

(Astro)Meteorology as a Tool for Medical Prognosis: Galen on Disease Forecasting

Konstantinos Stefou

1 Introduction

Today we understand climate as the average weather conditions that prevail at certain times in given places. As discussions on climate change are becoming more and more intense, there seems to be a general agreement among scientists that the weather has a significant impact on human health, regarding for instance morbidity, mortality, changes in mood, emotional imbalance, and so on, even if not all mechanisms involved have been adequately decoded to date.¹ It is also widely accepted that the Sun greatly affects a place's climate, for example by warming the land, the sea, the atmosphere, or by producing wind patterns and by extension contributing to the formation of storms or rainfall. Not all medical thinkers of the past, however, shared these or similar views;² some were skeptical about them or even opposed them. This chapter focuses on a physician who ardently believed in the relevance of the climate to medicine: Galen of Pergamum (129–c.216 CE). It will discuss a number of passages setting forth Galen's own astronomical and meteorological views, always with reference to his insistence on the crucial role (astro)meteorological knowledge can play in medical art, provided of course that someone unbiasedly leaves room for it. Since to my knowledge no such study has been published so far, this chapter does not aim at exhaustiveness but rather urges the need for a reconstruction of Galen's (astro)meteorology on its own merits. Such reconstruction will in turn result in determining whether Galen had developed a complete meteorological theory or if it is rather the case that he used more common meteorological ideas or particular sources for meteorology in his firm belief that meteorological phenomena were highly relevant for medical practice.

¹ See e.g. Kalkstein and Valimont (1987); Lemery, Knowlton, and Sorensen (2021).

² On which, see Section 2.1, 366 below.

2 The Influence of Climate on Human Health and Disease

2.1 *Defending a Genuinely Hippocratic View*

When posing the question “What does Galen have to say about (astro)meteorology?” the answer that immediately comes to mind amounts to a sort of self-exhortation to extract Galen’s own views mainly from his commentaries on the Hippocratic works *Airs, Waters, Places* (hereafter *Aer.*), *Epidemics I* and *III* and *Aphorisms* (esp. the first twenty in section *III*). The general feeling one gets from reading these commentaries is that they are largely Hippocratically-oriented and -colored in nature, which means that they are designed, for the most part, to pay tribute to, or defend the views of, the great medical authority of the past. Look, for example, at the following typical example of Galen’s undertaking to defend the Hippocratic idea of climatic factors such as the seasons or winds and their effect on human health:

Αί μεταβολαί τῶν ὥρέων μάλιστα τίκτουσι νοσήματα καί ἐν τῆσιν ὥρησιν αἱ μεγάλαι μεταβολαί ἢ ψύξιος ἢ θάλψιος καί τᾶλλα κατὰ λόγον οὕτως.³

Μεταβολὰς ὥρῶν ἔνιοι νομίζουσι λέγεσθαι καθ’ ὅς εἰς ἀλλήλας μεταβάλλουσιν, ὡς εἰ καί διαδοχὰς τὰς μεταβολὰς εἰρήκει [...]. ὥστε οὐδὲν μᾶλλον αἱ διαδοχαί τῶν ὥρῶν τίκτουσι νοσήματα, ἀλλὰ καί τὸ μάλιστα προσέθηκεν. ἄμεινον τοίνυν ἐστὶ διὰ τὴν προσθήκη τὴν τε μεταβολὰς ἀκούειν τὰς κατὰ τὴν κρᾶσιν αὐτῶν ἀλλοιώσεις. αὐταὶ γάρ εἰσιν αἱ μάλιστα τίκτουσαι νόσους, ὅταν ἐφεξῆς ἀλλοιώσεις ᾧσι πλείους, ὡς ἐν ταῖς ἐπιδημίαις ἔγραψε καὶ νῦν δ’ ὀλίγον ὕστερον ἐρεῖ. ἢ δὲ μιᾶς ὥρας ἀλλοίωσις μόνης ἐργάζεται μὲν νόσους τινὰς, ἀλλ’ οὐ μάλιστα. πότ’ οὖν μάλιστα νόσοι γίνονται κατὰ μίαν ὥραν ἀλλοιωθεῖσαν; ὅταν συμβῆ μεγάλην ἔσεσθαι τὴν μεταβολὴν καὶ διὰ τοῦτ’ αὐτὸς εἶπεν ὁ Ἱπποκράτης· καὶ ἐν τῆσιν ὥρησιν αἱ μεγάλαι μεταβολαί ἢ ψύξιος ἢ θάλψιος ἢ τινος τῶν ἄλλων, οἶον ὑγρότητος ἢ ξηρότητος ἢ πνευμάτων ἢ ἀπνοιῶν.

GALEN, *Commentary on Hippocrates' Aphorisms* 3.1, KÜHN [hereafter K.] 17b.562.13–564.11

‘It is chiefly the changes of the seasons which produce diseases, and in the seasons the great changes from cold or heat, and so on according to the same rule.’⁴

Some believe that the changes of seasons are spoken of in terms of their changing into one another, as if by ‘changes’ he meant also ‘successions’

3 3.1, Littré (hereafter L.) 4.486.4–6.

4 Translation by Jones (1931), who prints Αἱ μεταβολαί τῶν ὥρέων μάλιστα τίκτουσι νοσήματα, καὶ ἐν τῆσιν ὥρησιν αἱ μεγάλαι μεταλλαγαί ἢ ψύξιος ἢ θάλψιος, καὶ τᾶλλα κατὰ λόγον οὕτως.

[...] thus successions of seasons do not produce diseases to any greater degree; but he also added the word *μάλιστα*. So it is better to construe the addition of the word *μεταβολάς* as being meant to refer to the alterations in respect of their mixture. For it is these that produce diseases to the greatest degree, when the alterations, taking place one after the other, become sufficiently numerous, as he wrote in the *Epidemics* and is again going to point out a bit later. A single season's alteration alone does produce some diseases, yet not to the greatest degree. So when are diseases produced to the greatest degree with respect to a single season that has undergone alteration? When the change that is going to take place happens to be considerable, and this is why Hippocrates himself says: 'And it is in these very seasons that the great changes either in coldness or heat or some other thing, e.g. wetness, dryness, windiness or windlessness occur.'⁵

Clearly, Galen's intention here is to correct other exegetes, yet in indicating or marking the errors contained in their accounts he seems to undertake the task of defending the Hippocratic view from misinterpretations and possible groundless accusations. Defense thus manifests itself in the form of clarification of a certain word (*μεταβολαί*), indeed in a way that singles out the exegete Galen from those other commentators who failed to grasp the gist of this Hippocratic text.

A similar example, in which, however, the defense of the Hippocratic view is pursued more expressly comes from *Galen's Commentary on Hippocrates' Airs Waters Places 3* (Cairo, Ṭal'at, ṭibb 550, fol. 60^v9–61^r).⁶ Here Galen concerns himself with *Aer. 10* (L. 2.42 = Diller 46, 16–18) where the Hippocratic author stresses that the seasons belong to the things that one must take into serious account if (s)he is to know the state of the year, namely whether it is going to be health- or disease-producing. With regard to this, he makes the following observations:

Not only is it these Pneumatists who in their dealings with the seasons conform themselves to Hippocrates, but he is also followed by the Empiricists, although the latter claim that they know this [i.e. the influence of climate and seasons on human health] on the basis of experience and not by means of logical reasoning. Many of the ancient doctors have

⁵ My translation.

⁶ For the Arabic text and comments on it, see van der Eijk (2000), vol. I, 110–111 (who makes use of the text and apparatus prepared by G. Strohmaier), and 2001, vol. II, 117–119 (comments).

followed Hippocrates in all [these] matters [...] When one glances in one of their books, one will find that all of them follow Hippocrates both in wording and in meaning and have accepted his theory and adhere to it in all respects, i.e. in the basic presuppositions with regard to the elements, how they mix with each other and that they are four, warm, wet, cold, and dry, and in the denial and rejection of the atoms.⁷

In his comment, Galen underlines that this Hippocratic view about the cruciality of the knowledge of the seasons to the medical art as a whole was not fully accepted by the medical community, and proceeds to a doxographical discussion that aims to bring forth and highlight his own view, of the influence of climatic and seasonal factors on human health, against others, such as those of the Erasistrateans and the Methodists, who do not acknowledge that influence. Those, including Galen, who support the influence view also endorse the Hippocratic assumption that the state of the human body depends on a mixture of four elements, warm, cold, dry, and wet.⁸

The Greek text of Galen's *Aer.* commentary is lost yet the Arabic version upon which the translation cited above is based,⁹ along with its Hebrew, abridged version (even though this latter one represents the third stage of transmission of the Galenic commentary),¹⁰ are irrefutable witnesses not only to the importance that Galen attributed to the climate factor but also to his belief that the recognition of this importance always presupposes basic knowledge of human physiology (or the human body) and its physical constitution; thus any failure to do so is implied to reflect a profound ignorance of basic medical issues such as the state of the human body and the factors affecting it.

2.2 *A Person's Natural Constitution and the Knowledge of the Nature of Climate*

Galen's way of explaining the effect of climate with reference to the elemental qualities and the physiology of the human body marks an attempt on his part to show how useful the knowledge of climate's nature can be for the knowledge of human physiology and medical practice as a whole. At the same time, Galen's distancing himself from other physicians in that respect highlights,

7 Trans. van der Eijk (2000), vol. I, 111.

8 For more details on the passage, see van der Eijk (2001), vol. II, 117–118.

9 Edition prepared by Strohmaier for the CMG.

10 The Greek text was first translated into Syriac by Ḥunayn ibn Iṣḥāq (9th century CE), from the Syriac into Arabic by Ḥubaysh ibn al-Ḥasan, from the Arabic into Hebrew by Solomon ha-Me'ati, and from the Hebrew into Latin by Moses Amram Alatino; see Wasserstein (1982), 5–7; Scarborough (1984), 437; Strohmaier (2004), 1.

at least in his eyes, the difference in level between his own medical practice and that of others; to put it differently, knowing the nature of climate seems for Galen indeed capable of marking one out as a better physician than those without this knowledge.

Galen's reliance on the four element theory as underlying the Hippocratic corpus and in particular the first eleven chapters of *On the Nature of Man*¹¹ is well attested in many of his works.¹² Also well-known is how he further developed it by introducing his key concept of *krasis*, that is, combination or mixture of the elemental qualities both in his discussion of the constitution and physiology of the human body and in his theory of medical practice.¹³ What matters most, however, for the scope of the present study is how climate is capable of affecting that physiology and, most importantly, how Galen's line of argument points in that direction. In each person's intrinsic physiology, Galen believes, concentrations of humors and the prevalence of a certain quality or pair of qualities are normally naturally predetermined. Yet at the same time—and again naturally—they are susceptible to the influence of external factors such as climate or diet.¹⁴ For instance, bodies become warmer and more moist in the spring, or cooler and drier in the fall, which implies that different temperamental types are expected to feature prominently per season. Compare also the following comment from Galen's commentary on Hippocrates' *Aphorisms*:

Τῶν φυσίων αἱ μὲν πρὸς θέρος, αἱ δὲ πρὸς χειμῶνα εἶ ἢ κακῶς πεφύκασιν.¹⁵

Φύσεις εἶρηκε νῦν ὁ Ἱπποκράτης κατὰ τὸ κυριώτατόν τε καὶ πρῶτον σημαίνονμενον, ὃ καθ' αὐτὴν μάλιστα τὴν οὐσίαν ἐστὶ τῆς φύσεως. ἐλέγομεν δ' ἐν τοῖς ἔμπροσθεν αὐτὴν κρᾶσιν εἶναι τῶν τεσσάρων στοιχείων, ὑγροῦ καὶ ξηροῦ καὶ θερμοῦ καὶ ψυχροῦ. καὶ μέντοι καὶ δέδεικται πρὸς ἡμῶν ἐν τοῖς περὶ κρᾶσεων

11 He considers the other chapters spurious.

12 Especially his *On the Elements according to Hippocrates* and *On Hippocrates' Nature of Man*. The Hippocratic writer speaks of "the hot", "the wet" etc., i.e. in terms of what later were called the elementary *qualities* as distinguishable from the elements fire, water etc. Galen in *On Hippocrates' Nature of Man* argues that Hippocrates could not articulate the distinction between qualities and elements (qualities plus matter, in the Aristotelian analysis). In other words, he is *interpreting* Hippocrates as an elementary theorist rather than finding, or expecting to find, the four elements theory expounded by him. See also n. 17 below.

13 See e.g. his *On Mixtures*, *On the Natural Faculties* (*Nat. Fac.*) and *On the Opinions of Hippocrates and Plato* and the excellent study by van der Eijk (2015).

14 Cf. Kagan (1994), 3; Johnston and Horsley (2011), lxvii; van der Eijk (2015), 689 and 689 n. 35.

15 3.2, L. 4.486.7–8.

μία μὲν κράσις ἢ εὐκρατός τε καὶ ἀρίστη, δύσκρατοι δὲ καὶ μοχθηραὶ τὸν ἀριθμὸν ὀκτώ, τέσσαρες μὲν κατὰ μίαν ἐπικρατοῦσαν ποιότητα, τέσσαρες δ' ἄλλαι κατὰ δύο.

GALEN, *Commentary on Hippocrates' Aphorisms* 3.2, κ. 17b.565.5–16

'Of constitutions some are well or ill adapted to summer, others are well or ill adapted to winter.'¹⁶

Here Hippocrates spoke of natures in the principal and primary meaning of the word, which has first and foremost to do with the very substance of nature. In what preceded we said that this is the mixture of the four elements, wet, dry, warm and cold.¹⁷ Yet we have also shown in *On mixtures*¹⁸ that there is but one mixture that is well-blended and best, but those that are bad and unsound mixtures are eight in number, four with respect to a single prevailing quality, and four others with respect to two.¹⁹

Climate is thus acknowledged as capable of affecting a person's inherent physiology inasmuch as changes from season to season have a direct impact on their body and, as a consequence, on the quality/ pair of qualities and type of temperament that are to prevail (per season). This explains why knowing its nature, that is, acquiring this sort of environmental or, more broadly speaking, meteorological knowledge, is, in Galen's eyes, of utmost importance for the medical practitioner; it actually manifests itself as a form of medical prognostication, enabling them to predict, both in health and disease, the various reactions of the body under the climate's influence.

16 Translation by Jones (1931).

17 Here Galen follows Hippocrates in referring to the elements in terms of the qualities. Glossing over the difference could perhaps also be a way of safeguarding Hippocrates against criticism (viz. that he was not in possession of the four elements theory). See n. 12 above.

18 *On mixtures* K. 1.559 (= Helmreich 31.28–32.4). Van der Eijk (2015), 676 n. 4, points out that *eukrasia*, according to Galen, is to be understood in either of the following two senses: (i) in the absolute sense of all qualities being exactly in the same proportion to one another; or (ii) in the relative sense of the qualities being present in the proportion that is appropriate (*oikeios*) to a specific kind of living beings. The same also holds for *duskrasia*, which should be taken to refer either to the case where one or two qualities prevail over the others or to the case where one or two qualities are in excess in relation to the appropriate proportion for that specific kind of living beings; see also Singer and van der Eijk (2019), 86.

19 My translation.

2.3 *Diseases Resulting from Climatic Situations*

On many occasions Galen emphasizes the need for doctors to take into account climate as one of the factors actively involved in the occurrence of disease. One such example, in which Galen is seen to focus on climatic situations as being capable of inducing a disease, comes again from his commentary on the Hippocratic *Aphorisms* (3.16, K. 17b.601.14–609.5). The *Aphorism* in question runs as follows:

Νοσήματα δὲ ἐν μὲν τῆσιν ἐπομβρίησιν ὡς τὰ πολλὰ γίνεται πυρετοὶ τε μακροὶ καὶ κοιλίης ῥύσιες καὶ σηπεδόνες καὶ ἐπίληπτοι καὶ ἀπόπληκτοι καὶ κυνάγχαι. ἐν δὲ τοῖσιν ἀύχμοισι φθινώδεις, ὀφθαλμῖαι, ἀρθρίτιδες, στραγγουρίαι καὶ δυσεντερίαι.²⁰

The diseases which generally arise in rainy weather are protracted fevers, fluxes of the bowels, mortifications, epilepsy, apoplexy and angina. In dry weather occur consumption, eye diseases, diseases of the joints, strangury and dysentery.²¹

Here the author, in one of those passages exemplifying the Hippocratic doctrine of *καταστάσεις* (“climatic situations”, “seasonal conditions”), focuses his attention on those diseases resulting from periods of dry weather (e.g. eye diseases, diseases of the joints etc.). Galen starts (from 3.16, K. 17b.605 onwards) to discuss in detail the diseases related to weather, and one cannot fail to notice that, following the Hippocratic lead, he is very much concerned with the changes of seasons and their influence on health and disease.²² At the center of his criticism, in his comment on the Hippocratic text cited above, are those doctors who have failed to elaborate on the Hippocratic theory of climate-related diseases:

ἔστι δ' οὐχ οὕτως ὑπὲρ Ἱπποκράτους ἀπορήσαι δίκαιον, ὅτι τηλικαύτην θεωρίαν πρῶτος συστησάμενος οὐκ ἐξειργάσατο πάσαν, ὥσπερ Διοκλέους μὲν πρῶτον καὶ Μνησιθέου μετ' αὐτὸν, εἶτα καὶ ἄλλων πολλῶν ἰατρῶν, ὅσοι ταῖς ἀληθέσιν ὁδοῖς Ἱπποκράτους χρώμενοι πολλὰ τῶν κατὰ μέρος ἐξεργάσασθαι

20 3.16, L. 4.492.9–12.

21 Translation by Jones (1931), who prints *Νοσήματα δὲ ἐν μὲν τῆσιν ἐπομβρίησιν ὡς τὰ πολλὰ γίνεται, πυρετοὶ τε μακροὶ, καὶ κοιλίης ῥύσιες, καὶ σηπεδόνες, καὶ ἐπίληπτοι, καὶ ἀπόπληκτοι, καὶ κυνάγχαι· ἐν δὲ τοῖσιν ἀύχμοισι, φθινάδες, ὀφθαλμῖαι, ἀρθρίτιδες, στραγγουρίαι, καὶ δυσεντερίαι.*

22 See van der Eijk (2001), vol. II, 117.

προϋθεντο. δέον γὰρ αὐτούς εἶπερ τι καὶ ἄλλο, καὶ τὴν περὶ τῶν καταστάσεων θεωρίαν ὡς ὑπεθέμην ἄρτι διαρθρώσασθαι καὶ πάσαν ἐξεργάσασθαι παντελῶς ὠλιγώρησαν.

3.16, κ. 17b.6ο8.11–6ο9.2

However, it is not fair to raise objections to Hippocrates in the same way for not having fully worked out such a vast theory, which he was the first to put together, as [it is right to raise objections to] Diocles first, and after him to Mnesitheus, and then to many other doctors who, while following the true ways of Hippocrates, proposed to elaborate many individual [details]. For above all other subjects, they ought to have articulated also the theory of the weather-situations as I just expounded it, and to have elaborated it in its entirety, but they have completely neglected it.²³

Behind Galen's riposte lies his belief that any such theory, even if it has been formulated by Hippocrates, and even if it is necessary to be considered by a physician, requires further elaboration and development, if it is to fully comply with the facts.²⁴ Galen's insistence on additional factors to be considered or specified is not intended to discredit Hippocrates but rather to illuminate his views more clearly. This is something we learn from the proem to his commentary on *Aphorisms* 3:

<Προοίμιον Γαληνοῦ>. Ἐν τῷ τρίτῳ τῶν εἰς τοὺς ἀφορισμοὺς ὑπομνημάτων τῷδε περὶ τῶν κατὰ τὰς ὥρας τε καὶ ἡλικίας Ἱπποκράτει γεγραμμένων ἐξηγησόμεθα. μάλιστα μὲν οὖν ὅσον ἐν αὐτοῖς ἀσαφές ἐστὶ σαφηνίζοντες, ἔργον γὰρ τοῦτο ἴδιον ἐξηγήσεως, οὐ μὴν ἀλλὰ καὶ τὴν ἀπόδειξιν ἐκάστου τῶν ὀρθῶς εἰρημένων προστιθέντες, ἐπειδὴ καὶ τοῦτ' ἔστιν ἔθος ἐν τοῖς ὑπομνήμασιν γίνεσθαι.

κ. 17b.561.1–562.1

<Galen's proem>. In the present, third commentary on the *Aphorisms*, we will proceed to the task of explaining the things Hippocrates wrote with respect to the seasons and ages; in an attempt, above all, to make them plain insofar as there is something unclear in them—for this is a task pertaining specifically to exegesis—and, besides that, to adduce proof for

23 Trans. van der Eijk (2000), vol. 1, 109.

24 On Galen's idea of (scientific, moral) progress, see e.g. Hankinson (1994). Thus he also says that Hippocrates was on the right track with regard to the elements but did not have the conceptual apparatus to analyze them properly (into quality as form and matter), which was an improvement introduced by Aristotle; cf. nn. 12 and 17 above.

each of the things that have been correctly said—for this too is a usual practice in the commentaries.²⁵

Clearly, then, there is a twofold strategy at work here: to justify Hippocratic ideas while at the same time seeking to further develop them and express them more manifestly—given also the fact that Hippocrates often omitted to give proofs which have become necessary in Galen's own time because of doctors who diverged from and criticized Hippocrates. Such intentions can also be traced in another passage from the *Corpus Galenicum*, Pseudo-Galen's *Commentary on Hippocrates on Humours* 3.4, K. 16.364.3–370.6, which comments on 12.8–10, L. 5.492 of *On Humours*, and which, although it is now considered to be by a Renaissance compiler or forger, still deserves a somewhat detailed examination, as it may draw on a no longer extant source.²⁶ In Chapter 12 the Hippocratic author distinguishes between congenital diseases and diseases that are due (a) to the region where one lives, (b) to one's constitution or diet, (c) to the nature of the disease, or (d) to seasons. In commenting on this Chapter, and in particular on lines 8–10 (Τὰ μὲν ἀπὸ ὀδμῶν βορβορωδέων ἢ ἔλωδέων, τὰ δὲ ἀπὸ ὑδάτων, λιθιῶντα, σπληνώδεα, τὰ τοιαῦτα δ' ἀπὸ πνευμάτων χρηστῶν τε καὶ κακῶν.) pseudo-Galen highlights the harmful consequences of drinking poor quality water, while at the same time invoking the different types of water distinguished by the Hippocratic *Aer.* (7, L. 2.26.9 = Diller 34, 16–25), to seal off the view regarding the effect of winds on the quality of water. Yet he is quick to point out that water is not the only cause of lithiasis. In humans, excluding children, the formation of stones in internal organs is explained by the weakening of the *energeiai* and the unprocessed viscous humors, but in children, to whom these conditions do not apply, the causes must be sought elsewhere, such as in the spaciousness of the bladder, the consumption of cheese or milk, or their innate heat. Pseudo-Galen speaks also of the intense pain felt in the kidneys, its association with the formation of stones, and the sandy content of the urine; for the corresponding pain in the large intestine the humor is responsible, which Praxagoras calls “vitreous”.

It is clear from the above that the pseudogalenic restorative approach is intended to stress, once again, that the Hippocratic view of climate's influence needs to be elaborated: it must acquire more comprehensiveness, and the way to do so is through expanding the scope of consideration. Now when seen along with the aforementioned passage from Galen's commentary on the *Aphorisms*, a common conclusion seems to be drawn, as they both pinpoint the necessity

25 My translation.

26 Cf. van der Eijk (2001), vol. II, 159.

of one's having or acquiring—to the greatest extent possible—foreknowledge of the dynamics of climate's disease-producing influence, that is, of its pathogenic effect. In this respect, meteorological knowledge emerges as a body of knowledge which unfolds itself in the form of forethought processes involving the ability to prognosticate the full dynamics of the mechanism of climate's influence on both health and disease.

2.4 *Decoding the Kind of Effect of the Climatically Produced Disease on the Patient*

In another section of his commentary on the *Aphorisms* (K. 17b.530), Galen focuses on the content of *Aphorism 2.34*:

Ἐν τῆσι νούσοισιν ἦσσον κινδυνεύουσιν, οἷσιν ἂν οἰκείη τῆς φύσιος καὶ τῆς ἡλικίης καὶ τῆς ἕξιος καὶ τῆς ὥρης ἢ νούσος ἢ μᾶλλον ἢ οἷσιν ἂν μὴ οἰκειότατά τι τουτέων.²⁷

In diseases there is less danger when the disease is more nearly related to the patient in respect of constitution, habit, age and season, than when there is no such relationship.²⁸

Which he rephrases, for purposes of clarification, in terms of excess as follows:

Τῆς φύσεως πολλαχῶς λεγομένης ἀκουστέον νῦν ἔστιν αὐτῆς κατ' ἐκεῖνο τὸ σημαίνόμενον, ᾧ κέχρηται αὐτὸς, ἐν ἑτέροις πολλοῖς καὶ καθ' ὅλον γε τὸ περὶ φύσεως ἀνθρώπου βιβλίον, ἐν ᾧ τὴν ἐκ τῶν πρώτων στοιχείων κράσιν ὀνομάζει φύσιν, ὡς εἰ καὶ οὕτως ἔφη, ἐν τῆσι νούσοισιν ἦσσον κινδυνεύουσιν οἷς ἂν οἰκεία τῆς πρώτης τοῦ σώματος κράσεως καὶ τῆς νῦν διὰ τὴν ἡλικίαν ἢ τὴν ἕξιν ἢ τὴν ὥραν προσγεγεννημένης ἢ νόσος ἢ μᾶλλον, ἢ οἷς ἂν μὴ οἰκεία κατὰ τι τούτων ἦ. τῆ μὲν γὰρ θερμῆ φύσει καὶ ἡλικίᾳ καὶ ἕξει καὶ ὥρᾳ δηλονότι καὶ καταστάσει καὶ χώρᾳ τὰ θερμότερα τῶν νοσημάτων ἔστιν οἰκεία, ταῖς δὲ ψυχρότεραις τὰ ψυχρότερα. κατὰ δὲ τὸν αὐτὸν λόγον καὶ ταῖς μὲν ξηρότεραις τὰ ξηρότερα, ταῖς δ' ὑγροτέραις τὰ ὑγρότερα.

Since nature is spoken of in many ways, one must now understand it in that sense in which he himself has used it, in many other books and

27 2.34, L. 4.480.7–9.

28 Translation by Jones (1931), who prints Ἐν τῆσι νούσοισιν ἦσσον κινδυνεύουσιν, οἷς ἂν οἰκείη τῆς φύσιος, καὶ τῆς ἕξιος, καὶ τῆς ἡλικίης, καὶ τῆς ὥρης ἢ νούσος ὑπάρχει μᾶλλον, ἢ οἷσιν ἂν μὴ οἰκείη κατὰ τι τούτων ἦ.

certainly in his entire book *On the Nature of Man*, where it is the mixture made up of the first elements that he calls nature.²⁹ It is as if he spoke thus too, saying namely that in diseases there is less danger for those people in whom the disease corresponds with the primary mixture of the body and with the present mixture it has acquired through age or disposition or season, rather than [that there is less danger] for those people in whom the disease does not correspond [with the bodily mixture] in any one of these respects. For diseases that produce an excess of warmth correspond evidently with a warm natural constitution, or age, or disposition, or season, or weather situation, or environment, but diseases that produce an excess of cold correspond with colder constitutions, ages, etc. According to the same principle, diseases that produce an excess of dryness correspond with drier constitutions etc., those that produce an excess of wetness with wetter constitutions etc.³⁰

It is true that health is implied here as a sort of balance between the four qualities, and disease as its disturbance.³¹ But more important here, at least as regards the scope of the present study, is that any correspondence between excess in climate and excess caused by disease is explicitly said to be able to safely point to the degree of the latter's dangerousness. This suffices to imply that taking climate into serious account is as much crucial as knowing to what degree a certain disease is dangerous or not would be; or, to put it differently, acquiring meteorological knowledge seems to be conceived here as resulting in being forethoughtful in decoding the kind of effect climate has on the patient, such that discovering a sort of correspondence between excess in warmth or cold of season, weather situation or environment, and excess in bodily warmth or cold due to a disease, can safely lead to predicting, that is, determining in advance whether a certain disease is dangerous or not. Needless to say, it is this form of medical prognosis that determines also the treatment plan to be followed, as will become clear in the next section.

29 See further the Preface to Galen's commentary on the Hippocratic *Nature of Man*, which reflects an attempt by Galen to shed full light on the meaning of the term "nature" mostly by presenting a doxographical account of all previous thinkers on the subject.

30 Translation from "Since" to "saying namely that [...]" is mine. Translation of section "in diseases [...] constitutions etc." is taken from van der Eijk (2000), vol. I, 111–113.

31 See van der Eijk (2001), vol. II, 119.

2.5 *Deciding on When to Use a Therapeutic Measure*

Should one attach great value to meteorological knowledge also with regard to therapeutics? The answer is in the affirmative for Galen, as can be seen for instance from the following passages of his *On the Method of Healing*:

γίγνεται δὲ δήπου καὶ διὰ χώραν θερμὴν καὶ ξηράν, ὥραν τε θερινὴν καὶ κατάστασιν ἰκανῶς θερμὴν καὶ ξηράν ἢ διὰ τῆς ἐπιφανείας τοῦ σώματος ἀξιόλογος κένωσις, ὥσπερ καὶ διὰ ταύτην τοὺς δεομένους αἵματος ἀφαιρέσεως ἢ οὐδ' ὄλως φλεβοτομήσομεν ἢ ὀλίγον ἀφαιρήσομεν. ἔσονται δὲ καὶ κατὰ τὴν τομὴν τήνδε πολλοὶ σκοποὶ, ἢ φύσις ἢ ἐξ ἀρχῆς, τὸ ἔθος, ἢ ἡλικία, τὸ χωρίον, ἢ ὥρα τοῦ ἔτους, ἢ κατάστασις, ἔτι τε πρὸς τούτοις ἢ νοσώδης διάθεσις ἢν θεραπεύομεν, ἑτέρῳ τε τρόπῳ πρὸ αὐτῆς ἢ τοῦ κάμνοντος δύναμις.

9.17, K. 10.658.2–11

Of course, a significant evacuation through the surface of the body also occurs due to a hot dry place, a summery season, and weather conditions that are excessively warm and dry. And consequently, in those who need to have blood withdrawn, we either do not carry out phlebotomy at all or we shall withdraw very little [blood]. There will also be, in relation to this cut (i.e., venesection), many indicators: the nature which exists from the beginning, custom, age, place, season of the year, climatic conditions, and in addition to these, the disease condition which we are treating, and taking priority in another way, the capacity of the patient.

Trans. JOHNSTON 2011

ἔνιοι μὲν γὰρ εὐδιαφόρητοι φύσει, παῖδες δ' αἰεὶ διὰ τὴν ἡλικίαν· ἢ κατάστασις δ' ὅταν ἦ θερμὴ τε ἄγαν καὶ ξηρά. καλῶ δὲ δηλονότι κατάστασιν τὴν τοῦ περιέχοντος ἡμᾶς ἀέρος κρᾶσιν, ἐν ἣ καὶ χώρα καὶ ὥρα περιείληπται· καὶ γὰρ καὶ τούτων ἐκάτερον ἔχει τὴν ἔνδειξιν ἐκ τῆς τοῦ περιέχοντος κρᾶσεως. εὐδιαφόρητοι δ' εἰσὶν οἱ ὑγροὶ τὴν φύσιν ἅπαντες καὶ μᾶλλον ἄμα θερμότητι, καὶ οἱ ἀραιοὶ τὴν ἔξιν, ἔτι δ' οἷς τὸ στόμα τῆς γαστρὸς ἢ μικρόχολον, ἢ ἄρρωστον, ἢ πέρα τοῦ δέοντος αἰσθητικόν. οὗτοι μὲν οὖν οἱ ἀντιπράττοντες τῇ φλεβοτομίᾳ σκοποὶ. συνενδεικνύμενοι δ' αὐτὴν τῇ πρώτῳ χρηζούσῃ διαθέσει, σκληρὰ μὲν ἢ ἔξις καὶ πυκνὴ καὶ τὸ σύμπαν φάναι δυσδιαφόρητος· ὑγρὸν δὲ ἢ ψυχρὸν τὸ περιέχον. εὐλόγως δήπου τὰ μὲν συνενδείκνυται τὴν φλεβοτομίαν, τὰ δὲ ἀντενδείκνυται κένωσις μὲν γὰρ αὐτῆς ὁ σκοπός.

9.5, K. 10.625.12–626.10

For some have a natural propensity to secrete (children always have this due to their age), and climatic conditions when they are hot and very dry

[favor secretion]. Obviously, I call climatic conditions the *krasis* (“blend”, “mixture”, or “(mixed) composition”) of the air surrounding us,³² in which both the place and season are included, for each of these also has the indication of the *krasis* of the ambient air. Those with a natural propensity to secrete are all those who are moist in nature, and particularly if this is associated with heat, and those who are thin in habitus, and further, those in whom the opening (cardiac orifice) of the stomach is either full of bitter bile (picrocholic) or weak, or overly sensitive. These are the indicators of things that act in opposition to phlebotomy. Those things jointly indicating this (i.e. phlebotomy) primarily with the needful condition are a state that is hard and thick, and, in summary, that is difficult to secrete, and ambient air that is moist and cold. It is reasonable, of course, that some things jointly indicate phlebotomy, while others contraindicate it, since its objective is evacuation.

Trans. JOHNSTON 2011, modified at points

φλεβοτομητέον οὖν ἐστὶν ἐπὶ τῶν τοιούτων παθῶν κατ’ ἀρχὰς εὐθὺς ἰσχυρὰς μὲν οὕσης εἰς τοσοῦτον τῆς δυνάμεως ὡς ἐνεργεῖν ἀλύπως τὴν φλεβοτομίαν, ἑτέρου δὲ μηδενὸς κωλύοντος ὧν ἐν τοῖς περὶ φλεβοτομίας εἶπομεν, οἷον ἦτοι πλήθους ὠμῶν χυμῶν ἢ παιδικῆς ἡλικίας ἢ ὥρας ἢ χῶρας ἐσχάτως θερμῆς ἢ ψυχρῆς.

13,21, K. 10.930.4–10

You must carry out phlebotomy right at the outset in such affections, if the strength of the capacity is such as to bear the phlebotomy without harm and there is none of the other things I spoke about in the writings on phlebotomy to contraindicate it: for example, an excess of crude humors, young age, the season, the place, or extreme heat or cold.

Trans. JOHNSTON 2011

Here we come across Galen’s recognition that therapeutic measures need to be applied sometimes more cautiously, and other times more freely, in any case only when taking into serious consideration a number of climatic factors such as ambient air quality, region climate, season of the year, which have a certain, positive or negative, effect on the way the human body reacts. Practically

32 On *κατάστασις* and its being referred to by Galen as the mixture of the surrounding air, see also 9,5, K. 10.685,17; *On mixtures* K. 1.529,16–17 [= Helmreich 13,23–24]; *Galen’s Commentary on Hippocrates’ Epidemics* K. 17a.9,18; 17a.100,12; 17a.646,4–5; 17a.648,4; *On the Composition of Drugs by Type* K. 13,370,17; *On the Causes of Pulses* K. 9,127,5.

speaking, as Brain³³ puts it with regard to venesection: “One should remove less blood in the season of summer and in hot regions.”

The passages above help us form a fuller picture of Galen’s view of the benefits derived by the medical practitioner from meteorological knowledge. These can be summarized as follows: first (i) knowing in advance the power of climate to affect the human body, then (ii) focusing on and evaluating the type of effect on the human body, and thus (iii) deciding on when (if at all) to apply a certain therapeutic measure on the basis of that evaluation. This kind of meteorologically-based medical prognosis, judgment, and decision-making is what guarantees in Galen’s eyes a much greater level of success in therapy.

2.6 *What Is to Live in a City with a Well-Mixed Climate*

Climatic well-mixedness, along with its cruciality to civic life, is a question posed and largely answered by Galen in his rather preventive in nature *Health*. This treatise focuses primarily on the ways to maintain health without being dependent on external, medical intervention,³⁴ thus putting forth the model of the ideal patient living in a city with a healthy climate, as Galen envisages it.

When it comes to the objectives of hygiene, Galen expresses himself in a very categorical manner:

ἔφαμεν γάρ, ὡς, εἰ μὲν ἀπαθὲς ἦν ἡμῶν τὸ σῶμα, καθάπερ ἀδάμας ἢ τι τοιοῦτον, οὐδεμιᾶς ἂν ἐδεῖτο τέχνης ἐπιστατούσης αὐτῷ· ἐπειδὴ δὲ διττὰς ἔχει τῆς φθορᾶς αἰτίας, τὰς μὲν ἔνδοθεν καὶ ἐξ ἑαυτοῦ, τὰς δὲ ἐκ τῶν ἔξωθεν προσπιπτόντων, ἀναγκαῖον αὐτὸ δεῖσθαι προνοίας οὐ μικρᾶς [...] ἐξ ἑαυτοῦ μὲν οὖν ᾧδὲ πως φθειρεται, τῶν δὲ ἔξωθεν αὐτῷ προσπιπτόντων ἔν μὲν ἀχώριστόν τε ἔστι καὶ διαπαντὸς ὑπάρχον αὐτῷ καὶ ὡς ἂν εἴποι τις σύμφυτον, ὁ περιέχων ἀήρ, τὰ δ’ ἄλλα οὐτ’ ἀναγκαῖα καὶ κατὰ χρόνους τινὰς ἀτάκτως ὀμιλοῦντα, τὰ μὲν ὡσπερ ὁ περιέχων ἀήρ ἢ τῷ θερμαίνειν ἀμέτρως ἢ τῷ ψύχειν ἢ τῷ ξηραίνειν ἢ τῷ ὑγραίνειν βλάπτοντα, τὰ δὲ τῷ θλάνῃ ἢ διασπᾶν ἢ τιτρώσκειν ἢ ἔξαρθρόν τι ποιεῖν. ἔστι μὲν οὖν τις ἐνταῦθα λογικὴ ζήτησις εἰς ἐκάτερον ἐπιχειρεῖσθαι δυναμένη, τινῶν μὲν τῆς περὶ τὸ σῶμα τέχνης ἀπάντων τούτων τὴν φυλακὴν εἶναι λεγόντων, τινῶν δὲ τῶν θερμαίνόντων τε καὶ ψυχόντων, ὑγραίνόντων καὶ ξηραίνόντων μόνον.

Health 1.4, K. 6.9.12–6.10.14

I said that, if our body were impassible, like adamant or some such thing, there would be no need of any art for the care of it. But since it

33 Brain (1986), 89 n. 65

34 Wilkins (2016), 415; see also Singer (2023), 23.

has two sorts of causes of deterioration—those which are internal and of themselves and those which are external and befall it—this requires, of necessity, no little forethought.³⁵ [...] This is how the body deteriorates ‘of itself’. Of those things that befall it from without, one which is ever-present and everywhere—one might say natural—is the surrounding air, whereas other things are not essential and are irregular associations occurring from time to time. The surrounding air causes harm by either heating, cooling, drying or moistening immoderately, whereas the other things do so by bruising, tearing, wounding or dislocating. It is, then, possible to attempt a logical inquiry here into whether we say of the art that preserves the body that it concerns all these things or only those that are heating, cooling, moistening and drying.

Trans. JOHNSTON 2018

Here the surrounding air or, to put it simply, climate³⁶ is clearly recognized as the only, ubiquitous form of external cause of bodily deterioration, which demands our greatest attention due to its ever-present, multifarious potential to cause harm. Generally speaking, for Galen, to live in a city with a well-mixed climate means first and foremost to habitually engage already from infancy in the activities that are necessary for maintaining good health such as breathing and transpiring in good air, eating and drinking, exercise and rest, sleeping and waking, filling and emptying the bodily fluids, and mental well-being.³⁷ It also, and equally importantly, means to maintain a balance between one’s naturally physiology, their habits, and the environment in which they live, i.e. climate, waters, and winds.³⁸ Climate is thus recognized as a very important factor inasmuch as it can affect the good health, well-mixedness, and balance of the naturally-formed organism but also functionally it can hinder living healthily. Ideally, Galen believes, the natural body would maintain its good health in a city with a climate that is well-mixed and supportive of a healthy life in a well-mixed constitution.³⁹ What is more, just as the Hippocratic writer of *Aer.*, so too Galen acknowledges that climate is capable of affecting not only

35 As here, *πρόνοια* is very frequently paired with *τέχνη* or *σοφία* in Galen’s works (see e.g. *Natural Faculties* K. 2.80.12–13; *On the Usefulness of the Parts of the Body* K. 3.122–128; 3.216.12–13; 3.256.14–15; 3.257.4, and 3.391.1–2). On Galen’s clarification of Hippocrates’ use of *πρόνοια* instead of *πρόγνωσις*, see *Galen’s Commentary on Hippocrates’ Prognosticon* K. 18b.8.7–8 (= Heeg 201.14–15) (cf. also Singer 2023, 156 n. 9).

36 See n. 32 above.

37 Wilkins (2016), 419; cf. e.g. *Health* K. 6.124–133, esp. K. 6.125–126 and 6.128–129.

38 Wilkins (2016), 421.

39 Wilkins (2016), 421.

the body but the soul, i.e. human character. That is why he pays so much attention to factors such as wind directions, local climate, seasonal changes, landscape, quantity and quality of air, waters, and environment in his discussion of what the ideal conditions for a city consist in.⁴⁰

In view of the above considerations, there seems no denying that Galen took great pains to show that meteorological knowledge should be regarded as an indispensable part of medical knowledge, that is, knowledge of what good health consists in, since it enables the physician to prognosticate an ill-mixed or balanced climate's power to affect natural physiology and the well-mixedness of the human body in particular, and accordingly take the necessary measures to restore that balance; it also endows the physician with the knowledge of climate's character-forming power and what type of characters-potential patients result from certain excessive or moderate climatic changes.

3 The Influence of the Heavenly Bodies on Climate

3.1 On Critical Days, *Astronomy and the Question of Its Relation to Medicine*

In Book III of his *On Critical Days* (in particular, K. 9.901), Galen expressly acknowledges the power of the heavenly bodies to bring order to things on earth:

ἐν τάξει δέ τινι καὶ κόσμῳ προϊούσαν αἰεὶ τὴν ἐκ τῶν κατ' οὐρανὸν, ἅπαντα γὰρ τὰ τῆδε πρὸς ἐκείνων κοσμεῖται.

K. 9.901.11–13

the other [principle], springing from the heavenly bodies, proceeds always in some orderly and due manner; for all things on earth are put in order under their influence.⁴¹

Galen actually specifies the benefits the heavenly bodies confer upon earthly affairs in terms of orderliness, good-rhythmic arrangement, and regulation,⁴²

40 Van Tilburg (2015), 794. See further 797, n. 9, for literature on the connection between meteorology and medicine.

41 My translation.

42 Galen here seems to be influenced by the Platonic *Timaeus*, for instance the famous passage introducing Plato's account of time (*Ti.* 37c), where the Demiurge, in a bid to make the universe more like the eternal model after which he has created it, generates time by

but a little further down he goes on to single out the Sun as the body that surpasses all others in that respect:

Πάντων μὲν τῶν ἄνωθεν ἄστρον ἀπολαύομεν τῆς δυνάμεως, ἀλλ' ὁ μάλιστα κοσμῶν τὰ τῆδε καὶ ῥυθμίζων καὶ διατάττων ὁ ἥλιός ἐστιν.

K. 9.901.18–902.2

We benefit from the power of all the heavenly bodies, yet, most of all, it is the Sun that brings order to the things on earth, drives them into a regular measure and arranges them thoroughly.⁴³

The Sun is subsequently said to be the cause of the seasons as well as exercising power over such matters as the generation of animals and ripening of fruits (*ibid.* K. 9.902.2–6).⁴⁴ The Moon is also said to affect earthly matters, as is clear for instance from the fact that it brings order to the months (καὶ γὰρ αἰεὶ τοὺς μῆνας αὕτη διατάττει, *ibid.* K. 9.902.8), yet its influence is subordinate to the Sun's, being mostly dependent on it, inasmuch as the power of its effect varies in accordance with its phases which are in turn functionally identified exclusively with reference to the Sun (ὥστε ἐκ τῶν πρὸς ἥλιον ἀποστάσεων ἀπάσας ἔχει τὰς μεταβολάς, *ibid.* K. 9.902.13–14). Even so, the Moon, as Galen states, is not only responsible for regulating the days of the month but is commonly known to affect the weather through its influence on winds.⁴⁵ In showcasing the influence of the heavenly bodies on the year, seasons, months, and weather, Galen wishes to ascribe great importance to this sort of astrometeorological knowledge, and one can easily imagine why he does so. If, as was shown above, knowing the nature of climate is crucial to medical practice, then knowing what affects climate is even more crucial since it conduces significantly to predicting at an early stage the course of a certain disease by tracing the initial cause determining it up to the supraterrrestrial factors capable of affecting it. In that respect, astrometeorological knowledge emerges as an indispensable tool in the hands of medical practitioner, which when used properly can be the key to successful disease forecasting.

ordering the heavens, that is, by regulating their motions. All in all, it is these motions that are considered to be primarily responsible for making the universe more orderly.

43 My translation.

44 Cf. Cooper (2011), 322 n. 952, for further literature on the ripening power of the Sun's or Moon's natural heat.

45 Cf. K. 9.908.12–909.1 and Cooper (2011), 334.

In addition, Galen's use of what we would now call basically astrological knowledge⁴⁶ is also geared towards highlighting the importance of astrometeorologically-colored medicine. Regardless of whether the entirety of his astronomical and astrological remarks is faultless and accurate or not, his clear insistence on the power of the Sun⁴⁷ and Moon to bring increase and decay, or to affect weather patterns, which in turn have an impact on the course of diseases (see e.g. the discussion in section K. 9.911.14–917), suffices to prove his belief that a body of knowledge that was used for instance by sailors or farmers as a tool, among others, for predicting the weather can be upgraded to a body of knowledge playing a key role in medical prognosis.

3.2 *Galen's Commentary on Hippocrates' Airs, Waters, Places Again*

Galen's anxiety to vindicate astrometeorological medicine is clear from many passages in which he protests vigorously against those doctors who show indifference to astronomy or related sciences. Consider the Hebrew version of the commentary, in particular the following Hippocratic famous passage:

Εἰ δὲ δοκεῖσι τις ταῦτα μετεωρολόγια εἶναι, εἰ μετασταίη τῆς γνώμης, μάθοι ἂν ὅτι οὐκ ἐλάχιστον μέρος ξυμβάλλεται ἀστρονομίῃ ἐς ἰητρικὴν, ἀλλὰ πάνυ πλεῖστον. Ἄμα γὰρ τῆσιν ὥρησι καὶ αἱ κοιλίαι μεταβάλλουσι τοῖσιν ἀνθρώποισιν.⁴⁸

If someone thinks that all this belongs rather to meteorology, by keeping his mind open he will learn that astronomy makes no small contribution to the art of medicine but a very great one: for it is in time with the seasons that the cavities in humans also change.⁴⁹

Here meteorology is almost explicitly identified with astronomy, and Galen explains the indispensability of astronomy in medical science by reference to the fact that it is capable of acquainting people with the seasons and their changes as well as with the rising of stars which are responsible for the seasonal changes.⁵⁰

46 On Galen's stance to and (ab)use of catarchic, natural and judicial astrology, see Cooper (2011), 54, 57, 59, 67, 69–71, and 346 n. 1034.

47 On the religious significance of the Sun for Galen, see also Tieleman (2022), esp. 141, with further passages and references.

48 *Aer.* 2, L. 2.14.15–19 (= Diller 26, 18–21).

49 Translation by Jones (1923).

50 Wasserstein (1982), 19–21. As I wrote the final sections of this piece, I had the privilege to consult Professor Strohmaier's German translation of the Arabic text through the kind mediation of Dr. Roland Wittwer and Professor Teun Tieleman. So far as the above-cited

It goes without saying that a large part of the Hebrew translation of the commentary lays considerable stress on the rising and setting of stars. But here too the Sun and its rising seems to figure prominently. For instance, when commenting on the Hippocratic claim that a city facing the rising of the Sun will be healthier (Wasserstein 39), Galen is seen to implicitly define a city's health as that in which a balance between heat and cold prevails, which in turn has a beneficial effect on both the waters and the people. This seems to be a clear attempt to approach health in terms of the Sun's power of influence and is particularly revealing as to what place this type of astrometeorological knowledge may hold in the physician's arsenal of knowledge.

In fact, the last section of the Hebrew translation (Wasserstein 68) is even more devoted to astronomy-meteorology and its value. The occasion is *Aer.*'s statement that if the rising and setting of the stars is as it should be and the rains are abundant in autumn and few in winter, if there is not too much heat or too cold, and the rains are moderate in spring and summer, then the year will necessarily be healthy.⁵¹ Galen explains that Hippocrates refers to the rising and setting of the stars which are responsible for the seasons and the changes

Aer. passage is concerned, the Arabic text is more informative, chiefly because of the addition of an element that further clarifies why, in Galen's eyes, astronomy is necessary in medicine. Astronomy, Galen states, teaches us about the weather indications of the seasons and the rising of the stars that bring about their changes. These give very important clues to the doctor, inasmuch as the inside of the body changes with the changing of the seasons. Galen then informs us about the main work where these Hippocratic teachings can be found, *Aphorisms*, where one comes across such statements as "[t]he inside of the body is very warm in winter and spring" or "[w]e cannot eat much in summer and autumn". Galen concludes his comment by referring to the different interpretations proposed regarding the Hippocratic claim "the inside of the body": some take it to mean the place where food is received, while others say that by "inside" he means any place in the body that has depth and is hollow and empty.

See also the importance attached to astronomy in the beginning of Galen's treatise *The Best Doctor is also a Philosopher* (which also reflects *Aer.*), where Galen notes an inconsistency between the admiration some doctors express for the superiority of Hippocrates and the fact that they do practically nothing to resemble him. Galen then goes on to justify his claim by first stating that while Hippocrates held astronomy in high esteem, considering it, as well as the study prior to it, geometry, to be of crucial relevance to the study of medicine, these doctors do not busy themselves with either of them and actually go so far as to censure those who do so. For passages in which Galen complains about other doctors' neglect of astronomy and geometry, see also Wasserstein (1982), 20 comment on G6; cf. Wasserstein's comment on G. 50g (1982, 72–74). For the possibility that Galen himself wrote an astronomical work entitled *Περὶ τοῦ ἐνιαυσίου χρόνου* (*Galen's Commentary on Hippocrates' Prognosticon* K. 18b.240.14–15 = Heeg 334.8–9), planning also a work on meteorology (K. 17b.609.2–4, cf. p. 369), see Wasserstein's comment on G. 50g (1982, 74).

51 *Aer.* 10, L. 2.42.7–13 (= Diller 46, 18–22).

that take place in them. In his discussion one finds, among other things, details about the same or different middays and midnights, which are due to whether two cities lie under the same meridian, about the division of seasons and periods, about how the amount of rain at the rising of the Dog star testifies that diseases will be easier, or that the change in the air is due to the Sun.

3.3 *Galen on Astronomers and Astrologers*

Of course, as one would expect, trying to convince medical experts of the value of astrometeorological knowledge requires going into quite a bit of astrometeorological detail and Galen, as we have seen, does not hesitate to do so. This becomes also clear from Galen's somewhat lengthy discussion of astronomy and astrology in Chapter III of Book III of the Arabic translation of his *Aer. Commentary*, the text of which, particularly pleasingly, has been recently edited by Toomer 1985, even in provisional form (p. 194), in anticipation of the edition prepared by Strohmaier.⁵² Apart from its importance for the history of astronomy and astrology, this chapter helps us also to draw a clearer picture of Galen's stance towards astronomers and astrologers and to reaffirm his firm belief in the influence of the heavenly bodies on every sort of physical change that takes place on earth.⁵³ At the heart of the discussion here lies the following Hippocratic passage referring to the changes taking place as a result of the inflections of the Sun and to the influence of the risings and settings of certain stars on diseases:

μέγιστα δέ εἰσιν αἶθε καὶ ἐπικινδυνόταται, ἡλίου τροπαὶ ἀμφοτέραι καὶ μᾶλλον αἰ θεριναί· καὶ ἰσημερία νομιζόμεναι εἶναι ἀμφοτέραι, μᾶλλον δὲ αἰ μετοπωριναί. Δεῖ δὲ καὶ τῶν ἀστρῶν τὰς ἐπιτολὰς φυλάσσεσθαι, καὶ μάλιστα τοῦ κυνός, ἔπειτα ἀρκτούρου, καὶ ἔτι πληιάδων δύσιν· τὰ τε γὰρ νοσεύματα μάλιστα ἐν ταύτῃσι τῇσιν ἡμέρησι κρίνεται· καὶ τὰ μὲν ἀποφθίνει, τὰ δὲ λήγει, τὰ δὲ ἄλλα πάντα μεθίσταται ἐς ἕτερον εἶδος καὶ ἐτέρην κατάστασιν.

Aer. II, L. 2.52.1–8 = DILLER 52, 19–54, 3

Galen subsequently acknowledges the correctness of the Hippocratic view and goes on to justify it by accounting for the prolificness of diseases in summer and autumn in terms of the heat of the surrounding air, which is responsible for the propensity bodies show for yellow bile, in conjunction with the weakening of people's strength mostly due to the excessive dryness of the

52 On Galen and astronomy, see also the recent study by Strohmaier (2015).

53 Toomer (1985), 194.

body.⁵⁴ Interestingly, in what follows, Galen provides valuable information and quite frequently his own view on seasonal changes, equinoxes, solstices, the state of knowledge of Roman astrologers in relation to geometry, astronomy, and scientific thinkers of the past. Yet, most importantly, he focuses on those doctors—especially those who proclaim themselves to be disciples of Hippocrates—who consider it insignificant to take up and make use of astronomical and geometrical knowledge, and strongly urges them to do so.⁵⁵

4 Conclusion

From the discussion above it emerges clearly enough that meteorological knowledge and astronomical knowledge are at least in the aforementioned passages treated as consisting in knowing the effect of climate on humankind and the effect of the heavenly bodies on climate respectively. Climate thus emerges as the connecting link between these two types of knowledge to the effect that those Galenic passages treating of meteorology should be viewed as passages conveying purely meteorological knowledge while those dealing with astronomical knowledge should be viewed as passages conveying a sort of astro-meteorological knowledge. It is my contention that all these passages have a common aim, to bring out the importance of the above types of knowledge in particular to medical prognosis by spotlighting the benefits conferred by them. So far as purely meteorological knowledge is concerned, Galen is sometimes seen to speak of this knowledge in more theoretical terms whereas at other times he emphasizes its practical aspect or side. In the former case, a sort of theoretical knowledge beforehand, or meteorological knowledge_{the}, as one might call it, Galen discusses, on a more theoretical level, the dynamics or mechanism of the influence of climate on both the body (by stressing the power of climate either to affect the natural physiology or mixedness of the body or to maintain or disrupt the well-mixedness of the body—in short, climate's disease-producing and health-maintaining power) and soul (by stressing the power of climate to affect the soul and form characters). In the latter case, meteorological knowledge_{pra}, which actually amounts to the practical application of meteorological knowledge_{the}, has some complex yet not

54 See Toomer (1985), 198.

55 In the course of this, Galen refers to a book on geometry he wrote entitled *The Stars of Hippocrates and the Geometry Useful in the Science of Medicine*, which is not attested in his *On My Own Books* or in his *On the Order of My Own Books*; see Toomer (1985), 204.

incomprehensible ramifications. When it comes to body and disease it shows itself, at an early stage, as a kind of both prognostic and diagnostic knowledge of the reaction of the body to climate's effect, especially of the kind of morbid effect induced on the patient and of the dangerous nature of the disease and, at a later stage, as a form of therapeutic knowledge capable of adjusting the treatment plan according to the conclusions drawn in the previous stage. Again, when it comes to body and health, it represents a sort of predictive knowledge, especially of the kind of healthy effect made on an individual's body. Finally, when it comes to the soul and either disease or health, it becomes a tool in the hands of the physician for forecasting the kind of climatic effect induced on an individual's soul.

In the case of Galenic accounts of astrometeorological knowledge, things seem pretty much the same, though the stress here seems to me almost exclusively on its prognostic value; this makes us suspect that those passages dealing with this type of knowledge, establishing as they do a more complete form of the purely meteorological knowledge, have shouldered the task of revealing how Galen himself conceives of his role as meteorologically medical prognosticator. As before, Galen speaks of astrometeorological knowledge_{the} as conferring the benefit of knowing beforehand the periods of warmth and cold, the influences of winds and waters, the change of seasons, the climatic qualities of places, or the state of the year. It is this type of knowledge that, in its practical application, astrometeorological knowledge_{pra}, manifests itself mainly as prognosis of the course of a disease, both before and after its onset, i.e. both at the pre-morbid and the morbid stage. These manifestations include mainly prediction of (a) the susceptibility of people living in a particular area to diseases; (b) the reaction of the body to a certain season; and (c) the maturity or non-maturity of a disease, or its favorable or unfavorable outcome.

Acknowledgements

I would like to thank Giouli Korobili and Teun Tieleman for reading an earlier draft of this paper and offering many valuable suggestions. I am also grateful to Professor Gotthard Strohmaier for allowing me to consult his German translation of the Arabic text through the kind mediation of Dr. Roland Wittwer and Professor Teun Tieleman. The research for this paper was part of the project "Classics Today: Contemporary Issues Through the Lens of Ancient Greek and Roman Thought", implemented by the Department of History of the Ionian University, Corfu, and co-financed by Greece and the European Union (European Social Fund-ESF).

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