγματείᾳ, καὶ μάλιστα γὰρ κατ’ αὐτὸ τοῦτο τὸ δεύτερον, ἐν ᾧ ταῦτα ἔγραψεν, ἐπιπλέον ἐξεργάσθαι τὸν περὶ αὐτῶν λόγον. Ἴπποκράτης μὲν οὕτω κατὰ τὸ Προγνωστικὸν ἔγραψεν· “Οὖρον δὲ ἄριστον, ὅταν λευκὴ τε ἢ ὑπόστασις ἢ καὶ λεῖη καὶ ὀμαλὴ παρὰ πάντα τὸν χρόνον, ἔστ’ ἂν κριθῇ ἢ νοῦσος. σημαίνει τε γὰρ ἀσφάλειαν καὶ τὸ νόσημα ὀλιχρόνιον ἔσεσθαι. εἰ δὲ διαλείποι καὶ ποτὲ μὲν καθαρὸν οὖρηθῆι, ποτὲ δὲ ὑφίσταται λευκόν τε καὶ λεῖον, χρονιωτέρα γίνεται ἢ νοῦσος καὶ ἥσσον ἀσφαλῆς. εἰ δὲ εἴη τό τε οὖρον ὑπέρυθρον καὶ ἢ ὑπόστασις ὑπέρυθρός τε καὶ λεῖη, πολυχρονιώτερον μὲν τοῦτο τοῦ προτέρου γίνεται, σωτήριον δὲ κάρτα. κριμνώδεις δὲ ἐν τοῖσιν οὖροισιν ὑποστάσεις πονηραί, τουτέων δ’ ἔτι κακίους αἰ πεταλώδεις. λεπταὶ δὲ καὶ λευκαὶ κάρτα φλαῦραι, τουτέων δὲ ἔτι κακίους αἰ πιτυρώδεις. νεφέλαι δὲ ἐμφερόμεναι τοῖσιν οὖροισι λευκαὶ μὲν ἀγαθαί, μέλαιναὶ δὲ φλαῦραι. ἔστ’ ἂν δὲ πυρρὸν τε ἢ τὸ οὖρον καὶ λεπτόν, ἀπεπτον σημαίνει τὸ νόσημα. εἰ δὲ καὶ πολὺν χρόνον εἴη τοιοῦτον ἐόν, κίνδυνος μὴ οὐ δυνησεται ὁ ἄνθρωπος διαρκέσαι, ἔστ’ ἂν πεπανθῇ ἢ νοῦσος. θανατωδέστατα δὲ τῶν οὖρων ἐστὶ τὰ τε ὑδατώδεα καὶ δυσώδεα καὶ μέλανα καὶ παχέα. ἔστι δὲ τῆσι μὲν γυναιξὶ καὶ τοῖσιν ἀνδράσι τὰ μέλανα τῶν οὖρων κάκιστα, τοῖσι δὲ παιδίοισι τὰ ὑδατώδεα. ὅσοι δ’ ἂν οὖρα λεπτά τε καὶ ὠμὰ οὖρέωσι πολὺν χρόνον, ἦν τὰ ἄλλα ὡς περιεσομένοισι σημεία ἢ, τουτέοισιν ἀπόστασιν δεῖ προσδέχεσθαι ἐς τὰ κάτω τῶν φρενῶν χωρία. καὶ τὰς λιπαρότητας δὲ τὰς ἄνω ἐφισταμένας ἀραχνοειδέας μέμφεσθαι· συντήξιος γὰρ σημείον. σκοπεῖν δὲ χρὴ τῶν οὖρων, ἐν οἷς αἰ νεφέλαι, ἦν τε κάτω ἔωσιν, ἦν τε ἄνω, καὶ τὰ χρώματα ὀκοῖα ἔχουσι καὶ τὰς μὲν κάτω φερομένας σὺν τοῖσι χρώμασιν οἷσι προείρηται ἀγαθὰς εἶναι καὶ ἐπαινεῖν, τὰς δ’ ἄνω σὺν τοῖσι χρώμασιν οἷσιν εἴρηται πονηρὰς εἶναι καὶ μέμφεσθαι. μὴ ἐξαπατάτω δέ σε, ἦν τι αὐτὴ ἢ κύστις νόσημα ἔχουσα τῶν οὖρων τι ἀποδιδῶ τουτέων. οὐ γὰρ τοῦ ὄλου σημείον, ἀλλ’ αὐτῆς καθ’ αὐτήν.” ταῦτα γράψαντος Ἴπποκράτους καὶ μετ’ αὐτὸν Διοκλέους τε καὶ Πραξαγόρου παραπλήσια τούτοις εὐλογον ἦν, εἴτε ἀληθεύουσιν, εἴτε ψεύδονται, τὸν Ἑρασίστρατον εἰρηκέναι τὸν λογισμὸν προσθέντα τῆς ἰδίας ἀποφάσεως, ὥσπερ γὰρ καὶ περὶ τῶν ἐμουμένων τε καὶ διαχωρουμένων, ἐν οἷς ἐστὶ καὶ τὰ μέλανα καλούμενα καὶ πρὸς αὐτοῖς ἢ ἀκριβῆς μέλαινα χολή.

There can be no reasonable excuse to explain this silence, because he (Erasistratus) himself wrote: 'It sometimes happens that there is a secretion of dark urine when a woman is feverish and faint, but seems otherwise to be in no danger. However, the prognosis in this case is extremely pessimistic'. Earlier doctors had written that black bile is among the bad signs, so he said he realised that it exercised great force in those who were ill with acute fevers, since he had obviously read what had been written by these doctors concerning urine. Which is the reason why he had to treat his statement on urine rather more comprehensively in his work *On Fevers*, particularly in the second book where these descriptions of his can be found. For Hippocrates wrote in his *Prognostics*:

"Urine is best when the sediment is white, smooth and even for the whole period of the illness until the crisis, for it indicates a short sickness and a sure recovery. But should the sediment intermit, and the urine sometimes be clear and sometimes show the white, smooth, even deposit, the illness will be longer and recovery less likely. Should the urine be reddish and the sediment reddish and smooth, recovery will be sure, although the illness will be longer than in the former case. Sediments in urine which are like coarse meal are bad, and even worse than these are flaky sediments. Thin, white sediments are very bad, and even worse than these are those like bran. Clouds suspended in the urine are good when white but bad when black. So long as the urine is thin and of a yellowish-red colour, it is a sign that the disease is unconcocted; and if the disease should also be protracted, while the urine is of this nature, there is a danger lest the patient will not be able to hold out until the disease is concocted. The more fatal kinds of urine are the fetid, watery, black and thick; for men and women black urine is the worst, for children watery urine. Whenever the urine is for a long time thin and crude, should the other symptoms too be those of recovery, an abscession is to be expected to the parts below the diaphragm. Fatty substances like spiders' webs settling on the surface are alarming, as they are signs of wasting. The urine in which the clouds are, whether these be on the bottom or at the top, must be examined, as well as the colours of these clouds, and those that float at the bottom with the colours I have stated to be good, should be welcomed, while clouds on the top, with the colours I have stated to be bad, should be considered unfavourable. But be not deceived if the urine have these bad characters because the bladder itself is diseased; for they will not be a symptom of the general health, but only of the bladder by itself."

Since Hippocrates wrote this, and since Diocles and Praxagoras wrote much the same, whether they were telling the truth or lying, it might have been expected that Erasistratus should have said, by adding the reason for his own interpretation, that the same is true in cases of vomiting and diarrhoea, where there is present what is called dark matter, as well as genuine black bile.⁵³

⁵³ *At. Bil.* 8, CMG V 4,1,1 pp. 90,13-91,16 De Boer (V 140,15-143,14 K), translation by Grant.

Galen's aim here is to reinforce the notion that the discovery of black bile in evacuated material from the body is generally a bad sign of a serious disease. Galen quotes from Erasistratus' *On Fevers*, to argue that even Erasistratus had to acknowledge that the identification of altered black bile in urine means that what may be considered to be a minor illness, such as slight fever and fainting, is actually more serious and potentially fatal. This is part of Galen's general criticism of what he considers to be Erasistratus' denial of the importance of black bile as an essential humour to the health of the body and as a pathogen.⁵⁴ In this passage, Galen is attempting to show that Erasistratus is inconsistent in his theory, as he is acknowledging the importance of identifying altered black bile in the particular case mentioned in *On Fevers*. Next, Galen brings in evidence from the Hippocratic Corpus when he quotes a long passage from *Prognostic*, a text that he favours as one of the best examples of Hippocrates' work.⁵⁵ There are many different descriptions of urine in this passage. If we focus on the parts that refer to black substances, we have for example the black cloudy (νεφέλη) suspension in urine, which is considered to be a bad sign (φλαῦρος). The text used by Galen contains a reference to a most deadly (θανατώδεστατα) state of urine that is foul-smelling (δυσώδης), watery (ύδατώδης), black (μέλαν) and thick (παχύς). However, we are told that for adults black urine (μέλαν οὔρον) is the worst and that the watery urine is the most dangerous for children. This particular section referring to the difference between adults and children in terms of the colour and form of substances in urine is used by Galen in some of his other treatises. For example, in *On Crises*, Galen paraphrases parts of this passage from *Prognostic* about the urine of adults and children, where he explains that thicker urine is more habitual (συννηθέστερα) in children than adults.⁵⁶ Galen also examines this statement about black urine in detail in his *Commentary on Prognostic*. Again, Galen informs us about the importance of black bile in the understanding of

⁵⁴ See chapter 5 'The cleansing of harmful black bile from the body', section 5.3 above.

⁵⁵ *Prog.* XII (II 138,15-142,15 L). For Galen's opinion on the merits of *Prognostic* as a genuine Hippocratic work, see chapter 3 'Galen's opinion on the authenticity of the individual treatises in the Hippocratic Corpus', section 3.2.2 above. We find that Galen quotes from this passage many times in various different treatises, see Anastassiou and Irmer, 1997, volume II.1, pp. 418-420 and volume II.2 pp. 324-330.

⁵⁶ *Cris.* I.12 (IX 606,1-10 K). See Anastassiou and Irmer, 1997, volume II.2 p. 329.

observations of the contents of urine that contain black substances.⁵⁷ Galen's point here is that he has shown that the passage from *Prognostic* indicates that Hippocrates was aware of the importance of knowing that there are different types of substances found in the evacuated material from the body and that these vary in their appearance, such as by structure, colour and odour. It is interesting that in all the extant references that we have by Galen on this passage he does not identify any of these substances in the urine as actually being altered black bile, or any of the other types of black bile. This suggests that Galen probably considered them all to be forms of 'black matter', which may appear in some ways to be black bile, but are not actually this type of substance. This reinforces his point about correct identification, as there are many substances that could cause a physician to make an incorrect diagnosis concerning the presence of black bile.

Galen is using this passage from *Prognostic* to support his criticism in *On Black Bile*. The basis for Galen's argument here is that having read this type of material from the Hippocratic *Prognostic*, Erasistratus should have made clear reference to the importance of distinguishing between 'black matter' (μέλανα) and 'genuine black bile' (ἀκριβῆς μέλαινα χολή) in evacuations from the body, such as those found in urine. It should be noted that Galen has used 'black bile' (μέλαινα χολή), rather than 'melancholic humour' (μελαγχολικός χυμός), as this is his more 'loose' language when he wants to refer to the different forms of black bile collectively. Galen has chosen to quote the passage from the *Prognostic*, because this treatise has material on different types of substances in urine, which he requires for evidence that Hippocrates has written about this topic, so that he can use it in his attack on Erasistratus. But there are other references to black urine in the Hippocratic Corpus, which are also relevant. For example, there are four passages in *Koan Prognoses* that refer to black urine as being a sign that the patient will die from their illness, with terms such as κακόν (bad sign), δύσκολος (troublesome) and ὀλέθριος (deadly) being used in different passages.⁵⁸ However, Galen does not use the content of these passages, as we find that in all of his extant writing, he does not reference

⁵⁷ *Hipp. Prog.* II.32, CMG V 9,2, p. 286,3-17 Heeg (XVIIIb 157,7-158,7 K).

⁵⁸ *Coac.* 49; 172; 566 and 569 (V 596,8-10; 620,16-18; 712,17-19 and 714,15-20 L).

these passages at all from *Koan Prognoses*.⁵⁹ In addition, in *Epidemics I*, we are told that Philiscus, Silenus and Herophon are suffering from a fever with symptoms that include passing black urine. But this is just referring to the colour of the urine and there is no mention of the black bile humour in these three cases.⁶⁰ In Galen's *Commentary on Epidemics I* he remarks on all of them. For the first two he does not provide any extra detail, he just reiterates the information from the text.⁶¹ But when he comes to discussing the presence of black urine for Herophon, Galen tells us that the presence of black urine is associated with the swelling of the spleen (ὅτι σπλῆν ἐπήρθη πεμπταίω). However, instead of naming black bile explicitly in any of its different forms, Galen decides to use the non-specific term bad humour (κακοχυμία).⁶² But since Galen is discussing the contents of the spleen then it is strange that he does not name the offending substance as black bile, or even melancholic humour here. Galen's commentary on an earlier section of *Epidemics I* provides a more substantial link between black urine and black bile. The eighteenth section of *Epidemics I* refers to a small amount of urine that is black and thin (οὖρα τούτοις ὀλίγα, μέλανα, λεπτά).⁶³ Galen tells us in his *Commentary on Epidemics I* that this black urine has come about by the effect of the 'roasting of the bilious humour' (κατωπτημένου τοῦ χολώδους χυμοῦ). He does not explicitly name black bile or melancholic humour here, but we know that altered black bile is produced from the heating of yellow bile in this way.⁶⁴ Further to this, we are told that the heat for this roasting has been supplied by the burning fever (καυσώδης πυρετός) and the 'degenerative state of the urine generating organs' (τῶν οὐρητικῶν ὀργάνων ἤδη νενεκρωμένων).⁶⁵ This at least identifies the altered black bile as the substance that has caused the urine to be black. What we can say about Galen's choice of the passage from *Prognostic* is that it represents for him the best quality of material by Hippocrates and that the

⁵⁹ Galen considered *Prognostic* to be a superior work by Hippocrates, and although he describes parts of *Koan Prognoses* as being Hippocratic, I can understand why he would prefer to use material from *Prognostic* in this case.

⁶⁰ For Philiscus, Silenus and Herophon, see *Epid. I*, Cases 1-3 (II 682,4-690,10 L).

⁶¹ For Galen's remarks about Philiscus and Silenus, see *Hipp. Epid. I.III.18-19*, CMG V 10,1, pp. 127,18-133,25 Wenkebach (XVIIa 253,14-266,6 K).

⁶² *Hipp. Epid. I.III.20*, CMG V 10,1, pp. 133,26-134,32 Wenkebach (XVIIa 266,7-268,15 K).

⁶³ *Epid. I*, XVIII (II 652,8-9 L).

⁶⁴ See chapter 4 'Galen's characterisation and physical description of the black bile humour', sections 4.2-4.3 above.

⁶⁵ *Hipp. Epid. I.II.77*, CMG V 10,1, pp. 90,7-91,27 Wenkebach (XVIIa 178,8-181,14 K).

information in it provides evidence that Hippocrates acknowledged how the various types of substance that could be found in evacuated waste from the body can account for different types of disease. However, this passage does not tell us how to make a correct identification of black bile from substances that have a similar appearance.

Finally, if we look at the original purpose of Galen's reference to the content from the Hippocratic *Prognostic*, it was in reaction to his quotation of a section from Erasistratus' *On Fevers*, which is specifically about a woman who is feverish and faint. The content of *Prognostic* does not actually refer to women alone and the part about black urine being a deadly sign refers to both adult men and women. However, there is another passage from the Hippocratic Corpus, which contains a case of a female patient with a fever and passing black urine. In the Hippocratic *On Diseases of Women II*, we are told the following:

Ὅταν γυνή τὴν κεφαλὴν ἀλγέῃ τὸ βρέγμα τε καὶ τὸν τράχηλον καὶ ἰλιγγιᾶ πρὸ τῶν ὀμμάτων καὶ φοβῆται καὶ στυγνὴ ᾗ, καὶ οὖρα μέλανα καὶ δι' ὑστέρης ὅμοια, καὶ ἄση ἔχη καὶ δυσθυμίη, μέλαινα χολὴ ἐν τῆσι μήτρῃσιν ἔνι.

When a woman has a pain in the head, the front part of the head and the neck, there is dizziness in front of the eyes, terrors and sadness, black urine through the womb, having sickness and despondency, black bile is in the womb.⁶⁶

This passage contains similar symptoms to those presented by Erasistratus in his *On Fevers*, which is quoted by Galen in *On Black Bile* (see pages 243-244 above). It provides a direct link between the physical symptoms that a female patient is suffering, the observation that her urine is black and the identification of black bile as the overall cause of the condition. This would be a good example for Galen to compare against the case of the female patient in Erasistratus' *On Fever*, as this would show that Hippocrates has identified that black bile has discoloured the urine and so indicates the cause of the disease. Galen could have drawn upon this passage, as the texts that are known collectively as *On Diseases of Women* were considered by him to be genuine

⁶⁶ *Mul. II*, 182 (VIII 364,12-15 L).

Hippocratic works.⁶⁷ But, although this text is considered authentic by Galen, it is not one of his 'core' Hippocratic treatises, such as the *Prognostic*, that he prefers to quote or reference in this type of situation. The addition of this passage would help Galen support his point that Hippocrates was in agreement with him about the need to identify substances correctly that have a similar appearance, but different pathological implications, particularly in the case of the presence of black bile in evacuated material. However, Galen does not quote or refer to this passage from *On Diseases of Women II* at all in the extant works. Therefore, it seems that Galen felt that the passage from *Prognostic* alone is sufficient to make this point that Hippocrates had already written about the importance of observation and identification of substances in evacuated waste from the body, but also that this was the view of Diocles and Praxagoras. In this way Galen is bringing in the support for his argument against Erasistratus using the authority of three prominent physicians from the past, with emphasis on the opinion of Hippocrates.

6.5 Summary

We can see from Galen's writing that both the non-ideal natural black bile and altered black bile are important for his explanation of the cause of various diseases by black bile. When it comes to the illness known as melancholy, Galen is careful to identify non-ideal natural black bile, which he calls the thick, melancholic humour, as being responsible for this disease, rather than the ideal natural or altered forms of black bile. One type of altered black bile, produced from the heating of yellow bile, is also mentioned, but this causes severe madness, either with or without fever, but he does not provide any more information about this condition. Galen needs to make this distinction between his three main types of black bile, as he does not want to associate the ideal natural black bile with this illness, as he presents this form as beneficial to our health. Further to this, in Galen's medical view, the condition of melancholy is treatable and this is why Galen does not want to implicate the altered forms of black bile, as they could corrode and ulcerate the brain matter that might make

⁶⁷ See chapter 3 'Galen's opinion on the authenticity of the individual treatises in the Hippocratic Corpus', section 3.2.9 above.

the condition incurable. It is not common for Galen to be so specific about the difference between ideal natural black bile and 'melancholic humour' natural black bile in other treatises where he is discussing the cause of disease from types of black bile. The material on Galen's view on the cause of melancholy in *On Affected Parts* is the most significant that we have on this illness in the whole of the extant Galenic Corpus. There are brief references to melancholy in *The Faculties of the Soul Follow the Mixtures of the Body* and in one passage Galen refers to 'black bile', rather than 'melancholic humour' in terms of melancholy. The difference between these two texts is that Galen wants to be precise in his terminology for the different types of black bile in *On Affected Parts* because it is necessary for his detailed explanation of the cause of melancholy. However, in *The Faculties of the Soul Follow the Mixtures of the Body*, Galen is not providing the same level of detail in this treatise and so he is able to use a 'loose' style of language. In this case it is more convenient for him to be able to refer to 'black bile' (μέλαινα χολή), rather than be restricted to just the term 'melancholic humour' (μελαγχολικός χυμός), as μέλαινα χολή is the more familiar term used for the black bile humour in a wide range of medical sources.

Galen also does not apply such a strict nomenclature to explain the cause of the quartan fevers from different types of black bile. We have seen that he uses the terms 'black bile' and 'melancholic humour' interchangeably both within his treatises and between them. However, in the case of his writing about black bile and quartan fevers in *On Doctrines of Hippocrates and Plato*, Galen will use the term 'black bile' (μέλαινα χολή), as this corresponds to the way black bile is referred to in the Hippocratic *On the Nature of Man* and in Plato's *Timaeus*. But, in general, we find that both terms for black bile are used by Galen in association with quartan fevers. The altered form of black bile is also important for Galen's theory of the cause of quartan fevers. The production of a type of black bile from the heating of yellow bile allows Galen to explain why in the Hippocratic *Aphorisms* quartan fever can occur in both summer and autumn. The *Aphorisms* is one of Galen's core Hippocratic texts and it is important that he can explain any situation that might seem to contradict other 'genuine' Hippocratic treatises. However, the physical properties of natural black bile and

altered black bile are very different. The presence of large amounts of altered black bile would cause severe ulceration in the body, which is likely to be terminal. Galen does not mention this in terms of the altered black bile causing quartan fevers in summer. It seems more important for Galen to be able to account for the case of quartan fevers in summer found in *Aphorisms*, and he does not want to go into the details of how the different forms of black bile would interact with the body during this type of illness.

When it comes to providing evidence from ‘the best and most genuine’ Hippocratic sources for his view of black bile as the cause of different types of illness, we find that Galen favours the content of *Aphorisms* and *Prognostic*. These two texts from the Hippocratic Corpus are among the treatises that Galen considers as the best and most authentic of Hippocratic works. We saw in the case of his explanation of melancholy in *On Affected Parts* that he referred to material in *Aphorisms*, but chose not to include the more relevant passages from *Koan Prognoses*. The content of *Aphorisms* is also very important to support Galen’s theory that altered black bile in the body can be fatal. For example, one particular passage from *Aphorisms*, on the fatal result of dysentery that is initiated by black bile is quoted by Galen in both *On the Natural Faculties* and *On Black Bile* to emphasise the dangerous nature of black bile. Material from *Aphorisms* is used by Galen to show that Hippocrates had already warned of the deadly effect of black bile in the body. The importance of this aphorism is elevated further by Galen’s rejection of another passage in *Aphorisms*, which he believes contradicts this one, as he tells us that Galen would prefer the aphorism that he has quoted. When it comes to texts outside of the Hippocratic Corpus, we find that Galen does not quote or reference any material from Rufus of Ephesus’ work on black bile and melancholy in his discussion of this disease in *On Affected Parts*. Instead, he decides to quote from Diocles’ *Affection, Cause, Treatment* on hypochondriac melancholy, even though the passages do not contain any reference to black bile. Galen refers to Diocles’ work on melancholy so that he can discuss issues relating to the correct identification of the symptoms. In addition to the content of *Aphorisms*, Galen also quotes from *Epidemics VI* for evidence that Hippocrates not only wrote about melancholy, but also knew that the mechanism was a physical process relating to black bile and that a melancholy

illness could change into an epileptic one and vice-versa. However, Galen is using a passage from *Epidemics VI* that merely states that there are two types of disease, epilepsy and melancholy, which, under unstated circumstances, can transform from one to the other. There is no mention of black bile or any other humour at this point in *Epidemics VI*, so Galen is choosing this passage, as if 'Hippocrates' was in agreement with everything Galen has said about the cause of melancholy and epilepsy in terms of black bile and the other humours. Further to this, Galen completely ignores the content of *On the Sacred Disease* that contains information on an illness that is like epilepsy and comes from an affection of brain, although in this case it is phlegm not black bile. However, this treatise does contain reference to mental conditions that are produced by the effect of bile on the brain.

When it comes to quartan fevers, we can see that Galen also uses a passage from the *Aphorisms*, where he believes that it is necessary to explain that quartan fevers can be caused by excessive amounts of black bile in the body in both the autumn and the summer. Further to this, Galen interprets a passage from *Prognostic*, which refers to the quartan fevers, autumn and stage of life, as evidence that Hippocrates was talking about the increase in black bile to cause this type of fever. In these cases Galen is selecting what he considers to be sources from the best of Hippocrates' writing, which supports his own view of the mechanism by which quartan fevers are produced from excess natural black bile or altered black bile. When it comes to the *Prognostic*, there is no explicit reference to black bile itself in the whole treatise. However, Galen interprets the content from this Hippocratic treatise in relation to his own theory of black bile, as if this is what Hippocrates originally intended it to mean. This is part of Galen's strategy to select passages from texts in the Hippocratic Corpus and make it seem like the content is in complete agreement with a particular argument he is making. We know that Galen does not always choose to provide quotations from his Hippocratic sources, even when he is quoting other authorities. For example, in *On the Doctrines of Hippocrates and Plato*, we have seen that Galen criticises Plato's association of different types of fever with the elements, fire, air, water and earth. Galen suggests that Plato should have followed Hippocrates' use of the humours as the cause of the different types of fever. He goes further to say that Plato also should have read what Hippocrates

wrote about black bile, its relation to the seasons and stage of life, alongside the reasons for its cause of quartan fevers. Galen does not provide any quotations from the particular Hippocratic sources here. An investigation of the extant Hippocratic Corpus revealed that there was very little material on the important factors explaining black bile as the cause of quartan fevers. The only place where there was a clear association between black bile, stage of life and the quartan fevers was in the fifteenth section of *On the Nature of Man*, which Galen had rejected as being inauthentic. Therefore, we can see why Galen would be reluctant to reference this passage from this particular part of *On the Nature of Man*. However, Galen adopts a slightly different strategy and recommends the content of his own works for the basic understanding of the cause of quartan fevers by black bile. This is fine for his second century CE audience, but does not help to explain what Plato should have read on this topic. In this way, Galen can promote his own writing about black bile with the authority of Hippocrates, without actually needing to cite the Hippocratic sources that support his views on black bile. Further to this, we can see that in *On Black Bile*, Galen chooses to quote a substantial passage from the *Prognostic* to support his argument that Hippocrates was in agreement with his view on the importance of identifying black bile correctly amongst the various black substances found in human waste matter. However, the information on black substances in the *Prognostic* is fairly vague and there is no reference to black bile at all in any part of this text. I identified some other potential passages from other treatises of the Hippocratic Corpus such as from *Koan Prognoses*, *Epidemics I* and *On Diseases of Women II*, all of which Galen considered authentic Hippocratic works. However, although some of them were more relevant to the particular fever that Erasistratus was analysing, none of them discussed the correct identification of black bile from different black substances in urine. It seems that Galen considers the content of the passage from *Prognostic* sufficient to prove his point against Erasistratus in the context of the information from the rest of *On Black Bile*. Galen had also provided a quotation from Erasistratus' work *On Fevers*, but he does not include any material by Diocles and Praxagoras. This is because it is enough for Galen to say that they were in agreement with Hippocrates without telling his reader what they actually wrote about this topic. Therefore, Galen chose to use a passage from *Prognostic* to challenge Erasistratus' view on a specific analysis he made of a

female patient suffering from fever. It is Galen's strategy to bring together Hippocrates, Diocles and Praxagoras to show that Erasistratus is wrong in his view of fever in this case.

Conclusion

My analysis of the way that Galen uses 'black bile' for his explanation of health and disease in the body shows that it is important to understand the context of the particular treatise, or even section of a treatise, concerned. Therefore, it is very difficult, if not impossible, to summarise Galen's 'theory of the black bile' humour in terms of a comprehensive framework. This is because Galen does not apply a consistent theory of black bile in his writing, sometimes it is one substance with different characteristics, at other times it is described as completely different substances, even with different names. A large amount of modern scholarship has either attempted to explain or resolve inconsistencies in Galen's writing on black bile or has tried to ignore them. However, this approach will not allow us to fully understand the way that Galen has characterised black bile, as these very inconsistencies are essential to provide key information concerning Galen's strategy in developing a theory of black bile that can account for health and disease in the body, and refute his rivals' arguments in terms of the importance of black bile in medicine. The main factor causing Galen difficulty in maintaining consistency between his treatises, and even within them, is his attempt to represent Hippocrates as the founder and originator of a biological theory of health and disease in the body based on qualities, elements and humours, which was adopted and developed by a number of philosophers and physicians over several centuries. This means that Galen not only needs to show agreement on black bile between Hippocrates and other authorities such as Plato, Aristotle, Diocles and Praxagoras, but he also faces significant problems in showing consistency for the content of black bile within the Hippocratic Corpus itself. This task to obtain agreement between such a wide range of sources is very difficult in the case of the black bile humour, as the evidence that we have suggests that this substance was either considered as an insignificant residue or even completely ignored in the majority of ancient medical theories. One way that Galen tries to overcome such issues is to present black bile in terms of three main types, which I have called: ideal natural, non-ideal natural and altered black bile. These distinct definitions of black bile represent the most important characteristics of this type of humour in terms of health and disease in the body. What we find is that Galen's

characterisation of the physical structure and function of black bile in terms of health and disease in the body is his own creation, as it does not exist, in the way that Galen defines it, in any medical theory produced before him. We have seen that this division of black bile into three main types is required as he tries to show agreement between the many and varied sources such as the different treatises in the Hippocratic Corpus, philosophical works by Plato and Aristotle, along with the medical theories produced by physicians like Diocles, Praxagoras and Rufus of Ephesus. However, Galen presents his theory of black bile as if he is just providing more detailed information and an enhanced explanation that appears within Hippocrates' writing and is continued by certain philosophers and physicians afterwards. It is significant that Galen does not boast that he has created a new theory of black bile to challenge the views of his rivals, but instead he wants to present this theory with support from Hippocrates and other prominent authorities on medicine. It is more important to Galen that he is able to draw upon material from a wide range of sources to strengthen his arguments concerning the physical description and function of black bile, even when no such evidence can be found in the sources to which he refers.

We have seen that Galen uses Dioscurides' list of the most genuine Hippocratic texts: *Aphorisms*, *Prognostic*, *On Regimen in Acute Diseases*, *Airs, Waters and Places*, and *Epidemics I and III*, to support his characterisation of black bile. However, Galen also includes the first eight chapters of *On the Nature of Man* as one of Hippocrates' important treatises. But there is no evidence that any other physician, philosopher, or commentator had regarded the first part of *On the Nature of Man* as meriting this attribution to Hippocrates himself. In fact, we can see from the references by Aristotle that the content of this treatise was generally acknowledged to be by Polybos. The evidence suggests that the four-humour system in this treatise was not as highly regarded as Galen makes it out to be in the other works of the Hippocratic Corpus and the medical writing of some of the philosophers and physicians who came afterwards. Galen's particular emphasis on this treatise and its humoral theory has had a major impact on modern scholarship, as there is a tendency to regard the four-humour system of *On the Nature of Man* as having a more significant role in Galen's characterisation of black bile than it actually does. In fact, this is what Galen

would want us to believe, as he makes a large number of claims about the work of Hippocrates on black bile that cannot be substantiated from the content of *On the Nature of Man* alone. This is because the content on black bile in *On the Nature of Man* only provides Galen with information that he associates with the ideal natural form of black bile, which is essential for maintaining the humoral balance for health. But, this treatise does not contain any information for his characterisation of the non-ideal natural and altered forms of black bile. Therefore, Galen's attempt to show that *On the Nature of Man* is an essential reference work for information on the non-ideal natural and altered forms of black bile is inconsistent with the actual content of this Hippocratic treatise. But Galen's strategy is to convince his audience that Hippocrates did intend these other forms of black bile to be interpreted in the circumstances that Galen presents them as being important, such as the cause of certain types of diseases and the removal of unwanted black bile from the body. For example, in *On the Natural Faculties* Galen explicitly names *On the Nature of Man* as a text that should be read by Erasistratus for key information about the association between black bile and the spleen. However, I have shown that there is no such material that provides the level of detail on the function of the spleen to remove non-ideal natural black bile in *On the Nature of Man*. Some modern scholars, such as Jacques Jouanna, have attempted to provide a resolution to perceived inconsistencies between Galen's characterisation of black bile, such as in *On the Natural Faculties* and *On Black Bile*, in terms of the pairing of 'cold and dry' qualities in order to show that Galen's overall aim was to be consistent with the content of *On the Nature of Man*. However, my analysis undermines this argument, as Galen is not always striving to reconcile the different forms of black bile in relation to the 'cold and dry' qualitative definition of black bile found in *On the Nature of Man*. Instead, although Galen acknowledges the importance of the four humour system of *On the Nature of Man*, he is more interested in providing material on black bile that meets his own criteria for sound theoretical arguments that is consistent with any historical or current empirical information on black bile that he wants to use. Therefore, the description of black bile in *On the Nature of Man* is only a part of the information that Galen can draw upon to argue his position against his rivals. It is more important to Galen that he has a flexible theory that takes information from a wide range of sources so that he

can argue against the rival theories of the followers of Erasistratus and Asclepiades.

We have seen that it was important for Galen's theory of black bile to draw upon the material from various treatises in the Hippocratic Corpus. There is evidence that Galen wants to show that the texts from Dioscurides' list of the best examples of Hippocrates' works are in agreement with Galen's characterisation of the different types of black bile. All these texts are used by Galen in some way to support his view of black bile, but some are more prominent than others, particularly in cases where he wants to quote a Hippocratic source. We find that *Aphorisms* is frequently used by Galen to support his work on black bile, which is a text that contains a large amount of material on black bile in different contexts. This is in contrast to the *Prognostic* and *Epidemics I* and *III* that do not refer to black bile by name, but contain some references to black matter found in various waste substances evacuated from the body. However, the lack of reference to physical black bile does not stop Galen from interpreting the content of these treatises as if 'Hippocrates' was in agreement with Galen's view of black bile in its different forms. In some cases there is more relevant information in other Hippocratic treatises, which Galen also considered authentic, such as *Koan Prognoses*, *On Humours* and *On Diseases of Women II*. But we generally find that he ignores this material in favour of the 'best and most genuine' Hippocratic works. Further to this, it appears that he is not always consistent with his own concept of authenticity of Hippocratic works. I have identified areas within Galen's writing on black bile where he chooses to pass off certain treatises, as if they were written by Hippocrates, which in other places in his writing appear to have been rejected as inauthentic by him. We find this when we observe that Galen has glossed a passage from *On Diseases II* that characterises a substance in terms of its acidic nature to be corrosive to the body and effervesce in contact with the ground. Galen refers to its content as being related to black bile and it is similar to the way that he characterises the acidic properties of altered black bile. Another example of this strategy is when Galen paraphrases a passage from *On Places in Man*, which associates a disease of the spleen in relation to the swelling of the whole body. Galen does not say where he gets this information from, but he attributes it to Hippocrates. The problem is that Galen has denied that this treatise is Hippocratic and so he

is passing off a passage from this work, as if it is by Hippocrates. The reason is that in *On the Natural Faculties* he wants to show that there is agreement between Hippocrates and Plato on black bile and the spleen, which supports his overall aim in *On the Doctrines of Hippocrates and Plato*. This shows that there is sometimes an inconsistency between what Galen identifies as an authentic Hippocratic treatise and what he references in practice, which he believes is necessary to provide the evidence to support his theory of black bile. Therefore, it is more important for him to demonstrate that there is evidence in a 'Hippocratic' source to support his argument from authority than his more general statements about authenticity of texts from the Hippocratic Corpus.

There are also important sources outside of the Hippocratic Corpus that Galen uses to support his work on black bile. For example, Galen wants to demonstrate that Hippocrates and Plato are in agreement on topics concerning the characterisation and function of black bile in *On the Doctrines of Hippocrates and Plato*. Galen's reliance on certain physiological issues is centred on his agreement with Plato's tripartite system of the division of the soul, which he also tries to show is adopted by Hippocrates. This allows Galen to claim that Hippocrates had already developed a medical theory that explains the way that a mental illness, such as melancholy, can be caused by physical substances in the body, such as black bile. However, again we find the material that he uses is not consistent with the material he cites, and he is forced to make vague references to his sources, as any direct quotation would reveal that there is no such evidence available. Just like his strategy when using different texts from the Hippocratic Corpus, Galen is able to conceal the inconsistencies by saying that he has quoted passages in sufficient detail in other works or even just stating that there is evidence without any reference to a source at all. It was also important to Galen that Hippocrates had a similar approach to the idea of causation to Plato and Aristotle, as Galen wants to defend the very existence of black bile as an essential substance that explains health and disease in the body against his main rivals. Galen wants to use the authority of Hippocrates, alongside that of Plato and Aristotle, when he wants to refute the views of Asclepiades and Erasistratus on the basis of teleology. However, in contrast to the work of Plato and Aristotle, it is difficult to find a Hippocratic source that can provide the kind of teleological system that Galen attributes to Hippocrates. But

it is important to Galen that Hippocrates is viewed as a teleological authority on par with these eminent philosophers. In addition, we also find that when Galen criticises Erasistratus on his question over the teleological status of bile and the spleen, Galen does not refer to Aristotle's similar stance on this topic. In this way, Galen brings together the authority of Hippocrates, Plato and Aristotle to justify the status of black bile as a fundamental humour and that the spleen is specifically designed to remove this humour as a potentially harmful substance. Galen adopts a similar strategy when he names certain physicians that he claims were in agreement with Hippocrates in terms of the different types of black bile. This is Galen's approach towards the end of *On Black Bile*, where he makes it seem that Hippocrates, Diocles and Praxagoras had similar notions on the way to correctly identify the altered forms of black bile in evacuated waste from the body during illness. Galen does not provide any evidence to show that Diocles and Praxagoras wrote about altered black bile in this way, which is in contrast to his inclusion of a large section from the *Prognostic* and his quote from Erasistratus' *On Fevers*. However, Galen wants to criticise Erasistratus' work on fevers in relation to the importance of black bile, which he ignores, and so it is enough for Galen that he can quote a section of one of his favoured Hippocratic texts and interpret the content as if Hippocrates intended that altered black bile could be identified in urine. Galen then includes the names of Diocles and Praxagoras, who he says are in agreement with this interpretation to further strengthen his argument against Erasistratus. In contrast to this, we find that Rufus of Ephesus is not named in the list of those who followed Hippocrates in terms of the four humours. But, Galen does single out Rufus for praise at the beginning of *On Black Bile*, as he regards this physician as an excellent source on black bile, although he does not quote or reference Rufus' work on black bile in this treatise.

This methodology that brings together the material on black bile from a wide range of sources such as the Hippocratic Corpus, philosophy and other medical sources, has made it very difficult for Galen to present black bile as a single substance based on comprehensive and unified theory. This is the reason why he states that the three types of black bile are distinct in *On Affected Parts* because it is important for his explanation of the cause of melancholy by the non-ideal natural black bile. This is because he does not want to associate the

cause of melancholy with the ideal natural and altered forms of black bile. We also find the same type of precise definition of the three kinds of black bile when Galen shows that the spleen is responsible for removing the non-ideal natural black bile from the blood. This approach is consistent within the context of the passages in some of his works, but most of the time we find that Galen cannot be so precise in his distinction between the different kinds of black bile. For example, when he defends the existence of black bile against Asclepiades and Erasistratus in *On the Natural Faculties* he uses the term 'black bile' (μέλαινα χολή), and not 'melancholic humour' (μελαγχολικός χυμός), to describe this humour as a beneficial humour (ideal natural black bile) and as a harmful and potentially deadly substance in the body (non-ideal natural and altered forms of black bile). If Galen made such a distinction here it would cloud his argument and allow his critics to say that these are different substances and so one type of black bile may exist as a residue in the body, but is not defined as a fundamental substance, such as a humour like blood or phlegm. But, Galen needs to support his case for black bile both as a fundamental humour and as a pathogenic substance that causes different types of disease, some that are potentially life threatening. What we find is that Galen often prefers to be 'loose', rather than 'precise', with his terminology for black bile, as it allows him to use different terms, or even just descriptions of substances, to characterise black bile in various ways. However, this creates inconsistency in many of his references to the different forms of black bile.

Therefore, when we read different Galenic treatises that contain information relating to black bile it is important that we understand the particular type of black bile that Galen is discussing in the context of the section of the treatise. In the case of *On the Elements According to Hippocrates* and *On the Doctrines of Hippocrates and Plato*, black bile should be understood in terms of the ideal natural form, which has the characteristics of the black bile in the Hippocratic *On the Nature of Man*. This is the case for the majority of the content of *Commentary on On the Nature of Man*. But care must be taken in this text, as we can also find one reference to the term 'melancholic humour' (μελαγχολικός χυμός), which is not used by Galen for ideal natural black bile. In this case, melancholic humour is used in a specialist sense to refer to the

type of non-ideal natural black bile, just as in the section on melancholy in *On Affected Parts*. There is a similar situation in *On the Utility of the Parts* and *On the Natural Faculties*, where the most common term is 'black bile' (μέλαινα χολή) with just one reference to the 'melancholic humour' (μελαγχολικός χυμός) in each text. In both of these cases Galen is referring to the substance that is drawn out of the blood by the spleen where he has decided to be more precise with his terminology for non-ideal natural black bile. However, it is more useful in these two texts for Galen to be less precise in his distinction between the three forms of black bile when he is attacking the views of rivals, such as Erasistratus, Asclepiades and their followers. This is because the collective naming of the three forms of black bile means that Galen can be more flexible with the material that he uses to characterise black bile when he wants to justify its importance in medicine. We can find a similar polemic against Erasistratus and his followers in *On Black Bile*, but this time Galen uses 'melancholic humour' (μελαγχολικός χυμός) much more than 'black bile' (μέλαινα χολή). However the difference between this treatise and *On the Natural Faculties* is that *On Black Bile* contains a large amount of material on the function of different types of black bile, mostly the altered forms, to explain the cause of different diseases and how these kinds of black bile can be correctly identified in waste matter evacuated from the body. Apart from a brief statement near the start of this treatise, the ideal natural black bile is not part of the overall discussion, as Galen focuses on the cause of disease and observation for diagnosis and prognosis. However, he does not differentiate by name between non-ideal natural and altered forms of black bile. He admits that he calls them both 'melancholic humour', but justifies it because he understands the important differences between these two types of black bile and so does not need to use different names to distinguish between them. The situation is even more complex in *On Mixtures*, as there are references to forms of black bile described as like sediment or as a substance produced from combustion. However, Galen only uses the term 'black bile' (μέλαινα χολή) and does not refer to melancholic humour at all. It is possible that Galen is using his language more 'loosely' here because he is not explaining the cause of a disease in detail and that he wants to show agreement between Hippocrates and Aristotle on the importance of the qualities in medicine. In this case, it would be easier for Galen

to refer to the different forms of black bile collectively, which would be consistent with the concept of a single form of black bile in the Hippocratic *On the Nature of Man* and material on black bile in Aristotelian works. Therefore, Galen will sometimes be precise with his naming of different types of black bile, but it is more convenient for him to use 'black bile' (μέλαινα χολή) for all three in these texts, with the occasional use of the term melancholic humour when he wants to be precise about a particular form of black bile. This is the basis of his overall strategy, as it is better that he is more flexible and can refer to black bile in different ways so that he can bring different sources together, Hippocratic, Platonic, Aristotelian and many others, to show agreement and support his arguments against rivals such as Asclepiades and Erasistratus.

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